



BOARD OF TRUSTEES
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

Regular Meeting
Tuesday, October 28, 2025
7:00 PM

“Please be advised that any proposed documents attached hereto are in draft form and vary from the final versions which are adopted at the meeting as set forth herein.”

1. CALL TO ORDER

2. ROLL CALL

3. PRESIDENT’S OPENING COMMENTS

A. Oak Brook Fire Department’s Commendation Awards Presentation

4. PUBLIC COMMENTS

5. CONSENT AGENDA

All items on the Consent Agenda are considered to be routine in nature and will be enacted in one motion. There will be no separate discussion of these items unless a Board member so requests, in which event, the item will be removed from the Consent Agenda and considered as the first item after approval of the Consent Agenda.

A. Accounts Payable for Period Ending: October 22, 2025 - \$1,097,050.53

1. DuPage Water Commission - Water Consumption - September 2025 - \$585,533.20
2. Intergovernmental Risk Management Agency - September Deductible - \$32,919.22
3. BLA, Inc. - Woodside & Forest Glen Watermain Improvements Project - \$29,112.50
4. Enterprise FM Trust - Village Vehicle Leases - October 2025 - \$52,175.75
5. DU-COMM - Fire Department Quarterly Shares for the Period from 11/1/25 to 1/31/26 - \$37,876.75
6. Engineering Resource Associates, Inc. - Ginger Creek WM Storm Sewer Improvements - \$29,284.20
7. DU-COMM - Police Department Quarterly Shares for the Period from 11/1/25 to 1/31/26 - \$137,224.75

B. Approval of Payroll Paydate: October 16, 2025 — \$1,008,128.85

C. Authorization to Seek Bids or Proposals or Negotiate Contracts:

1. Request for RFP for Auditing Services

2. Request for RFP for Actuarial Services

D. National First Responders Day Proclamation

6. ITEMS REMOVED FROM CONSENT AGENDA

7. ACTIVE BUSINESS

A. Ordinances & Resolutions

1. Resolution R-2319, A Resolution Approving the Delivery Agreement By and Between the Village of Oak Brook and Aqua Illinois, Inc.
2. Resolution R-2321, A Resolution to Waive the Formal Bid Process Due to Sole Source Purchase and Authorize an Award of Contract to Leibold Irrigation, Inc., of East Dubuque, IL for the Sports Core Pump Station Replacement Project
3. Resolution R-2322, A Resolution Awarding a Contract to the Sole Bidder, Dahme Mechanical Industries, Inc.(DMI) of Arlington Heights, Illinois, for the Water System Disinfection Modernization Project
4. Resolution R-2323, A Resolution to Waive Competitive Bidding and Authorize the Issuance of a Purchase Order to Standard Equipment for the Purchase of One (1) ODB Leaf Collection Machine

B. Confirmation of Appointments

1. Sports Core Advisory Committee

8. BOARD UPDATES

9. ADJOURNMENT

In accord with the provisions of the American with Disabilities Act, any individual who is in need of a reasonable accommodation in order to participate in or benefit from attendance at this public meeting should contact the Butler Government Center (Village Hall), at 630-368-5010 as soon as possible before the meeting date.



ITEM 5.C.1.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Request to go out for RFP Auditing Services

FROM: Marilyn Fumero, Finance Director

BUDGET SOURCE/BUDGET IMPACT: Various 76100 Auditing Services accounts.

RECOMMENDED MOTION: I move that the Village Board authorize the staff to issue a Request for Proposals (RFP) for Auditing Services for the years ended December 31, 2025 through 2027 with additional option years for 2028 and 2029.

Background/History:

In 2020, the Village issued an RFP for auditing services and received nine (9) responses. After review, staff made the recommendation to award Sikich a contract for the fiscal years ended December 31, 2020 through 2022, with option years for 2023 and 2024.

Governmental Finance Officers Association (GFOA) best practice for audit procurement recommends the following regarding selection of auditors:

- Governmental entities should enter into multi-year agreements of at least five years in duration when obtaining the services of independent auditors. Such multi-year agreements can take a variety of different forms (e.g., a series of single-year contracts) consistent with applicable legal requirements. Such agreements allow for greater continuity and help to minimize the potential for disruption in connection with the independent audit. Multi-year agreements can also help to reduce audit costs by allowing auditors to recover certain "startup" costs over several years, rather than over a single year.
- Governmental entities should undertake a full-scale competitive process for the selection of independent auditors at the end of the term of each audit contract, consistent with applicable legal requirements.

The audit procurement process should be structured so that the principal factor in the selection of an independent auditor is the auditor's ability to perform a quality audit. Price should not be allowed to serve as the sole criterion for the selection of an independent auditor, rather an independent auditor should have a demonstrated commitment to the state and local government audit practice.

Proposals will be evaluated based on a number of criteria, including municipal audit experience, staff qualifications, fees, and more. Once proposals are reviewed and a recommendation is made, this item will be brought back for your consideration.

Recommendation:

Staff recommends that the Village Board authorize the staff to issue a Request for Proposals (RFP) for Auditing Services for the years ended December 31, 2025 through 2027 with additional option years for 2028 and 2029.

Attachments:

1. Auditing Services

**VILLAGE OF OAK BROOK
Purchasing Division
1200 Oak Brook Road
Oak Brook, IL 60523**

(630) 368-5164

REQUEST FOR PROPOSALS

AUDITING SERVICES

OCTOBER 2025

TABLE OF CONTENTS

SECTION 1. REQUEST FOR PROPOSALS	2
A. NOTICE.....	2
B. GENERAL INFORMATION	2
C. AGREEMENT TERM.....	3
D. ANTICIPATED TIMELINE.....	4
SECTION 2. SCOPE OF SERVICES.....	4
SECTION 3. PROPOSAL STATEMENT.....	5
SECTION 4. PROPOSAL COST.....	6
SECTION 5. SUBMITTAL PROCEDURES.....	7
A. RFP SUBMITTALS	7
B. QUESTIONS AND CLARIFICATIONS	7
SECTION 6. REVIEW PROCESS	7
A. EVALUATION OF PROPOSALS AND SELECTION	7
B. BASIS OF AWARD.....	8
SECTION 7. TERMS AND CONDITIONS.....	9
SECTION 8. PROPOSERS CERTIFICATION	13
SECTION 9. ATTACHMENTS	15
ATTACHMENT A – LIST OF AUDIT WORKPAPERS PREPARED BY VILLAGE.....	15

Section 1. Request for Proposals

A. Notice

Posted on OpenGov Procurement Module October 29, 2025

The Village of Oak Brook is soliciting proposals from independent Certified Public Accountants licensed in the State of Illinois to provide Auditing Services for the three (3) fiscal years from December 31, 2025 through December 31, 2027, with a Village option for a fourth and fifth year ending December 31, 2028 and 2029.

Qualified firms interested in performing these services must obtain the detailed Request for Proposals (RFP) package from the Village's eProcurement Portal at <https://procurement.opengov.com/portal/oak-brook>.

Firms intending to respond to this opportunity must create a FREE account with OpenGov by signing up at <https://procurement.opengov.com/signup>. This step is necessary to establish a communication link with the Village.

The closing date and time for receipt of Proposal statements is **Wednesday, November 12, at 10:00 A.M. prevailing time**, after which time, additional submittals will not be accepted.

The Village reserves the right to reject any or all Proposals, to waive technical or legal deficiencies, to proceed or not to proceed with any subsequent proposal process, or to negotiate, without further process, and to make an award that, in its judgment, is the best and most favorable to the interests of the Village and the public.

All inquiries regarding this RFP must be submitted via the Village's eProcurement Portal at <https://procurement.opengov.com/portal/oak-brook>.

B. General Information

This Request for Proposals ("**RFP**") has been prepared by the Village of Oak Brook in order to retain an independent Certified Public Accountant licensed in the State of Illinois to provide auditing services for the three (3) fiscal years from December 31, 2025 through December 31, 2027, with a Village option for a fourth and fifth year ending December 31, 2028 and 2029 ("**Services**").

For the purpose of this RFP and the anticipated Agreement, "Village" means the Village of Oak Brook and the selected Proposer that is awarded the Agreement is the "Proposer."

The selected Proposer will be invited to enter into an agreement with the Village, in a form to be provided by the Village ("**Agreement**"), to provide the Services in accordance with the Project Scope section of this RFP. The Village Board has the ultimate authority to approve any proposal and to authorize execution of the negotiated Agreement.

The Village is a non-home rule municipality with a population of 8,188. The Village's annual budget for fiscal year 2025 is \$68,669,450. The Village has no outstanding bonded debt. The Village does not levy a property tax. Sales taxes, telecommunications taxes, and utility taxes are the primary revenue sources for general governmental operations.

Village Information

Number of Funds

The Village has the following number of funds by type:

<u>Type of Fund</u>	<u># of Funds</u>
General Corporate	1
Capital Project	1
Special Revenue	2
Enterprise	2
Internal Service	3
Pension Trust	<u>2</u>
	11

Of the total number of funds, the Village has two (2) funds classified as Major Funds as of December 31, 2024.

The Village provides a full range of services including public safety (police, fire, bureau of inspection, and emergency medical service), public works, a water utility, engineering and public improvements, and a free public library. In addition, the Village owns the Oak Brook Sports Core, consisting of 3 swimming pools, banquet facilities, outdoor tennis courts, and an 18-hole public golf course.

Statistics

Fiscal Year	December 31, 2025
General Fund Budget	\$32,082,850
Total Budget	\$68,669,450
Population	8,188
Total full-time equivalent employees	189.62

Financial Operations

Six (6) full-time employees, including the Finance Director, staff the Village's Finance Department. The Finance Department utilizes Munis as its financial system software, which is available on the Village-wide network. The Village obtains its insurance through membership in the Intergovernmental Risk Management Agency (IRMA).

The Village has complied with all of the accounting and reporting standards set forth in GASB Statement 34, including the retroactive reporting of infrastructure. The first Village ACFR to reflect the requirements of GASB 34 was for the fiscal year that ended December 31, 2003. The Comprehensive Annual Financial Report (ACFR) is to be prepared in a format that complies with the Certificate of Achievement for Excellence in Financial Reporting requirements of the Government Finance Officers Association (GFOA).

C. Agreement Term

The term of the agreement will be for three (3) fiscal years from December 31, 2025 – December 31, 2027. The Village will have the sole option to renew for a fourth and fifth year ending December 31, 2028 and 2029.

D. Anticipated Timeline

The Village plans to adhere to the following schedule regarding this RFP:

Distribute Request for Proposals	October 29, 2025
Deadline for vendor questions or clarifications via OpenGov	November 5, 2025 @ 12:00 pm
Village's response to questions via OpenGov	As answered
RFP Due Date	November 12, 2025 @ 10:00 am
Evaluation Period	November 12 – November 21, 2025
Optional Interviews	November 17 – November 25, 2025
Recommendation to Village Board/Final Award	December 9, 2025
Agreement Effective Date	January 5, 2026

Section 2. Scope of Services

The Services must include the following:

1. The Proposer is to express an opinion on the fair presentation of the financial position of the governmental activities, the business-type activities, and the Village's fiduciary funds in conformity with accounting principles generally accepted in the United States of America. The Proposer will issue an "in relation to" opinion on the Village's combining and individual fund statements and schedules.
2. The Proposer shall be responsible for performing certain limited procedures involving providing required supplementary information required by GASB as mandated by generally accepted auditing standards.
3. The report, including financial statements, notes, and statistical sections, is to be presented in a manner that is consistent with GASB, GFOA ACFR standards and practices. The Village will submit the report to the GFOA ACFR award program. The Proposer must prepare any response to GFOA regarding ACFR deficiencies, if any.
4. The Proposer shall prepare the Comprehensive Annual Financial Report (ACFR), including drafting and typing such report. The most current version of the ACFR for the Village for the year ending on December 31, 2024 is available for viewing on the Village's website at [Annual Comprehensive Financial Reports \(ACFR\) | Oak Brook, IL - Official Website](#)
5. The Village will provide all records necessary to perform such audit and will prepare workpapers. A listing of the workpapers that have been prepared in the past is attached (see Attachment A). The Proposer must note additional workpaper requirements, if any, in the response to the request for proposal.
6. The Letter of Transmittal, Management's Discussion and Analysis, and necessary letterhead will be provided by the Village of Oak Brook.
7. Report preparation, editing, printing, and supplies including covers, dividers, and spines shall be the responsibility of the Proposer.

8. If during the course of the examination, the Proposer finds any weaknesses in internal controls, the Proposer shall summarize such findings and recommendations in the form of a separate management letter to the Village of Oak Brook.
9. The Proposer shall be available to meet with elected officials at an evening meeting to answer questions regarding the proposal, the completed audit, or management letter, if requested. The Proposer will present the audit report to the Village Board at one of its May or June meetings of each year of the Agreement.
10. The Proposer shall be available for consultation and questions which arise throughout the year regarding accounting, compliance or internal control issues.
11. If required, the Proposer shall prepare a Single Audit Report as required by the Single Audit Act. Village requirements vary from year to year and at the present time a Single Audit is not required. The Proposer's responsibility includes advising the Village of all filing requirements related to the Single Audit Act.
12. The Proposer shall complete their audit fieldwork and submit a draft of the ACFR and management letter within 100 days of year-end. Preliminary fieldwork is encouraged. Final copies of the ACFR, management letter, certificate responses, and required compliance opinions are due no later than April 30th of each year.
13. The following minimum numbers of reports are to be provided to the Village photocopied and bound:
 - Fifteen (10) copies of the Village's Comprehensive Annual Financial Report.
 - Fifteen (10) copies of the Management Letter.
14. In addition to the Services, the Village is also interested in receiving proposals for an agreed upon procedures report on its internal controls. The scope of the internal controls review will focus on various Village activities including, without limitation, the Village's Sports Core operations. Proposers should include a description and pricing for this supplementary service as part of their proposals to the Village.

Section 3. Proposal Statement

All proposals must be signed by an authorized officer of the Proposer. Proposals that contain omissions, erasures, alterations, conditional quotes, or that contain irregularities of any kind may be rejected.

Submitted Proposal shall address the below, at a minimum.

A. Contact Information.

1. Name of Proposer; and
2. Office address, main telephone and fax numbers, e-mail address, and website address.

B. List of Qualifications and Certifications and Required Licensing.

The Proposer shall provide the following:

1. General information about the Proposer, its history, and services;

2. The resume of the owner/supervisor/partner of the Proposer that will be responsible for providing the Services and all of the key person(s) that would be responsible for overseeing and completing the Services, including these individuals' certifications, degrees and experience.
3. A current listing of the firm's Illinois municipal clients along with an indication as to which clients have received the GFOA Certificate of Achievement.
4. The hourly rates for staff assigned to the engagement as well as the total maximum inclusive fees for the years ending December 31, 2025 through 2027 and the fourth and fifth year option for the years ending December 31, 2028 and 2029.

For purposes of your response, the maximum inclusive fees should be broken down into the following categories: (1) the base audit including preparation of the Management Letter and ACFR; and (2) preparation of financial statements.

C. References.

The Proposer shall provide a list of at least five (5) public agencies and firms for which the Proposer has provided similar services and a summary of the exact type of services that were provided to these references. The proposal must include the contact information for these references.

D. Letter.

All Proposers shall include a letter indicating that all information in the proposal is true and complete and signed by the authorized owner, partner, officer of the corporation, or manager of the limited liability company submitting the proposal, with said signature duly notarized by a notary public.

Section 4. Proposal Cost

In compliance with this Request for Proposals, and subject to all conditions thereof, the undersigned offers and agrees, if this proposal is accepted, to furnish the services as outlined herein for the Village of Oak Brook at the amount indicated, subject to modification through negotiations. The not-to-exceed cost proposed shall include all anticipated expenses.

AUDITING SERVICES

AUDIT YEAR	BASE AUDIT	SINGLE AUDIT (if necessary)
All Inclusive Fee for 2025		
All Inclusive Fee for 2026		
All Inclusive Fee for 2027		
OPTIONAL YEARS		
All Inclusive Fee for 2028		
All Inclusive Fee for 2029		

SCHEDULE OF HOURLY RATES

PERSONNEL	RATES
Partners	
Managers	
Supervisors	
Seniors	
Staff	
Others	

Section 5. Submittal Procedures

A. RFP Submittals

The closing date and time for receipt of the Request for Proposals is **Wednesday, November 12, 2025, at 10:00 A.M. prevailing time**, after which time, additional submittals will not be accepted. All proposals must be delivered via the Village's eProcurement Portal at <https://procurement.opengov.com/portal/oak-brook>.

The Village reserves the right to reject any or all Proposals, to waive technical or legal deficiencies, to proceed or not to proceed with any subsequent proposal process, or to negotiate without further process any contract as may be in the best interest of the Village.

B. Questions and Clarifications

All inquiries regarding this RFP must be submitted in writing through the Village's eProcurement Portal in the Questions/Answer tab. Questions will be accepted until **12:00 p.m. CST on Wednesday, November 5, 2025. To ensure that questions asked are responded to correctly, please include the section title for each question.**

All questions submitted and responses provided will be electronically distributed to the Firms following this solicitation on the Village's eProcurement Portal. You must click the "**Following**" button on the top right-hand side of the main project page in the Village's OpenGov eProcurement portal.

Section 6. Review Process

A. Evaluation of Proposals and Selection

The proposals received will be evaluated by the Village on the basis of professional qualifications, previous experience on similar projects, key personnel assigned to the project, satisfaction of previous clients on work performed for them, current billing rates of the firm, and the proposal that best meets the needs of the Village. This proposal is not intended to be detailed; it is intended to be an expression of interest in providing services for the project, as well as to provide background information on the firm and its professional qualifications. Firms will be contacted during the evaluation if further information is needed. The Village may choose to interview one or more firms before final selection is made.

This Request for Proposal does not commit the Village to award an agreement, to pay any costs incurred in the preparation of a proposal based on this request, or to procure or contract for services. All proposals submitted in response to this Request for Proposal become the property of the Village. The Village

reserves the right to accept or reject any or all proposals received as a result of this request, to negotiate with qualified proposers, or to cancel in part or in its entirety the Request for Proposal, if it is in the best interest of the Village to do so. The Village may require the proposer selected to participate in negotiations concerning agreement price or the nature and extent of services to be provided. The results of such negotiations shall be incorporated into the final agreement between the Village and its proposer.

B. Basis of Award

The Village uses the Request for Proposals (RFP) process. A short list of firms will be drawn up and interviews with those firms may take place. The Village will then attempt to negotiate a satisfactory contract with the firms deemed most qualified.

The Village of Oak Brook reserves the right to waive any informality or technical error and to accept the firm deemed by the Village to be in its best interests. In reviewing Proposals, the Village will consider the following factors:

1. The ability, capacity, and skill of the firm to perform the services required.
2. Whether the firm can fulfil the contract or provide the services promptly, or within the time specified without delay or interference.
3. The character, integrity, reputation, judgment, experience, and efficiency of the firm.
4. The quality of the performance on previous contracts for services.
5. The previous and existing compliance by the firm with laws and ordinances relating to the firm's services.
6. The sufficiency of the financial resources and ability of the firm to fulfill the contract or provide the services.
7. Proposed Cost for requested tasks and services
8. The ability of the firm to provide future service for the use of the subject of the contract.
9. The number and scope of conditions attached to the Proposal submitted.

Additional criteria to be considered in reviewing Proposals:

1. The Firms familiarity with the GFOA Certificate Program.
2. Understanding of the Village's current and future needs.
3. Oral interview (at Village option).
4. Demonstrated experience in assisting governmental entities with these types of services.
5. Quality and experience of staff proposed for projects by the firm.

The Village will then select the top preferred Proposer, with whom the Agreement, on a form to be provided by the Village, will be negotiated. The Village Board of Trustees has the ultimate authority to approve any proposal and to authorize execution of the negotiated Agreement.

The Village reserves the right to make clarifications, corrections, or changes in this RFP at any time prior to the deadline for the submission of proposals.

Section 7. Terms and Conditions

1. Any contract or agreement resulting from the acceptance of this Request for Proposals by the Village shall be on forms supplied by the Village.
2. If, through any cause, the firm fails to fulfill any of the obligations agreed to in a timely and proper manner, the Village shall have the right to terminate the contract by notifying the firm in writing of such termination at least 30 calendar days in advance of such termination.
3. The Village reserves the right to request clarification of information submitted and request additional information as needed.
4. The term of the agreement will be for three (3) fiscal years from December 31, 2025 – December 31, 2027. The Village will have the sole option to renew for a fourth and fifth year ending December 31, 2028 and 2029.
5. Proposers may attach separate sheets to the proposal for the purpose of explanation, exception, alternate proposal and to cover unit prices, if needed.
6. Proposers may withdraw their proposal either personally or by written request at any time before the time set for the proposal opening and may resubmit it. No proposal may be withdrawn or modified after the receipt of proposals except where the award of agreement has been delayed for a period of more than **ninety (90) days**.
7. In submitting this proposal, the proposer further declares that the only person or party interested in the proposal as principals are those named herein, and that the proposal is made without collusion with any other person, firm or corporation.
8. The proposer further understands and agrees that if their proposal is accepted, the individual/company is to furnish and provide all necessary materials and/or equipment and other means to do all of the work and to furnish all of the materials specified in the contract, except such materials as are to be furnished by the Village, in the manner and at the time therein prescribed, and in accordance with the requirements therein set forth.
9. The proposer further agrees to execute all documents within this Proposal Package, obtain a Certificate of Insurance for this work and present all of these documents to the Village within fifteen (15) days after the receipt of the Notice of Award and the Agreement by the company.
10. The proposer further agrees to begin work not later than fifteen (15) days after receipt of the Notice to Proceed, unless otherwise provided, and to execute the work in such a manner and with sufficient materials, equipment and labor.
11. By submitting a proposal, the proposer understands and agrees that, if the proposal is accepted, and the proposer fails to enter into an agreement forthwith, the company shall be liable to the Village for any damages the Village may thereby suffer.
12. The Village is exempt from Federal excise tax and the Illinois Retailer's Occupation Tax. This proposal cannot include any amounts of money for these taxes.

13. The Village authorizes the payment of invoices on the second and fourth Tuesday of the month. For consideration on one of these dates, payment request must be received no later than fourteen (14) days prior to the second or fourth Tuesday of the month.
14. **Indemnification** – The Proposer shall protect, indemnify, save, defend and hold forever harmless the Village and/or its officers, officials, employees, volunteers and agents from and against all liabilities, obligations, claims, damages, penalties, causes of action, costs and expenses, including without limitation court costs, insurance deductibles and attorney's fees and expenses, which the Village and/or its officers, officials, employees, volunteers and agents may incur, suffer or sustain, or for which the Village and/or its officers, employees and agents may become obligated by reason for any accident, injury to or death of persons or loss of or damage to property, or civil and/or constitutional infringement of rights (specifically including violations of the Federal Civil Right Statutes), arising indirectly or directly in connection with or under, or as a result of, this or any Agreement by virtue of any act or omission of any of the Proposer's officers, employees, subcontractors, and/or agents, provided that the Proposer shall not be liable for claims, obligations, damages, penalties, causes of action, costs and expenses arising solely from any act or omission of the Village's officers, officials, employees, volunteers and/or agents.

The proposer shall hold the Village harmless for any and all claims for labor, material, apparatus, equipment, fixtures or machinery furnished to the proposer for the purpose of performing the work under the contract; and the payment of all direct and indirect damages to any person, firm, company or corporation suffered or sustained on account of the performance of such work during the time the agreement is in force.

15. **Insurance** – Certificates of Insurance and Additional Insured Endorsement shall be presented to the Village within fifteen (15) days after the receipt by the proposer of the Notice of Award and the unexecuted contract, it being understood and agreed that the Village will not approve and execute the agreement or will the bid guarantee be returned until acceptable insurance certificates are received and approved by the Village.

Each proposer performing any work pursuant to an agreement with the Village and each permittee working under a permit as required pursuant to the provisions of Title 1, Chapter 8 of the Code of Ordinances of the Village (hereinafter referred to as "Insured") shall be required to carry such insurance as specified herein. Such proposer and permittee shall procure and maintain for the duration of the agreement or permit insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the work under the agreement or permit, by either the proposer, permittee, or their agents, representatives, employees or subcontractors.

A contractor or permittee shall maintain insurance with limits no less than:

- a) General Liability - \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage, provided that when the estimated cost of the work in question does not exceed \$5,000 the required limit shall be \$500,000;
- b) Automobile Liability (if applicable) - \$1,000,000 combined single limit per accident for bodily injury and property damage;
- c) Worker's Compensation and Employer's Liability - Worker's Compensation limits as required by the Labor Code of the State of Illinois and Employer's Liability limits of \$1,000,000 per accident.

Any deductibles or self-insured retention must be declared to and approved by the Village. At the option of the Village, either the insurer shall reduce or eliminate such deductible or self-insured retention as respects the Village, its officers, officials, employees and volunteers; or the Insured shall procure a bond

guaranteeing payment of losses and related investigations, claim administration and defense expenses to the extent of such deductible or self-insured retention.

The policies shall contain, or be endorsed to contain, the following provisions:

d) General Liability and Automobile Liability Coverage -

I. The Village, its officers, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of activities performed by or on behalf of the Insured; premises owned, occupied or used by the Insured. The coverage shall contain no special limitations on the scope of protection afforded to the Village, its officers, officials, employee's volunteers or agents.

II. The Insured's insurance coverage shall be primary insurance as respects the Village, its officers, officials, employees, volunteers and agents. Any insurance or self-insurance maintained by the Village, its officers, officials, employees, volunteers or agents shall be in excess of the Insured's insurance and shall not contribute with it.

III. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Village, its officers, officials, employees, volunteers or agents.

IV. The Insured's insurance shall apply separately to each covered party against whom claim is made or suit is brought except with respect to the limits of the insurer's liability.

e) Worker's Compensation and Employer's Liability Coverage

The policy shall waive all rights of subrogation against the Village, its officers, officials, employees, volunteers and agents for losses arising from work performed by the insured for the Village.

Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail has been given to the Village. Each insurance policy shall name the Village, its officers, officials and employees, volunteers and agents as additional Insureds. Insurance is to be placed with insurers with a Best's rating of no less than A: VII.

Each Insured shall furnish the Village with certificates of insurance and with original endorsements effecting coverage required by this provision. The certificate and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on forms approved by the Village and shall be subject to approval by the Village Attorney before work commences. The Village reserves the right to require complete, certified copies of all required insurance policies, at any time.

Each insured shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

16. **Equal Opportunity** – The Proposer will not discriminate against any employee or applicant for employment because of race, color, religion, sex, ancestry, national origin, place of birth, age or handicap unrelated to bona fide occupational qualifications.

17. **Execution of Documents** – The Proposer, in signing his Proposal on the whole or on any portion of the work, shall conform to the following requirements:

Proposals signed by an individual other than the individual represented in the Proposal documents shall have attached thereto a power of attorney, evidencing authority to sign the Proposal in the name of the person for whom it is signed.

Proposals that are signed for a partnership shall be signed by all of the partners or by an attorney-in-fact. If signed by an attorney-in-fact, there shall be attached to the Proposal a power of attorney evidencing authority to sign the proposal, executed by the partners.

Proposals that are signed for a corporation shall have the correct corporate name thereof and the signature of the President or other authorized officer of the corporation manually written below the corporate name.

If an official other than the President of the Corporation manually signs such Proposal, a certified copy of a resolution of the board of directors evidencing the authority of such official to sign the Proposal shall be attached to it. Such Proposal shall also bear the attesting signature of the Secretary of the corporation and the impression of the corporate seal.

The Agreement shall be deemed as have been awarded when formal notice of award shall have been duly served upon the intended awardee.

18. **Non-Discriminating** – The Proposer, its employees and subcontractors, agrees not to commit unlawful discrimination and agrees to comply with applicable provisions of the Illinois Human Rights Act, the U.S. Civil Rights Act and Section 504 of the Federal Rehabilitation Act, and rules applicable to each.
19. **Negotiations** – The Village reserves the right to negotiate specifications, terms, and conditions that may be necessary or appropriate to the accomplishment of the purpose of the RFP. The Village may require the entire proposal be made an integral part of the resulting contract. This implies that all responses, supplemental information, and other submissions provided by the proposer during discussions or negotiations will be held by the Village as contractually binding on the successful proposer.
20. **Incurred Costs** – The Village will not be liable in any way for any costs incurred by respondents in replying to this RFP. Proposer agrees to comply with all laws, ordinances, and rules of the Village and the State of Illinois.
21. **Proposer Responsibilities** – The selected Proposer will be required to assume responsibility for all services offered in this proposal. The Village will consider the selected Proposer to be the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the contract.
22. **Default** – The Agreement may be canceled or annulled by the Village in whole or in part by written notice of default to the Proposer upon nonperformance or violation of agreement terms. An award may be given to another proposer with services similar to those so terminated. Failure of the Proposer to deliver services within the time stipulated on his offer, unless extended in writing by the Village, shall constitute agreement default.
23. **Independent Contractor** – There is no employee/employer relationship between the Proposer and the Village. Proposer is an independent contractor and not the Village's employee for all purposes, including, but not limited to, the application of the Fair Labor Standards Act minimum wage and overtime payments, Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the Worker's Compensation Act (820 ILCS 305/1, et seq.). The VILLAGE will not (i) provide any form of insurance coverage, including but not limited to health, worker's compensation, professional liability insurance, or other employee benefits, or (ii) deduct any taxes or related items from the monies paid to Proposer. The performance of the services described herein

shall not be construed as creating any joint employment relationship between the Proposer and the Village, and the Village is not and will not be liable for any obligations incurred by the Proposer, including but not limited to unpaid minimum wages and/or overtime premiums, nor does there exist an agency relationship or partnership between the Village and the Proposer.

24. **Governing Law** – The laws of the State of Illinois as to interpretation, performance and enforcement shall govern this Agreement. The forum for resolving any disputes concerning the parties' respective performance or failure to perform under this Agreement shall be the Circuit Court for the Eighteenth Judicial Circuit, DuPage County, Illinois.

Section 8. Proposers Certification

The undersigned, being first duly sworn an oath, deposes and states that he has the authority to make this certification on behalf of the proposer for the construction, product, commodity, or service briefly described as follows:

“Auditing Services”

- 1) The undersigned certifies that, pursuant to Chapter 720, Section 5/33E of the Illinois Compiled Statutes, 1993, the proposer is not barred from bidding on this agreement as a result of a conviction for the violation of State of Illinois laws prohibiting bid rigging or bid-rotating.
- 2) The undersigned states under oath that, pursuant to Chapter 65, Section 5/11-42.1-1 of the Illinois Compiled Statutes, 1993, the proposer is not delinquent in the payment of any tax administered by the Illinois Department of Revenue.
- 3) The undersigned certifies that, pursuant to Chapter 775, Section 5/2-105. of the Illinois Compiled Statutes, 1993, the proposer has a written sexual harassment policy in place including the following information:
 - a) An acknowledgment of the illegality of sexual harassment.
 - b) The definition of sexual harassment under State law.
 - c) A description of sexual harassment, utilizing examples.
 - d) The Proposer's internal complaint process including penalties.
 - e) The legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Human Rights Commission.
 - f) Directions on how to contact the Department or the Commission.

This Business Firm is (Check One):

_____ Corporation _____ Partnership _____ Individual

Firm Name: _____

Address: _____

Signature: _____

Name _____

Printed: _____

Title: _____

Telephone: _____

Date: _____

ATTEST:

-SEAL-

SUBSCRIBED AND SWORN TO
before me this _____ day
of _____, 2025.

Notary Public

Section 9. Attachments

Attachment A – List of Audit Workpapers Prepared by Village

Accounts Payable Schedules, Including Retainage
Accounts Receivable Listings By Fund
All Board Minutes
All Confirmations
Bad Debt Analysis
Bank Reconciliations
Billed and Unbilled Water Accounts Receivable
Budget
Building Deposit Listing
Chart of Accounts
Debt Service Analysis
DuPage Water Commission Payment Analysis
Fixed Asset Workpapers
Food and Beverage Inventories
Garage Supplies and Gasoline Inventory
Golf Merchandise Inventory
Health Insurance Expense Account Reconciliation
Hotel/Motel Tax Revenue Analysis, Including Receivable
Interfund Schedules
Investment Schedules
IRMA and IMRF Expenses Reconciled to General Ledger
IMRF Pension Net Pension Liability
Motor Fuel Tax Revenue Analysis
Office Supply Inventory
Organization Charts
OPEB Liability
Payroll, Vacation, & Sick Leave Accruals
Police and Firefighters' Pension Net Pension Liability
Road & Bridge Tax Revenue Analysis
Schedule of Expenditures of Federal Awards
Schedules of Other Receivable Accounts
Self-Insurance (Health and Dental) Analysis, Including IBNR Liability
Special Event Deposit Listing
Sports Core Membership Analysis
Sports Core Special Event Accounts Receivable Listing
Trial Balances
Utility Tax Revenue Analysis, Including Receivable
Yard Waste Sticker Inventory
YTD Water Billing Analysis

Attachment B – Proposer Questionnaire

FIRM NAME _____

CONTACT PERSON _____

ADDRESS _____

PHONE NUMBER _____

EMAIL ADDRESS _____

WHEN ORGANIZED _____

WHERE ORGANIZED _____

LICENSED IN ILLINOIS? _____

NUMBER OF YEARS IN PRACTICE? _____

HAS THE FIRM EVER REFUSED TO ENTER
INTO A CONTRACT?

If yes, please submit details _____

HAS THE FIRM EVER DEFAULTED ON A CONTRACT?

If yes, please submit details _____

WHERE IS YOUR NEAREST OFFICE TO OAK BROOK? _____

HOW MANY PEOPLE ARE EMPLOYED IN THE
NEAREST OFFICE TO OAK BROOK?



ITEM 5.C.2.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Request to go out for RFP Actuarial Services

FROM: Marilyn Fumero, Finance Director

BUDGET SOURCE/BUDGET IMPACT: TBD: Various Actuarial Services Accounts.

RECOMMENDED MOTION: I move that the Village Board authorize staff to issue a Request for Proposals (RFP) for Actuarial Services for years ending December 31, 2025 through 2029.

Background/History:

The Village requires periodic actuarial valuations of its Police and Fire Pension Funds to ensure compliance with state regulations and to adequately plan for future funding needs. The Village also needs to conduct OPEB analysis to understand and manage the long-term liabilities associated with post-employment benefits other than pensions.

The Governmental Finance Officers Association (GFOA) best practice for audit procurement recommends the following regarding selection of an actuary:

- Ensuring the actuary has experience with similar-sized municipalities and public pension funds.
- Checking the actuary's qualifications and professional credentials.
- Verifying the actuary's independence and objectivity.
- Considering the actuary's communication skills and ability to explain complex actuarial concepts clearly.

The actuarial procurement process should be structured so that the principal factor in the selection of an independent actuary is the actuary's ability to provide quality actuarial valuations and insights. Price should not be allowed to serve as the sole criterion for the selection of an independent actuary, rather an independent actuary should have a demonstrated commitment to the state and local government.

Key services to be included in the RFP:

- Actuarial valuation of the Police Pension Fund.
- Actuarial valuation of the Fire Pension Fund.
- OPEB (Other Post-Employment Benefits) liability analysis.
- Compliance with all applicable GASB (Governmental Accounting Standards Board) standards.

Evaluation Criteria:

Proposals will be evaluated based on a number of criteria, including municipal audit experience, staff qualifications, fees, and more.

Once proposals are received, this item will be brought back to the Village Board for consideration.

Recommendation:

Staff recommends that the Village Board authorize staff to issue a Request for Proposals (RFP) for Actuarial Services for years ending December 31, 2025 through 2029.

Attachments:

1. RFP Actuarial Services

**VILLAGE OF OAK BROOK
Purchasing Division
1200 Oak Brook Road
Oak Brook, IL 60523**

(630) 368-5164

REQUEST FOR PROPOSALS

ACTUARIAL SERVICES

OCTOBER 2025

TABLE OF CONTENTS

SECTION 1. REQUEST FOR PROPOSALS	2
A. NOTICE.....	2
B. GENERAL INFORMATION	2
C. AGREEMENT TERM.....	3
D. ANTICIPATED TIMELINE.....	3
SECTION 2. SCOPE OF SERVICES.....	3
SECTION 3. PROPOSAL STATEMENT.....	4
SECTION 4. PROPOSAL COST.....	5
SECTION 5. SUBMITTAL PROCEDURES.....	6
A. RFP SUBMITTALS	6
B. QUESTIONS AND CLARIFICATIONS	6
SECTION 6. REVIEW PROCESS	6
A. EVALUATION OF PROPOSALS AND SELECTION	6
B. BASIS OF AWARD.....	7
SECTION 7. TERMS AND CONDITIONS.....	8
SECTION 8. PROPOSERS CERTIFICATION	12
SECTION 9. ATTACHMENTS	14

Section 1. Request for Proposals

A. Notice

Posted on OpenGov Procurement Module October 29, 2025

The Village of Oak Brook is soliciting proposals from qualified benefits consulting firms to provide Actuarial Valuations for its Police and Fire Pension Funds. In addition, the Village of Oak Brook seeks an evaluation for Other Post-Employment Benefits (OPEB). The selected benefits consulting firm will perform the Actuarial Services to prepare actuarial valuation reports for the Police and Fire Pension systems as of January 1, 2026. **The OPEB Services are completed every three years and updated annually. A full report was completed in 2023; therefore, the Village is requesting an update in 2026.**

The initial term will be for three (3) years from January 1, 2026 through December 31, 2028, with the Village's sole option to renew for an additional 2-year term from January 1, 2029 through December 31, 2030.

Qualified firms interested in performing these services must obtain the detailed Request for Proposals (RFP) package from the Village's eProcurement Portal at <https://procurement.opengov.com/portal/oak-brook>.

Firms intending to respond to this opportunity must create a FREE account with OpenGov by signing up at <https://procurement.opengov.com/signup>. This step is necessary to establish a communication link with the Village.

The closing date and time for receipt of Proposal statements is **Thursday, November 13, at 10:00 A.M. prevailing time**, after which time, additional submittals will not be accepted.

The Village reserves the right to reject any or all Proposals, to waive technical or legal deficiencies, to proceed or not to proceed with any subsequent proposal process, or to negotiate, without further process, and to make an award that, in its judgment, is the best and most favorable to the interests of the Village and the public.

All inquiries regarding this RFP must be submitted via the Village's eProcurement Portal at <https://procurement.opengov.com/portal/oak-brook>.

B. General Information

This Request for Proposals ("**RFP**") has been prepared by the Village of Oak Brook in order to retain a qualified benefits consulting firm to provide Actuarial Valuations for its Police and Fire Pension Funds. In addition, the Village of Oak Brook seeks an evaluation for Other Post-Employment Benefits (OPEB). The selected benefits consulting firm will perform the Actuarial Services to prepare annual actuarial valuation reports for the Police and Fire Pension Fund systems as of January 1, 2025 through December 31, 2028. The OPEB Services are completed every three years and updated annually. A full report was completed in 2023; therefore, the Village is requesting an update in 2026. The initial term will be for three (3) years from January 1, 2025 through December 31, 2028, with the Village's sole option to renew for an additional two (2) year term from January 1, 2029 through December 31, 2030. ("**Services**").

For the purpose of this RFP and the anticipated Agreement, "Village" means the Village of Oak Brook and the selected Proposer that is awarded the Agreement is the "Proposer."

The selected Proposer will be invited to enter into an agreement with the Village, in a form to be provided by the Village ("**Agreement**"), to provide the Services in accordance with the Project Scope section of this RFP. The Village Board has the ultimate authority to approve any proposal and to authorize execution of the negotiated Agreement.

C. Agreement Term

The term of the agreement will be for three (3) fiscal years from January 1, 2026 – December 31, 2028. The Village will have the sole option to renew for an additional 2-year term from January 1, 2029 – December 31, 2030.

D. Anticipated Timeline

The Village plans to adhere to the following schedule regarding this RFP:

Distribute Request for Proposals	October 30, 2025
Deadline for vendor questions or clarifications via OpenGov	November 6, 2025 @ 12:00 pm
Village's response to questions via OpenGov	As answered
RFP Due Date	November 13, 2025 @ 10:00 am
Evaluation Period	November 13 – November 21, 2025
Optional Interviews	November 17 – November 25, 2025
Recommendation to Village Board/Final Award	December 9, 2025
Agreement Effective Date	January 1, 2026

Section 2. Scope of Services

The Services must include the following:

Police and Fire Pensions Valuation – Written Report Required

The Services shall include the preparation of separate reports for the Fire and Police pension funds (collectively, “**Reports**”), which reports must include:

1. Actuarial certification;
2. Summary of valuation objectives;
3. A statement of the actuarial cost method selected and actuarial assumptions;
4. The results of the valuation, including the recommended and the “Statutory Minimum” contribution from the Village to properly fund the Village’s Fire and Police pension funds;
5. ACFR GASB statement disclosure information;

The Services shall also include:

1. Delivering the Reports to the Village by March 15 of each year during the term of the Agreement.
2. Coordinating and discussing the Reports with the Village Board/Staff as may be needed.
3. Attending at least one Village Board meeting. The consultant is required to attend additional meetings of the Village Board upon request.

4. Updating staff and the Village Board on any new legislation and regulations that may be relevant to the administration of the pension plans.
5. The Village's current actuary created a 35-year projected modeler tool that allows the Village finance staff to review estimated financial results based on various assumptions, such as asset returns, amortization methods, and cost methods. This allows the transfer of functions from the actuary to Village finance staff to review different scenarios and communicate those results to the Village Board. Please include in your proposal if your firm can provide a similar tool, assuming the current modeler is obsolete.

OPEB Valuation-Written Report Required

The OPEB Services shall include the preparation of a report that includes the following:

1. Actuarial certification;
2. Summary of valuation objectives;
3. A statement of the actuarial cost method selected and actuarial assumptions;
4. The results of the valuation;
5. ACFR GASB statement disclosure information and required supplementary Information;

The OPEB report must be delivered to the Village by March 15 of each year during the term of the Agreement. In addition, the Services shall include coordinating and discussing the results of the OPEB report with Village staff.

Section 3. Proposal Statement

All proposals must be signed by an authorized officer of the Proposer. Proposals that contain omissions, erasures, alterations, conditional quotes, or that contain irregularities of any kind may be rejected.

Submitted Proposal shall address the below, at a minimum.

A. Contact Information.

1. Name of Proposer; and
2. Office address, main telephone and fax numbers, e-mail address, and website address.

B. List of Qualifications and Certifications and Required Licensing.

The Proposer shall provide the following:

1. General information about the Proposer, its history, and services;

2. The resume of the owner/supervisor/partner of the Proposer that will be responsible for providing the Services and all of the key person(s) that would be responsible for overseeing and completing the Services, including these individuals' certifications, degrees and experience.
3. The assumptions the proposer recommends for computing evaluations for funds of comparable size.
4. A complete reference list of all Illinois pension funds and municipalities that the proposer provides services to. Please include contact names and, phone numbers, and e-mail address for all of the funds and municipalities.
5. The complete fee schedule for the initial term of the Agreement and each option year with the proposed evaluation type and each year listed separately.

C. References.

The Proposer shall provide a list of at least five (5) public agencies and firms for which the Proposer has provided similar services and a summary of the exact type of services that were provided to these references. The proposal must include the contact information for these references.

D. Letter.

All Proposers shall include a letter indicating that all information in the proposal is true and complete and signed by the authorized owner, partner, officer of the corporation, or manager of the limited liability company submitting the proposal, with said signature duly notarized by a notary public.

Section 4. Proposal Cost

In compliance with this Request for Proposals, and subject to all conditions thereof, the undersigned offers and agrees, if this proposal is accepted, to furnish the services as outlined herein for the Village of Oak Brook at the amount indicated, subject to modification through negotiations. The not-to-exceed cost proposed shall include all anticipated expenses.

ACTUARIAL SERVICES

<u>YEAR</u>	<u>FD PENSION VALUATION</u>	<u>PD PENSION VALUATION</u>	<u>OPEB VALUATION</u>
All Inclusive Fee for 2026			(updated report)
All Inclusive Fee for 2027			(updated report)
All Inclusive Fee for 2028			(full report)
<u>OPTIONAL YEARS</u>	<u>FD PENSION VALUATION</u>	<u>PD PENSION VALUATION</u>	<u>OPEB VALUATION</u>
All Inclusive Fee for 2029			(update report)
All Inclusive Fee for 2030			(updated report)

HOURLY RATE TO ATTEND ADDITIONAL BOARD OF TRUSTESS MEETINGS

<u>YEAR</u>	<u>RATES</u>
2026	
2027	
2028	
2029	
2030	

Section 5. Submittal Procedures

A. RFP Submittals

The closing date and time for receipt of the Request for Proposals is **Thursday, November 13, 2025, at 10:00 A.M. prevailing time**, after which time, additional submittals will not be accepted. All proposals must be delivered via the Village's eProcurement Portal at <https://procurement.opengov.com/portal/oak-brook>.

The Village reserves the right to reject any or all Proposals, to waive technical or legal deficiencies, to proceed or not to proceed with any subsequent proposal process, or to negotiate without further process any Agreement as may be in the best interest of the Village.

B. Questions and Clarifications

All inquiries regarding this RFP must be submitted in writing through the Village's eProcurement Portal in the Questions/Answer tab. Questions will be accepted until **12:00 p.m. CST on Thursday, November 6, 2025**. **To ensure that questions asked are responded to correctly, please include the section title for each question.**

All questions submitted and responses provided will be electronically distributed to the Firms following this solicitation on the Village's eProcurement Portal. You must click the "**Following**" button on the top right-hand side of the main project page in the Village's OpenGov eProcurement portal.

Section 6. Review Process

A. Evaluation of Proposals and Selection

The proposals received will be evaluated by the Village on the basis of professional qualifications, previous experience on similar projects, key personnel assigned to the project, satisfaction of previous clients on work performed for them, current billing rates of the firm, and the proposal that best meets the needs of the Village. This proposal is not intended to be detailed; it is intended to be an expression of interest in providing services for the project, as well as to provide background information on the firm and its professional qualifications. Firms will be contacted during the evaluation if further information is needed. The Village may choose to interview one or more firms before final selection is made.

This Request for Proposal does not commit the Village to award an agreement, to pay any costs incurred in the preparation of a proposal based on this request, or to procure or contract for services. All proposals submitted in response to this Request for Proposal become the property of the Village. The Village reserves the right to accept or reject any or all proposals received as a result of this request, to negotiate

with qualified proposers, or to cancel in part or in its entirety the Request for Proposal, if it is in the best interest of the Village to do so. The Village may require the proposer selected to participate in negotiations concerning agreement price or the nature and extent of services to be provided. The results of such negotiations shall be incorporated into the final agreement between the Village and its proposer.

B. Basis of Award

The Village uses the Request for Proposals (RFP) process. A short list of firms will be drawn up and interviews with those firms may take place. The Village will then attempt to negotiate a satisfactory Agreement with the firms deemed most qualified.

The Village of Oak Brook reserves the right to waive any informality or technical error and to accept the firm deemed by the Village to be in its best interests. In reviewing Proposals, the Village will consider the following factors:

1. The ability, capacity, and skill of the firm to perform the services required.
2. Whether the firm can fulfil the Agreement or provide the services promptly, or within the time specified without delay or interference.
3. The character, integrity, reputation, judgment, experience, and efficiency of the firm.
4. The quality of the performance on previous Agreements for services.
5. The previous and existing compliance by the firm with laws and ordinances relating to the firm's services.
6. The sufficiency of the financial resources and ability of the firm to perform the Agreement or provide the services.
7. Proposed Cost for requested tasks and services
8. The ability of the firm to provide future service for the use of the subject of the Agreement.
9. The number and scope of conditions attached to the Proposal submitted.

Additional criteria to be considered in reviewing Proposals:

1. The Proposers municipal/pension experience.
2. The Proposers understanding of Illinois law.
3. Understanding of the Village's current and future needs.
4. Oral interview (at Village option).
5. Demonstrated experience in assisting governmental entities with these types of services.
6. Quality and experience of staff proposed for projects by the firm.

The Village will then select the top preferred Proposer, with whom the Agreement, on a form to be provided by the Village, will be negotiated. The Village Board of Trustees has the ultimate authority to approve any proposal and to authorize execution of the negotiated Agreement.

The Village reserves the right to make clarifications, corrections, or changes in this RFP at any time prior to the deadline for the submission of proposals.

Section 7. Terms and Conditions

1. Any contract or agreement resulting from the acceptance of this Request for Proposals by the Village shall be on forms supplied by the Village.
2. If, through any cause, the firm fails to fulfill any of the obligations agreed to in a timely and proper manner, the Village shall have the right to terminate the Agreement by notifying the firm in writing of such termination at least 30 calendar days in advance of such termination.
3. The Village reserves the right to request clarification of information submitted and request additional information as needed.
4. The initial term of the agreement will be for three (3) fiscal years from January 1, 2026 – December 31, 2028. The Village will have the sole option to renew for a two (2) year term from January 1, 2029 – December 31, 2030.
5. Proposers may attach separate sheets to the proposal for the purpose of explanation, exception, alternate proposal and to cover unit prices, if needed.
6. Proposers may withdraw their proposal either personally or by written request at any time before the time set for the proposal opening and may resubmit it. No proposal may be withdrawn or modified after the receipt of proposals except where the award of agreement has been delayed for a period of more than **ninety (90) days**.
7. In submitting this proposal, the proposer further declares that the only person or party interested in the proposal as principals are those named herein, and that the proposal is made without collusion with any other person, firm or corporation.
8. The proposer further understands and agrees that if their proposal is accepted, the individual/company is to furnish and provide all necessary materials and/or equipment and other means to do all of the work and to furnish all of the materials specified in the Agreement, except such materials as are to be furnished by the Village, in the manner and at the time therein prescribed, and in accordance with the requirements therein set forth.
9. The proposer further agrees to execute all documents within this Proposal Package, obtain a Certificate of Insurance for this work and present all of these documents to the Village within fifteen (15) days after the receipt of the Notice of Award and the Agreement by the company.
10. The proposer further agrees to begin work not later than fifteen (15) days after receipt of the Notice to Proceed, unless otherwise provided, and to execute the work in such a manner and with sufficient materials, equipment and labor.
11. By submitting a proposal, the proposer understands and agrees that, if the proposal is accepted, and the proposer fails to enter into an agreement forthwith, the company shall be liable to the Village for any damages the Village may thereby suffer.
12. The Village is exempt from Federal excise tax and the Illinois Retailer's Occupation Tax. This proposal cannot include any amounts of money for these taxes.

13. The Village authorizes the payment of invoices on the second and fourth Tuesday of the month. For consideration on one of these dates, payment request must be received no later than fourteen (14) days prior to the second or fourth Tuesday of the month.
14. **Indemnification** – The Proposer shall protect, indemnify, save, defend and hold forever harmless the Village and/or its officers, officials, employees, volunteers and agents from and against all liabilities, obligations, claims, damages, penalties, causes of action, costs and expenses, including without limitation court costs, insurance deductibles and attorney's fees and expenses, which the Village and/or its officers, officials, employees, volunteers and agents may incur, suffer or sustain, or for which the Village and/or its officers, employees and agents may become obligated by reason for any accident, injury to or death of persons or loss of or damage to property, or civil and/or constitutional infringement of rights (specifically including violations of the Federal Civil Right Statutes), arising indirectly or directly in connection with or under, or as a result of, this or any Agreement by virtue of any act or omission of any of the Proposer's officers, employees, subcontractors, and/or agents, provided that the Proposer shall not be liable for claims, obligations, damages, penalties, causes of action, costs and expenses arising solely from any act or omission of the Village's officers, officials, employees, volunteers and/or agents.

The proposer shall hold the Village harmless for any and all claims for labor, material, apparatus, equipment, fixtures or machinery furnished to the proposer for the purpose of performing the work under the Agreement; and the payment of all direct and indirect damages to any person, firm, company or corporation suffered or sustained on account of the performance of such work during the time the agreement is in force.

15. **Insurance** – Certificates of Insurance and Additional Insured Endorsement shall be presented to the Village within fifteen (15) days after the receipt by the proposer of the Notice of Award and the unexecuted Agreement, it being understood and agreed that the Village will not approve and execute the agreement or will the bid guarantee be returned until acceptable insurance certificates are received and approved by the Village.

Each proposer performing any work pursuant to an agreement with the Village and each permittee working under a permit as required pursuant to the provisions of Title 1, Chapter 8 of the Code of Ordinances of the Village (hereinafter referred to as "Insured") shall be required to carry such insurance as specified herein. Such proposer and permittee shall procure and maintain for the duration of the agreement or permit insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the work under the agreement or permit, by either the proposer, permittee, or their agents, representatives, employees or subcontractors.

A contractor or permittee shall maintain insurance with limits no less than:

- a) General Liability - \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage, provided that when the estimated cost of the work in question does not exceed \$5,000 the required limit shall be \$500,000;
- b) Automobile Liability (if applicable) - \$1,000,000 combined single limit per accident for bodily injury and property damage;
- c) Worker's Compensation and Employer's Liability - Worker's Compensation limits as required by the Labor Code of the State of Illinois and Employer's Liability limits of \$1,000,000 per accident.

Any deductibles or self-insured retention must be declared to and approved by the Village. At the option of the Village, either the insurer shall reduce or eliminate such deductible or self-insured retention as respects the Village, its officers, officials, employees and volunteers; or the Insured shall procure a bond

guaranteeing payment of losses and related investigations, claim administration and defense expenses to the extent of such deductible or self-insured retention.

The policies shall contain, or be endorsed to contain, the following provisions:

d) General Liability and Automobile Liability Coverage -

I. The Village, its officers, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of activities performed by or on behalf of the Insured; premises owned, occupied or used by the Insured. The coverage shall contain no special limitations on the scope of protection afforded to the Village, its officers, officials, employee's volunteers or agents.

II. The Insured's insurance coverage shall be primary insurance as respects the Village, its officers, officials, employees, volunteers and agents. Any insurance or self-insurance maintained by the Village, its officers, officials, employees, volunteers or agents shall be in excess of the Insured's insurance and shall not contribute with it.

III. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Village, its officers, officials, employees, volunteers or agents.

IV. The Insured's insurance shall apply separately to each covered party against whom claim is made or suit is brought except with respect to the limits of the insurer's liability.

e) Worker's Compensation and Employer's Liability Coverage

The policy shall waive all rights of subrogation against the Village, its officers, officials, employees, volunteers and agents for losses arising from work performed by the insured for the Village.

Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail has been given to the Village. Each insurance policy shall name the Village, its officers, officials and employees, volunteers and agents as additional Insureds. Insurance is to be placed with insurers with a Best's rating of no less than A: VII.

Each Insured shall furnish the Village with certificates of insurance and with original endorsements affecting coverage required by this provision. The certificate and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on forms approved by the Village and shall be subject to approval by the Village Attorney before work commences. The Village reserves the right to require complete, certified copies of all required insurance policies, at any time.

Each insured shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

16. **Equal Opportunity** – The Proposer will not discriminate against any employee or applicant for employment because of race, color, religion, sex, ancestry, national origin, place of birth, age or handicap unrelated to bona fide occupational qualifications.

17. **Execution of Documents** – The Proposer, in signing his Proposal on the whole or on any portion of the work, shall conform to the following requirements:

Proposals signed by an individual other than the individual represented in the Proposal documents shall have attached thereto a power of attorney, evidencing authority to sign the Proposal in the name of the person for whom it is signed.

Proposals that are signed for a partnership shall be signed by all of the partners or by an attorney-in-fact. If signed by an attorney-in-fact, there shall be attached to the Proposal a power of attorney evidencing authority to sign the proposal, executed by the partners.

Proposals that are signed for a corporation shall have the correct corporate name thereof and the signature of the President or other authorized officer of the corporation manually written below the corporate name.

If an official other than the President of the Corporation manually signs such Proposal, a certified copy of a resolution of the board of directors evidencing the authority of such official to sign the Proposal shall be attached to it. Such Proposal shall also bear the attesting signature of the Secretary of the corporation and the impression of the corporate seal.

The Agreement shall be deemed as have been awarded when formal notice of award shall have been duly served upon the intended awardee.

18. **Non-Discriminating** – The Proposer, its employees and subcontractors, agrees not to commit unlawful discrimination and agrees to comply with applicable provisions of the Illinois Human Rights Act, the U.S. Civil Rights Act and Section 504 of the Federal Rehabilitation Act, and rules applicable to each.
19. **Negotiations** – The Village reserves the right to negotiate specifications, terms, and conditions that may be necessary or appropriate to the accomplishment of the purpose of the RFP. The Village may require the entire proposal be made an integral part of the resulting Agreement. This implies that all responses, supplemental information, and other submissions provided by the proposer during discussions or negotiations will be held by the Village as contractually binding on the successful proposer.
20. **Incurred Costs** – The Village will not be liable in any way for any costs incurred by respondents in replying to this RFP. Proposer agrees to comply with all laws, ordinances, and rules of the Village and the State of Illinois.
21. **Proposer Responsibilities** – The selected Proposer will be required to assume responsibility for all services offered in this proposal. The Village will consider the selected Proposer to be the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the Agreement.
22. **Default** – The Agreement may be canceled or annulled by the Village in whole or in part by written notice of default to the Proposer upon nonperformance or violation of agreement terms. An award may be given to another proposer with services similar to those so terminated. Failure of the Proposer to deliver services within the time stipulated on his offer, unless extended in writing by the Village, shall constitute agreement default.
23. **Independent Contractor** – There is no employee/employer relationship between the Proposer and the Village. Proposer is an independent contractor and not the Village's employee for all purposes, including, but not limited to, the application of the Fair Labor Standards Act minimum wage and overtime payments, Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the Worker's Compensation Act (820 ILCS 305/1, et seq.). The VILLAGE will not (i) provide any form of insurance coverage, including but not limited to health, worker's

compensation, professional liability insurance, or other employee benefits, or (ii) deduct any taxes or related items from the monies paid to Proposer. The performance of the services described herein shall not be construed as creating any joint employment relationship between the Proposer and the Village, and the Village is not and will not be liable for any obligations incurred by the Proposer, including but not limited to unpaid minimum wages and/or overtime premiums, nor does there exist an agency relationship or partnership between the Village and the Proposer.

24. **Governing Law** – The laws of the State of Illinois as to interpretation, performance and enforcement shall govern this Agreement. The forum for resolving any disputes concerning the parties' respective performance or failure to perform under this Agreement shall be the Circuit Court for the Eighteenth Judicial Circuit, DuPage County, Illinois.

Section 8. Proposers Certification

The undersigned, being first duly sworn an oath, deposes and states that he has the authority to make this certification on behalf of the proposer for the construction, product, commodity, or service briefly described as follows:

“Actuarial Services”

- 1) The undersigned certifies that, pursuant to Chapter 720, Section 5/33E of the Illinois Compiled Statutes, 1993, the proposer is not barred from bidding on this agreement as a result of a conviction for the violation of State of Illinois laws prohibiting bid rigging or bid-rotating.
- 2) The undersigned states under oath that, pursuant to Chapter 65, Section 5/11-42.1-1 of the Illinois Compiled Statutes, 1993, the proposer is not delinquent in the payment of any tax administered by the Illinois Department of Revenue.
- 3) The undersigned certifies that, pursuant to Chapter 775, Section 5/2-105. of the Illinois Compiled Statutes, 1993, the proposer has a written sexual harassment policy in place including the following information:
 - a) An acknowledgment of the illegality of sexual harassment.
 - b) The definition of sexual harassment under State law.
 - c) A description of sexual harassment, utilizing examples.
 - d) The Proposer's internal complaint process including penalties.
 - e) The legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Human Rights Commission.
 - f) Directions on how to contact the Department or the Commission.

This Business Firm is (Check One):

_____ Corporation _____ Partnership _____ Individual

Firm Name: _____

Address: _____

Signature: _____

Name

Printed: _____

Title: _____

Telephone: _____

Date: _____

ATTEST:

-SEAL-

SUBSCRIBED AND SWORN TO
before me this _____ day
of _____, 2025.

Notary Public

Section 9. Attachments

Attachment A – 2025 Actuarial Valuation Report for the Fire Fund

Attachment B – 2025 Firefighters Fund GASB Nos. 67 & 68 Report

Attachment C – 2025 Actuarial Valuation for the Police Fund

Attachment D – 2025 Police Fund GASB Nos. 67 & 68 Report

Attachment E – GASB 75 Interim Actuarial Valuation Fiscal Year Ending December 31, 2024

Attachment F – Proposer Questionnaire

FIRM NAME _____

CONTACT PERSON _____

ADDRESS _____

PHONE NUMBER _____

EMAIL ADDRESS _____

WHEN ORGANIZED _____

WHERE ORGANIZED _____

LICENSED IN ILLINOIS? _____

NUMBER OF YEARS IN PRACTICE? _____

HAS THE FIRM EVER REFUSED TO ENTER
INTO AN AGREEMENT?

If yes, please submit details _____

HAS THE FIRM EVER DEFAULTED ON AN AGREEMENT?

If yes, please submit details _____

WHERE IS YOUR NEAREST OFFICE TO OAK BROOK? _____

HOW MANY PEOPLE ARE EMPLOYED IN THE
NEAREST OFFICE TO OAK BROOK?



Village of Oak Brook Firefighters' Pension Fund

January 1, 2025
Actuarial Valuation Report

Actuarial Certification	3
Executive Summary	5
Summary Results	5
Changes Since Prior Valuation and Key Notes	6
History of Valuation Results	7
Identification of Risks	8
Plan Maturity Measures	9
Assets and Liabilities	10
Present Value of Future Benefits	10
Funding Liabilities	11
Asset Information	12
Reconciliation of Gain/Loss	14
Contribution Requirements	15
Development of Actuarially Determined Contribution	15
Demographic Information	16
Participant Reconciliation	18
Plan Provisions	20
Actuarial Assumptions	23
Other Measurements	25
Minimum Contribution	26
Low-Default-Risk Obligation Measure	27

At the request of the plan sponsor, this report summarizes the Village of Oak Brook Firefighters' Pension Fund as of January 1, 2025. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- Actuarially Determined Contribution; and
- Statutory Minimum Contribution.

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by the employer. Asset information has been provided to us by the administrator. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the employer. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

In preparing the results, Nyhart used Proval valuation software developed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing pension valuations. We coded the plan provisions, assumptions, methods, and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any material weaknesses or limitations in the software, and have determined it is appropriate for performing this valuation.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart



Matthew Branding, FSA, EA, CERA



John Toweson, ASA, EA

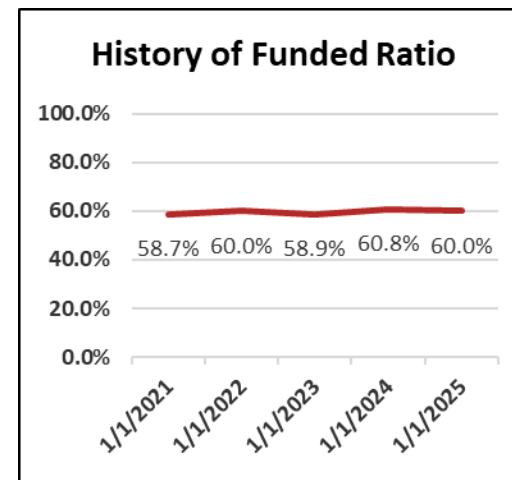
May 9, 2025

Date

Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The Accrued Liability is based on the Entry Age Normal % Salary actuarial cost method.

	January 1, 2024	January 1, 2025
Funded Status Measures		
Accrued Liability	\$61,046,910	\$65,063,113
Actuarial Value of Assets	<u>\$37,108,820</u>	<u>\$39,063,812</u>
Unfunded Accrued Liability	\$23,938,090	\$25,999,301
Funded Percentage (AVA)	60.8%	60.0%
Funded Percentage (MVA)	57.2%	59.1%
Cost Measures		
Total Actuarially Determined Contribution	\$2,863,981	\$3,199,820
Expected Employee Contributions	<u>(325,894)</u>	<u>(348,423)</u>
Net Actuarially Determined Contribution	\$2,538,087	\$2,851,397
- as a Percentage of Payroll	76.1%	80.0%
Asset Measures		
Market Value of Assets (MVA)	\$34,941,614	\$38,420,030
Actuarial Value of Assets (AVA)	\$37,108,820	\$39,063,812
Actuarial Value/Market Value	106.2%	101.7%
Participant Information		
Active Participants	31	31
Terminated Vested Participants	7	7
Retirees, Beneficiaries, and Disabled Participants	<u>47</u>	<u>46</u>
Total	85	84
Payroll	\$3,334,258	\$3,564,755



Changes since Prior Valuation and Key Notes

There have been no changes to the assumptions or plan provisions since the last valuation.

History of Valuation Results

	1/1/2021	1/1/2022	1/1/2023	1/1/2024	1/1/2025
Plan Funding					
Accrued Liability	\$53,675,156	\$57,099,837	\$59,739,608	\$61,046,910	\$65,063,113
Actuarial Value of Assets	31,490,506	34,270,067	35,211,320	37,108,820	39,063,812
Unfunded Accrued Liability	\$22,184,650	\$22,829,770	\$24,528,288	\$23,938,090	\$25,999,301
Funded Percentage	58.7%	60.0%	58.9%	60.8%	60.0%
Normal Cost (NC)	\$808,944	\$801,777	\$793,365	\$844,093	\$899,358
NC as a Percent of Covered Payroll	25.0%	27.0%	26.7%	25.3%	25.2%
Actual Contribution	\$2,173,496	\$2,252,102	\$2,754,407	\$3,065,244	To Be Determined
Actuarially Determined Contribution (ADC)	\$2,173,495	\$2,316,400	\$2,480,119	\$2,538,087	\$2,851,397
ADC (% of Pay)	67.1%	77.9%	83.4%	76.1%	80.0%
Interest Rate	6.75%	6.75%	6.75%	6.75%	6.75%
Rate of Return					
Actuarial Value of Assets	10.2%	11.3%	4.8%	6.5%	5.9%
Market Value of Assets	15.0%	11.8%	-16.9%	14.8%	10.7%
Demographic Information					
Active Participants	31	29	27	31	31
Retired Participants	23	24	25	25	25
Beneficiaries	12	11	9	9	8
Disabled Participants	13	13	13	13	13
Terminated Vested Participants	5	4	5	7	7
Total Participants	84	81	79	85	84
Covered Payroll	\$3,240,175	\$2,974,486	\$2,975,539	\$3,334,258	\$3,564,755
Average Covered Pay	\$104,522	\$102,568	\$110,205	\$107,557	\$114,992

Identification of Risks

The results presented in this report are shown as single point values. However, these values are derived using assumptions about future markets and demographic behavior. If actual experience deviates from our assumptions, the actual results for the plan will consequently deviate from those presented in this report. Therefore, it is critical to understand the risks facing this pension plan. The following table shows the risks we believe are most relevant to the Village of Oak Brook Firefighters' Pension Fund. The risks are generally ordered with those we believe to have the most significance at the top. Also shown are possible methods by which a more detailed assessment of the risk can be performed.

Type of Risk Additional Information

Investment Return	Portfolio risk and substantial equity position leave the plan open to adverse market results, which could increase costs in the future.
Participant Longevity	The plan has adopted the mortality tables suggested by the 2021 Consolidated Investment Experience study for valuation purposes. There is no guarantee anticipated mortality experience will mirror your plan's future experience. Deviation from expected mortality rates could impact long-term liabilities and plan cost.
Early Retirement	The plan has a relatively generous provisions regarding retirement eligibility; if more employees than expected retire or avail themselves of early retirement options, then this could impact estimated plan liabilities.
Salary Growth	The plan has experienced volatility in observed salary increases in the recent past; as benefits are based on final average salary, the salary growth assumption is key to accurately calculating liabilities and future costs.

Type of Risk Method to Assess Risk

Investment Return	Scenario Testing; Asset Liability Study
Participant Longevity	Scenario Testing; Sensitivity Testing
Early Retirement	Scenario Testing; Sensitivity Testing
Salary Growth	Scenario Testing; Sensitivity Testing

Plan Maturity Measures - January 1, 2025

Each pension plan has a distinct life-cycle. New plans promise future benefits to active employees and then accumulate assets to pre-fund those benefits. As the plan matures, benefits are paid and the pre-funded assets begin to decumulate until ultimately, the plan pays out all benefits. A plan's maturity has a dramatic influence on how risks should be viewed. The following maturity measures illustrate where the Village of Oak Brook Firefighters' Pension Fund falls in its life-cycle.

Duration of Liabilities: 12.3

Duration is the most common measure of plan maturity. It is defined as the sensitivity of the liabilities to a change in the interest rate assumption. The metric also approximates the weighted average length of time, in years, until benefits are expected to be paid. A plan with high duration is, by definition, more sensitive to changes in interest rates. A plan with low duration is more susceptible to risk if asset performance deviates from expectations as there would be less time to make up for market losses in adverse market environments while more favorable environments could result in trapped surplus from gains. Conversely, high duration plans can often take on more risk when investing, and low duration plans are less sensitive to interest rate fluctuations.

Demographic Distribution - Ratio of Actively Accruing Participants to All Participants: 36.9%

A plan with a high ratio is more sensitive to fluctuations in salary (if a salary-based plan) and statutory changes. A plan with a low ratio is at higher risk from demographic experience. Such a plan should pay close attention to valuation assumptions as there will be less opportunity to realize future offsetting gains or losses when current experience deviates from assumptions. Plans with a low ratio also have limited opportunities to make alterations to plan design to affect future funded status.

Asset Leverage - Ratio of Payroll for Plan Participants to Market Value of Assets: 9.3%

Younger plans typically have a large payroll base from which to draw in order to fund the plan while mature plans often have a large pool of assets dedicated to providing benefits to a population primarily consisting of members no longer on payroll. Plans with low asset leverage will find it more difficult to address underfunding, as the contributions needed to make up the deficit will represent a higher percentage of payroll than for a plan with high asset leverage.

Benefit Payment Percentage - Ratio of Annual Benefit Payments to Market Value of Assets: 9.6%

As a plan enters its decumulation phase, a larger percentage of the pre-funded assets are paid out each year to retirees. A high percentage is not cause for alarm as long as the plan is nearly fully funded. However, such a plan is more sensitive to negative asset performance, especially if cash contributions are not an option to make up for losses.

Present Value of Future Benefits

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

January 1, 2025

Present Value of Future Benefits

Active Participants

Retirement	\$25,453,438
Disability	2,592,822
Death	260,965
Termination	590,314
Total Active	\$28,897,539

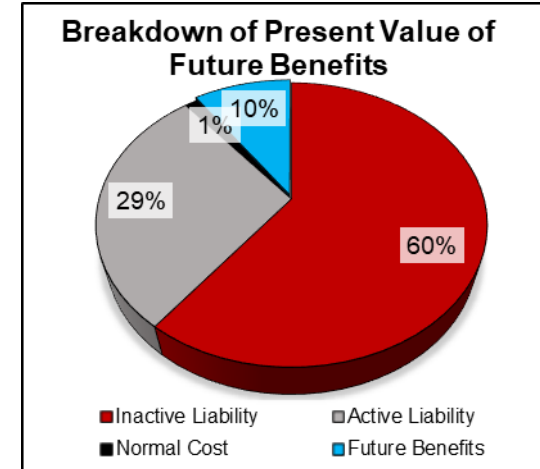
Inactive participants

Retired Participants	\$30,829,861
Beneficiaries	4,338,301
Disabled Participants	8,312,322
Terminated Vested Participants	567,977
Total Inactive	\$44,048,461

Total **\$72,946,000**

Present Value of Future Payrolls **\$34,918,488**

Present Value of Future Employee Contributions **\$3,237,351**



Accrued Liability

The Funding Liability measures the present value of benefits earned as of the valuation date, using the actuarial assumptions described in the assumption section of this report and the Entry Age Normal % Salary actuarial cost method.

January 1, 2025

Funding Liabilities

Active Participants

Retirement	\$19,507,309
Disability	1,269,416
Death	89,689
Termination	148,238
Total Active	\$21,014,652

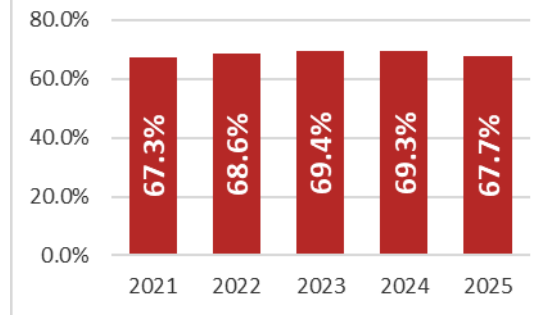
Inactive Participants

Retired Participants	\$30,829,861
Beneficiaries	4,338,301
Disabled Participants	8,312,322
Terminated Vested Participants	567,977
Total Inactive	\$44,048,461

Total \$65,063,113

Normal Cost \$899,358

History of the Percentage of Inactive Liability



Asset Information

The amount of assets backing the pension promise is typically the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

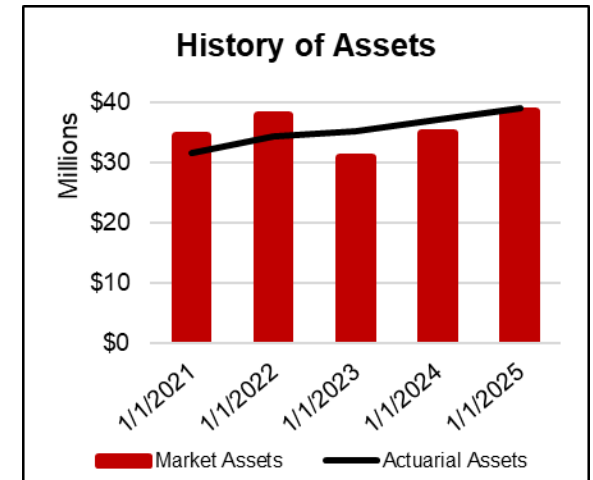
January 1, 2025

Market Value Reconciliation

Market Value of Assets, Beginning of Prior Year	\$34,941,614
Contributions	
Employer Contributions	\$3,065,244
Member Contributions	341,988
Total	\$3,407,232
Investment Income	3,709,612
Benefit Payments	(3,573,161)
Administrative Expenses	(65,267)
Market Value of Assets, Beginning of Current Year	\$38,420,030
Return on Market Value	10.7%

Actuarial value of assets

Value at Beginning of Current Year	\$39,063,812
------------------------------------	--------------



Asset Information (continued)

Plan Assets are used to develop funded percentages and contribution requirements.

January 1, 2025

1. Expected Market Value of Assets	
(a) Market Value of Assets, Beginning of Prior Year	\$34,941,614
(b) Contributions	3,407,232
(c) Benefit Payments	(3,573,161)
(d) Administrative Expenses	(65,267)
(e) Expected Return	2,350,756
(f) Expected Market Value of Assets, Beginning of Current Year	<u>\$37,061,174</u>
2. Market Value of Assets, Beginning of Current Year	\$38,420,030
3. Actual Return on Market Value	\$3,709,612
4. Amount Subject to Phase-in [(3)-(1e)]	\$1,358,856
5. Phase-in of Asset Gain/(Loss)	
(a) Current Year [80% x \$1,358,856]	\$1,087,085
(b) First Prior Year [60% x \$2,456,198]	1,473,719
(c) Second Prior Year [40% x (\$8,879,764)]	(3,551,906)
(d) Third Prior Year [20% x \$1,736,599]	347,320
(e) Total Phase-in	<u>(\$643,782)</u>
6. Actuarial Value of Assets, Beginning of Current Year [(2)-(5e)]	\$39,063,812
7. Return on Actuarial Value of Assets	5.9%

Reconciliation of Gain/Loss

January 1, 2025

Liability (Gain)/Loss

Actuarial Liability, Beginning of Prior Year	\$61,046,910
Normal Cost	844,093
Benefit Payments	(3,573,161)
Expected Interest	<u>4,057,049</u>
Expected Actuarial Liability, Beginning of Current Year	\$62,374,891
Actual Actuarial Liability, Before Changes	\$65,063,113
Liability (Gain)/Loss	\$2,688,222

Asset (Gain)/Loss

Actuarial Value of Assets, Beginning of Prior Year	\$37,108,820
Contributions	3,407,232
Benefit Payments and Administrative Expenses	(3,638,428)
Expected Return	<u>2,497,042</u>
Expected Actuarial Value of Assets, Beginning of Current Year	\$39,374,666
Actual Actuarial Value of Assets, Beginning of Current Year	\$39,063,812
Asset (Gain)/Loss	\$310,854

Total (Gain)/Loss

\$2,999,076

Development of Actuarially Determined Contribution

The actuarially determined contribution is the annual amount needed to fund the plan to 100% by the end of the 2040 fiscal year as a level percentage of payroll, using the Entry Age Normal % Salary actuarial cost method. The actuarially determined contribution is subject to the State statutory minimum, which is the annual amount needed to fund the plan to 90% by the end of the 2040 fiscal year as a level percentage of payroll, using the Projected Unit Credit actuarial cost method.

In accordance with ASOP No. 4, we reviewed the plan's funding method (liability method, amortization method and period, asset smoothing method), contribution policy & allocation procedures, and the computation of the actuarially determined contribution. We believe each to be reasonable, both individually and in combination, as expected plan costs are expected to be fully funded over a reasonable timeframe.

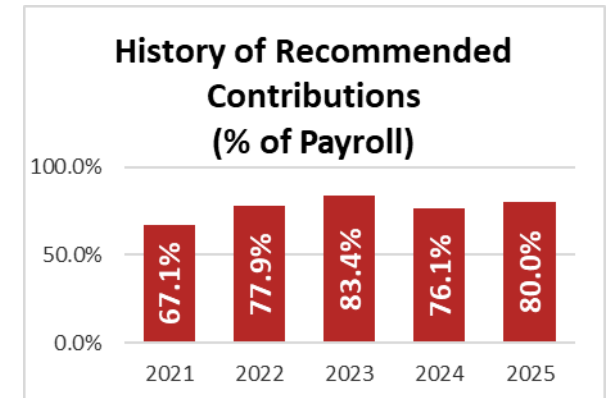
January 1, 2025

Funded Position

1. Entry Age Normal % Salary Accrued Liability	\$65,063,113
2. 100% of Entry Age Normal % Salary Accrued Liability	\$65,063,113
3. Actuarial Value of Assets	39,063,812
4. Unfunded Actuarial Accrued Liability (UAAL) (2 – 3)	\$25,999,301

Actuarially Determined Contribution

1. Normal Cost	\$899,358
2. Administrative Expenses	65,267
3. Amortization of UAAL	2,130,727
4. Applicable Interest	104,468
5. Total Actuarially Determined Contribution	\$3,199,820
6. Expected Employee Contributions	348,423
7. Net Actuarially Determined Village Contribution (5 – 6)	\$2,851,397
8. Minimum Contribution (Public Act 096-1495 Tax Levy Requirement)	\$2,341,648
9. Final Actuarially Determined Contribution [max (7,8)]	\$2,851,397
As a Percentage of Expected Payroll	80.0%



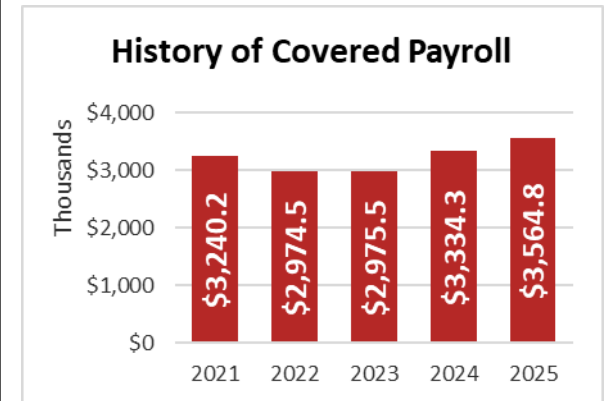
The Plan's Normal Cost plus interest on the Unfunded Actuarial Accrued Liability is \$2,278,326 .

A contribution greater than the Normal Cost plus interest on the Unfunded Actuarial Accrued Liability will reduce the Unfunded Actuarial Accrued Liability, if all other assumptions are met. A contribution less than the Normal Cost plus interest on the Unfunded Actuarial Accrued Liability will increase the Unfunded Actuarial Accrued Liability, if all other assumptions are met. Consider making a contribution greater than the Normal Cost plus interest on the Unfunded Actuarial Accrued Liability in order to pay down the Plan's shortfall more rapidly if that amount is greater than your funding policy contribution.

Demographic Information

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

	January 1, 2024	January 1, 2025
Participant Counts		
Active Participants	31	31
Retired Participants	25	25
Beneficiaries	9	8
Disabled Participants	13	13
Terminated Vested Participants	7	7
Total Participants	85	84
Active Participant Demographics		
Average Age	40.7	41.6
Average Service	14.1	14.8
Average Compensation	\$107,557	\$114,992
Covered Payroll	\$3,334,258	\$3,564,755



Demographic Information (continued)

	January 1, 2024	January 1, 2025
Retiree Statistics		
Average Age	71.7	72.7
Average Monthly Pension Benefit	\$7,810	\$8,044
Beneficiary Statistics		
Average Age	65.5	74.5
Average Monthly Pension Benefit	\$3,302	\$4,875
Disabled Participants Statistics		
Average Age	71.0	72.0
Average Monthly Pension Benefit	\$4,454	\$4,672
Terminated Participants Statistics		
Average Age	41.2	42.2
Average Monthly Pension Benefit*	\$1,417	\$1,417

* Average monthly pension benefit does not include participants eligible for a return of contributions only.

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	31	7	13	25	9	85
Active						
To Retired	0	0	0	0	0	0
To Disabled	0	0	0	0	0	0
To Terminated Vested	0	0	0	0	0	0
Terminated Nonvested (return of employee contributions)	0	0	0	0	0	0
To Death with Beneficiary	(1)	0	0	0	1	0
Terminated Vested						
To Retired	0	0	0	0	0	0
Return of employee contributions	0	0	0	0	0	0
Disabled						
To Death	0	0	0	0	0	0
Retired						
To Death with Beneficiary	0	0	0	0	0	0
To Death without Beneficiary	0	0	0	0	0	0
Beneficiaries						
To Death	0	0	0	0	0	0
Expired Child Coverage	0	0	0	0	(2)	(2)
Additions	1	0	0	0	0	1
Departures	0	0	0	0	0	0
Current Year	31	7	13	25	8	84

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service										Total	Average Pay
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up		
Under 25		3									3	\$86,926
25 to 29		4	1								5	\$94,475
30 to 34				1							1	\$112,604
35 to 39	1		1	1							3	\$103,347
40 to 44				2	3						5	\$129,237
45 to 49					2	2	2				6	\$130,731
50 to 54					1	3					4	\$117,290
55 to 59						2	1	1			4	\$127,306
60 to 64											0	
65 to 69											0	
70 & up											0	
Total	1	7	2	4	6	7	3	1	0	0	31	\$114,992

Eligibility for Participation

Firefighters of the Village of Oak Brook

Accrual of Benefits

For employees hired prior to January 1, 2011, the normal retirement benefit is equal to 50% of the final salary plus 2.5% of any service over 20 years (with a maximum of 30) times the final salary. There is a minimum benefit of \$1,159.27 per month. The benefit is paid as a 100% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participants as the survivor.

For employees hired after or on January 1, 2011, the normal retirement benefit is equal to 2.5% of the final average salary times benefit service (maximum 30 years.) The benefit is paid as a 66.67% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participants as the survivor.

Benefits

Normal Retirement

Eligibility	For employees hired prior to January 1, 2011, the normal retirement date is the first day of the month on or after completion of 20 years of service and attainment of age 50. For employees hired after or on January 1, 2011, the normal retirement date is the first day of the month on or after completion of 10 years of service and attainment of age 55.
Benefit	Unreduced Accrued Benefit payable immediately.

Early Retirement

Eligibility	For employees hired prior to January 1, 2011 and terminating with less than 20 years of service For employees hired after or on January 1, 2011 who has attained age 50 and has 10 years of service.
Benefit	For those hired prior to January 1, 2011 a reduced Accrued Benefit shall be paid at age 60 based on the schedule below. For those hired after or on January 1, 2011 the Accrued Benefit is reduced by 0.5% for each month prior to age 55.

Benefit Service	Accrual Percentage	Benefit Service	Accrual Percentage
10	15.0%	15	30.0%
11	17.6%	16	33.6%
12	20.4%	17	37.4%
13	23.4%	18	41.4%
14	26.6%	19	45.6%

Termination

Eligibility	For employees hired prior to January 1, 2011, age 60 with 8 years of service. For employees hired after or on January 1, 2011, age 55 with 10 years of service.
Benefit	Accrued benefit. Refund of contributions for employees that do not meet the eligibility criteria above.

Disability In The Line of Duty

Eligibility	For participants who become disabled in the line of duty.
Benefit	The greater of 65% of the final salary or the accrued benefit

Disability Not In The Line of Duty

Eligibility	For participants who become disabled outside of the line of duty.
Benefit	50% of the final salary

Death In the Line of Duty

Eligibility	For participants who die in the line of duty.
Benefit	The benefit is 100% of final salary paid to the survivor.

Death Not In the Line of Duty

Eligibility	For participants who die outside of the line of duty.
Benefit	For those hired before 1/1/2011 with greater than 20 years of service, a benefit of 100% of the accrued benefit is paid to the survivor. For those with more than 10 years of service, but less than 20 years of service, a benefit of 54% of the final salary is paid to the survivor. For those hired after 1/1/2011, a benefit equal to the greater of 54% of Final Salary and 66-2/3% of the accrued benefit is paid to the survivor.

Compensation

Final Salary is the salary attached to the rank held on the last day of service, or one year prior to the last day, whichever is greater.

Final Average Salary is the average monthly salary obtained by dividing the total salary of the firefighter during the 48 consecutive months of service within the last 60 months of service in which the total salary was the highest by the number of months of service in that period. Salary will not exceed \$106,800 adjusted from January 1, 2011 with the lesser of 3% and 50% (100% effective January 1, 2020) of the CPI on November 1.

Credited Service

For Vesting and Benefit Accrual purposes, pension service credit is based on elapsed time from hire.

Employee Contributions

9.455% of Compensation

COLA

Eligibility All Employees

Benefit For employees hired prior to January 1, 2011 a compound COLA of 3% is granted each year after attainment of age 55 and 1 year of payments.

For employees hired after or on January 1, 2011 a simple COLA of the lesser of 3% and 50% of the CPI on November 1 is granted each year after attainment of age 60 and 1 year of payments.

For disabled employees, a simple COLA is available after attainment of age 60 and 1 year of payments. For employees hired prior to January 1, 2011 the COLA is 3%. For employees hired after January 1, 2011, the COLA is the lesser of 3% and 50% of the CPI on November 1.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law and applicable regulations.

Valuation Date	January 1, 2025								
Participant and Asset Information Collected as of	January 1, 2025								
Actuarial Cost Method (CO)	Entry Age Normal % Salary Cost Method								
Amortization Method – Actuarially Determined Contribution (CO)	Closed level percentage of payroll amortization of 100% of the Unfunded Actuarial Accrued Liability using a 2.75% payroll growth assumption over the period ending on December 31, 2040 (16-year amortization in 2025)								
Asset Method	5-year smoothing of asset gains and losses								
Interest Rates (CO)	6.75%, net of investment expenses								
Inflation (FE)	2.25%								
Annual Pay Increases (FE)	Recommended rates from the 2021 IL Firefighters' Pension Investment Experience study. Sample rates include: <table> <tr> <th><u>Service</u></th><th><u>Rate</u></th></tr> <tr> <td>0</td><td>12.50%</td></tr> <tr> <td>5</td><td>7.50%</td></tr> <tr> <td>10+</td><td>4.00%</td></tr> </table>	<u>Service</u>	<u>Rate</u>	0	12.50%	5	7.50%	10+	4.00%
<u>Service</u>	<u>Rate</u>								
0	12.50%								
5	7.50%								
10+	4.00%								
Ad-hoc Cost-of-living Increases	3.0% (1.125% for those hired after 1/1/2011)								
Mortality Rates (FE)									
Healthy (pre-commencement)	Pub-2010 Public Safety Employee Mortality Table without adjustment, with generational improvement scale MP-2021 applied from 2010.								
Healthy (post-commencement)	Pub-2010 Public Safety Employee Mortality Table with 1.081 adjustment for males, with generational improvement scale MP-2021 applied from 2010. The Pub-2010 Public Safety Survivor Mortality Table with 1.098 adjustment for females, with generational improvement scale MP-2021 applied from 2010 is used for survivors.								
Disabled	Pub-2010 Public Safety Disabled Retiree Mortality Table with 1.178 adjustment for males, with generational improvement scale MP-2021 applied from 2010. 20% of deaths are assumed to be in the line of duty								

Retirement Rates (FE)

Recommended rates from the 2021 IL Firefighters' Pension Investment Fund Experience study. Sample rates include:

Tier I		Tier II	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
50-51	12%	50-54	3%
52-53	15%	55	30%
54-59	20%	56-59	20%
60-62	25%	60-62	25%
63-64	33%	63-64	33%
65-69	50%	65-69	50%
70+	100%	70+	100%

Disability Rates (FE)

Recommended rates from the 2021 IL Firefighters' Pension Investment Fund Experience study. Sample rates include:

<u>Age</u>	<u>Rate</u>
20	0.010%
30	0.068%
40	0.420%
50	0.900%

80% of disabilities are assumed to be in the line of duty

Termination Rates (FE)

Recommended rates from the 2021 IL Firefighters' Pension Investment Fund Experience study. Sample rates include:

<u>Age</u>	<u>Rate</u>
20	10.00%
30	4.00%
40	1.20%
50	1.00%

Marital Status and Ages (FE)

80% of participants are assumed to be married with female spouses 3 years younger.

Expense Load

Equal to the administrative expenses paid in the prior year.

Funding Policy

Statutory minimum contribution, with additional funding at the discretion of the Village

FE indicates an assumption representing an estimate of future experience

MD indicates an assumption representing observations of estimates inherent in market data

CO indicates an assumption representing a combination of an estimate of future experience and observations of market data

The actuarial report also shows the necessary items required for plan reporting and any state requirements.

- ✓ Minimum contribution (Public Act 096-1495 Tax Levy Requirement)
- ✓ Low-Default-Risk Obligation Measure (LDROM)

Minimum Contribution (Public Act 096-1495 Tax Levy Requirement)

	January 1, 2025
1. Accrued liability using projected unit credit cost method	\$64,384,992
2. 90% of Accrued liability	\$57,946,493
3. Actuarial value of assets	<u>39,063,812</u>
4. Unfunded liability to be amortized [(2)-(3)]	\$18,882,681
5. Total normal cost using projected unit credit cost method	\$989,481
6. Administrative expenses	65,267
7. 16-year level pay amortization of (4)	1,547,497
8. Applicable interest	<u>87,826</u>
9. Minimum contribution (5 + 6 + 7 + 8)	\$2,690,071
10. Expected employee contributions	<u>348,423</u>
11. Net employer minimum contribution (9 – 10)	\$2,341,648

Actuarial Cost Method

Projected Unit Credit

Amortization Method

Closed level percentage of payroll amortization of 90% of Unfunded Actuarial Accrued Liability using a 2.75% payroll growth assumption over the period ending on December 31, 2040 (16-year amortization in 2025)

Asset Method

5-year smoothing of asset gains and losses

Interest Rate

6.75%, net of investment expenses

The statutory minimum contribution outlined in Illinois statutes targets reaching 90% funded on a Projected Unit Credit basis by 2040. By design this results in the unfunded actuarial accrued liability not being fully funded by the end of the amortization period. This was put in place as temporary budget relief and should not be viewed as a viable long term contribution strategy. We recommend the fund follow the more robust actuarially determined contribution method, targeting 100% funded

Other Measurements

Low-Default-Risk Obligation Measure (LDROM)

For reports issued after February 15, 2023 the Plan's actuary is generally required to disclose liabilities under an alternative low-default-risk based discount rate. This LDROM liability measure represents the estimated asset value as of the measurement date the Plan would need in order to purchase a low-default-risk fixed income securities portfolio with durations that are reasonably consistent with the timing of benefits expected to be paid from the plan.

	January 1, 2025
LDROM liability	\$ (74,339,730)
Market value of assets	\$ <u>38,420,030</u>
LDROM funded status	\$ (35,919,700)

The LDROM liability measure is for informational purposes only. The plan sponsor has no requirements to contribute to the Plan to meet this threshold, and the funded status on this basis is not reported to any government agency or used for any restrictions.

If Plan assets are invested to earn in excess of a fixed income portfolio, a shortfall on this basis may not necessarily mean the security of participant benefits is at risk. If the plan is fully funded, or nearly fully funded, on the LDROM measure, the plan sponsor may want to consider reducing investment risk in order to offer greater benefit security and lower contribution volatility. We did not perform an analysis of assumption or provision changes resulting from a potential shift in investment policy due to the limited scope of our engagement.

The above LDROM liability measure applies a single effective discount rate of 5.65% which would produce approximately the same discounted cashflows as the FTSE Above Median AA Index as of December 31, 2024. All other data, assumptions, methods and provisions are the same as those detailed in this report.



Village of Oak Brook Firefighters' Pension Fund

December 31, 2024
GASB Nos. 67 & 68 Report

Actuarial Certification	3
Summary	5
Statement of Fiduciary Net Position	6
Statement of Changes in Fiduciary Net Position	7
Schedule of Changes in Net Pension Liability and Related Ratios	8
Pension Expense	10
Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions	11
Rate of Return	13
Discount Rate and Net Pension Liability Sensitivity	14
Schedule of Contributions	15
Actuarial Assumptions for Total Pension Liability	16
Actuarial Assumptions for Actuarially Determined Contributions	17
Plan Provisions	19

This report is prepared in accordance with our understanding of GASB Nos. 67 & 68 for the purpose of disclosing pension plans in financial statements. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report.

The information presented in this report is based on:

- the actuarial assumptions included in this report;
- the plan provisions;
- participant information furnished to us by the Plan Administrator;
- asset information furnished to us by the Plan Trustee.

We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we may have made assumptions we believe are reasonable for the purpose of the measurement. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report.

The interest rate, other economic assumptions, and demographic assumptions have been selected by the plan sponsor with our recommendations. The assumptions used, in our opinion, are reasonable and represent a reasonable expectation of future experience under the plan. All calculations have been made in accordance with generally accepted actuarial principles and practice.

A summary of any assumptions not included in this report, the plan provisions and the participant information is included in the Actuarial Valuation Report for funding purposes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement.

In preparing the results, Nyhart used Proval valuation software developed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing pension valuations. We coded the plan provisions, assumptions, methods, and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any material weaknesses or limitations in the software, and have determined it is appropriate for performing this valuation.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.

To our knowledge there have been no significant events prior to the current year's measurement date or as of the date of this report which could materially affect the results contained herein.

Neither Nyhart nor any of its employees have any relationships with the plan or plan sponsor which could impair or appear to impair the objectivity of this report.

Nyhart



Matthew Branding, FSA, EA, CERA



John Toweson, ASA, EA

05/9/2025

Net Pension Liability

The components of the net pension liability at December 31

	<u>12/31/2024</u>	<u>12/31/2023</u>
Total pension liability	\$ 65,063,113	\$ 61,046,910
Plan fiduciary net position	(38,420,030)	(34,941,614)
Net pension liability	\$ 26,643,083	\$ 26,105,296
Plan fiduciary net position as a percent of the total pension liability	59.05%	57.24%
Pension Expense for the Fiscal Year Ended December 31	\$ 3,955,679	\$ 3,092,518

Actuarial Assumptions

The total pension liability was determined using the following actuarial assumptions

Inflation	2.25%	2.25%
Salary increases, including inflation	4.00%-12.50%	4.00%-12.50%
Investment rate of return, including inflation, and net of investment expense	6.75%	6.75%

Plan Membership

The total pension liability was determined based on the plan membership as of December 31

	<u>2024</u>	<u>2023</u>
Inactive plan members and beneficiaries currently receiving benefits	46	47
Inactive plan members entitled to but not yet receiving benefits	7	7
Active plan members	31	31
Total members	84	85

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Statement of Fiduciary Net Position

Assets	12/31/2024	12/31/2023
Cash and deposits	\$ 315,646	\$ 28,642
Securities lending cash collateral	0	0
Total cash	\$ 315,646	\$ 28,642
Receivables:		
Contributions	\$ 0	\$ 0
Due from broker for investments sold	0	0
Investment income	0	0
Other	66,863 *	4,603
Total receivables	\$ 66,863	\$ 4,603
Investments:		
Illinois Firefighters' Pension Investment Fund	\$ 38,039,187	\$ 34,448,588
Money Market Mutual Funds	0	460,996
Fixed Income	0	0
Stock Equities	0	0
Mutual Funds	0	0
Total investments	\$ 38,039,187	\$ 34,909,584
Total assets	\$ 38,421,696	\$ 34,942,829
Liabilities		
Payables:		
Investment management fees	\$ 0	\$ 0
Due to broker for investments purchased	0	0
Collateral payable for securities lending	0	0
Other	1,666	1,215
Total liabilities	\$ 1,666	\$ 1,215
Net position restricted for pensions	\$ 38,420,030	\$ 34,941,614

*includes \$59,630 that is due from the Village for employer contributions that were recorded in accrued payroll on the Village trial balance.

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Statement of Changes in Fiduciary Net Position

	<u>12/31/2024</u>	<u>12/31/2023</u>
Additions		
Contributions:		
Employer	\$ 3,065,244	\$ 2,754,407
Member	341,988	300,356
Nonemployer contributing entity	0	0
Total contributions	\$ 3,407,232	\$ 3,054,763
Investment income:		
Net increase in fair value of investments	\$ 3,036,041	\$ 4,546,463
Interest and dividends	724,302	16,050
Less investment expense, other than from securities lending	(50,731)	(40,404)
Net income other than from securities lending	\$ 3,709,612	\$ 4,522,109
Securities lending income	0	0
Less securities lending expense	0	0
Net income from securities lending	\$ 0	\$ 0
Net investment income	\$ 3,709,612	\$ 4,522,109
Other	0	0
Total additions	\$ 7,116,844	\$ 7,576,872
Deductions		
Benefit payments, including refunds of member contributions	\$ 3,573,161	\$ 3,379,811
Administrative expense	65,267	48,130
Other	0	0
Total deductions	\$ 3,638,428	\$ 3,427,941
Net increase in net position	\$ 3,478,416	\$ 4,148,931
Net position restricted for pensions		
Beginning of year	34,941,614	30,792,683
End of year	\$ 38,420,030	\$ 34,941,614

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Schedule of Changes in Net Pension Liability and Related Ratios

	12/31/2024	12/31/2023	12/31/2022	12/31/2021	12/31/2020
Total pension liability					
Service cost	\$ 844,093	\$ 793,365	\$ 801,777	\$ 808,944	\$ 818,358
Interest	4,057,049	3,971,907	3,800,750	3,570,068	3,489,011
Changes of benefit terms	0	0	0	0	0
Differences between expected and actual experience	2,688,222	(78,159)	1,101,246	(41,604)	327,007
Changes of assumptions	0	0	124,403	2,275,678	(307,978)
Benefit payments, including refunds of member contributions	(3,573,161)	(3,379,811)	(3,188,405)	(3,188,405)	(3,043,861)
Net change in total pension liability	4,016,203	1,307,302	2,639,771	3,424,681	1,282,537
Total pension liability - beginning	61,046,910	59,739,608	57,099,837	53,675,156	52,392,619
Total pension liability - ending (a)	\$ 65,063,113	\$ 61,046,910	\$ 59,739,608	\$ 57,099,837	\$ 53,675,156
Plan fiduciary net position					
Contributions - employer	\$ 3,065,244	\$ 2,754,407	\$ 2,252,102	\$ 2,173,496	\$ 1,834,554
Contributions - member	341,988	300,356	299,887	332,919	317,505
Contributions - nonemployer contributing member	0	0	0	0	0
Net investment income	3,709,612	4,522,109	(6,349,869)	4,041,581	4,559,196
Benefit payments, including refunds of member contributions	(3,573,161)	(3,379,811)	(3,188,405)	(3,188,405)	(3,043,861)
Administrative expenses	(65,267)	(48,130)	(38,343)	(62,320)	(43,590)
Other	0	0	0	0	0
Net change in plan fiduciary net position	\$ 3,478,416	\$ 4,148,931	\$ (7,024,628)	\$ 3,297,271	\$ 3,623,804
Plan fiduciary net position - beginning	34,941,614	30,792,683	37,817,311	34,520,040	30,896,236
Plan fiduciary net position - ending (b)	\$ 38,420,030	\$ 34,941,614	\$ 30,792,683	\$ 37,817,311	\$ 34,520,040
Net pension liability - ending (a) - (b)	\$ 26,643,083	\$ 26,105,296	\$ 28,946,925	\$ 19,282,526	\$ 19,155,116
Plan fiduciary net position as a percentage of the total pension liability	59.05%	57.24%	51.54%	66.23%	64.31%
Covered-employee payroll	\$ 3,564,755	\$ 3,334,258	\$ 2,975,539	\$ 2,974,486	\$ 3,240,175
Net pension liability as percentage of covered-employee payroll	747.40%	782.94%	972.83%	648.26%	591.18%

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Schedule of Changes in Net Pension Liability and Related Ratios

	12/31/2019	12/31/2018	12/31/2017	12/31/2016	12/31/2015
Total pension liability					
Service cost	\$ 807,975	\$ 786,115	\$ 782,892	\$ 756,771	\$ 746,748
Interest	3,420,108	3,347,278	3,287,875	3,229,650	3,040,301
Changes of benefit terms	64,337	0	0	0	0
Differences between expected and actual experience	(139,992)	(96,554)	(768,292)	(569,891)	163,758
Changes of assumptions	(175,274)	(156,879)	300,225	90,432	1,474,675
Benefit payments, including refunds of member contributions	(2,889,667)	(2,756,038)	(2,695,712)	(2,645,270)	(2,615,406)
Net change in total pension liability	1,087,487	1,123,922	906,988	861,692	2,810,076
Total pension liability - beginning	51,305,132	50,181,210	49,274,222	48,412,530	45,602,454
Total pension liability - ending (a)	\$ 52,392,619	\$ 51,305,132	\$ 50,181,210	\$ 49,274,222	\$ 48,412,530
Plan fiduciary net position					
Contributions - employer	\$ 2,150,924	\$ 2,064,689	\$ 2,080,231	\$ 1,801,476	\$ 1,414,530
Contributions - member	308,176	300,087	295,477	273,775	269,349
Contributions - nonemployer contributing member	0	0	0	0	0
Net investment income	4,971,532	(1,255,489)	3,459,107	1,794,320	(256,565)
Benefit payments, including refunds of member contributions	(2,889,667)	(2,756,038)	(2,695,712)	(2,645,270)	(2,615,406)
Administrative expenses	(45,898)	(45,569)	(41,034)	(40,567)	(46,350)
Other	0	0	0	0	0
Net change in plan fiduciary net position	\$ 4,495,067	\$ (1,692,320)	\$ 3,098,069	\$ 1,183,734	\$ (1,234,442)
Plan fiduciary net position - beginning	26,401,169	28,093,489	24,995,420	23,811,686	25,046,128
Plan fiduciary net position - ending (b)	\$ 30,896,236	\$ 26,401,169	\$ 28,093,489	\$ 24,995,420	\$ 23,811,686
Net pension liability - ending (a) - (b)	\$ 21,496,383	\$ 24,903,963	\$ 22,087,721	\$ 24,278,802	\$ 24,600,844
Plan fiduciary net position as a percentage of the total pension liability	58.97%	51.46%	55.98%	50.73%	49.18%
Covered-employee payroll	\$ 3,179,407	\$ 3,187,983	\$ 3,085,809	\$ 2,918,844	\$ 2,812,001
Net pension liability as percentage of covered-employee payroll	676.11%	781.18%	715.78%	831.80%	874.85%

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Pension Expense

Fiscal year ending	<u>12/31/2024</u>	<u>12/31/2023</u>
Service cost	\$ 844,093	\$ 793,365
Interest on total pension liability	4,057,049	3,971,907
Projected earnings on pension plan investments	(2,350,756)	(2,065,911)
Changes of benefit terms	0	0
Employee contributions	(341,988)	(300,356)
Pension plan administrative expense	65,267	48,130
Other changes	0	0
Current period recognition of deferred outflows/(inflows) of resources		
Differences between Expected & Actual Experience in measurement of the Total Pension Liability	\$ 917,427	\$ 327,122
Changes of assumptions	600,019	523,028
Differences between Projected & Actual Earnings on Pension Plan Investments	164,568	(204,767)
Total	<u>\$ 3,955,679</u>	<u>\$ 3,092,518</u>

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

Differences between expected and actual experience in measurement of the total pension liability for fiscal year ending:	Initial Balance	Amortization Period	Annual Recognition	12/31/2024 Balance
December 31, 2024	\$ 2,688,222	4.0	\$ 672,056	\$ 2,016,166
December 31, 2023	\$ (78,159)	4.0	\$ (19,540)	\$ (39,079)
December 31, 2022	\$ 1,101,246	4.0	\$ 275,312	\$ 275,310
December 31, 2021	\$ (41,604)	4.0	\$ (10,401)	\$ 0
			<u>\$ 917,427</u>	<u>\$ 2,252,397</u>

Changes in assumptions for fiscal year ending:	Initial Balance	Amortization Period	Annual Recognition	12/31/2024 Balance
December 31, 2024	\$ 0	4.0	\$ 0	\$ 0
December 31, 2022	\$ 124,403	4.0	\$ 31,101	\$ 31,100
December 31, 2021	\$ 2,275,678	4.0	\$ 568,918	\$ 0
			<u>\$ 600,019</u>	<u>\$ 31,100</u>

Differences between projected and actual earnings on pension plan investments for fiscal year ending:	Initial Balance	Amortization Period	Annual Recognition	12/31/2024 Balance
December 31, 2024	\$ (1,358,856)	5.0	\$ (271,771)	\$ (1,087,085)
December 31, 2023	\$ (2,456,198)	5.0	\$ (491,240)	\$ (1,473,718)
December 31, 2022	\$ 8,879,764	5.0	\$ 1,775,953	\$ 3,551,905
December 31, 2021	\$ (1,736,599)	5.0	\$ (347,320)	\$ (347,319)
December 31, 2020	\$ (2,505,270)	5.0	\$ (501,054)	\$ 0
			<u>\$ 164,568</u>	<u>\$ 643,783</u>

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 2,291,476	\$ (39,079)
Changes of Assumptions	\$ 31,100	\$ 0
Net difference between projected and actual earnings on pension plan investments	\$ 3,551,905	\$ (2,908,122)
	<u>\$ 5,874,481</u>	<u>\$ (2,947,201)</u>

The balances as of December 31, 2024 of the deferred outflows/(inflows) of resources will be recognized in pension expense for the fiscal year ending December 31.

12/31/2025	\$ 1,624,549
12/31/2026	\$ 1,665,458
12/31/2027	\$(90,955)
12/31/2028	\$(271,772)
12/31/2029	\$ 0
Thereafter	\$ 0

The long-term expected rate of return on pension plan investments was determined using a building -block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These expected future real rates of return are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2024 are summarized in the following table:

Asset class	Target allocation	Long-term expected real rate of return
Illinois Firefighters' Pension Investment Fund	100.0%	4.40%
Money Market Mutual Funds	0.0%	0.00%
Fixed Income	0.0%	0.00%
Stock Equities	0.0%	0.00%
Mutual Funds	0.0%	0.00%
Cash	0.0%	0.00%
Total	100.0%	

Long-term expected rate of return is 6.75%.

Money-weighted rate of return is 10.66%.

Discount rate

The discount rate used to measure the total pension liability was 6.75%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Professional judgment on future contributions has been applied in those cases where contribution patterns deviate from the actuarially determined rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the net pension liability to changes in the discount rate

The following presents the net pension liability, calculated using the discount rate of 6.75 %, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (5.75%) or 1-percentage-point higher (7.75%) than the current rate:

	1% Decrease (5.75%)	Current Discount Rate (6.75%)	1% Increase (7.75%)
Net pension liability	\$ 34,988,514	\$ 26,643,083	\$ 19,774,057

Village of Oak Brook Firefighters' Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Schedule of Contributions

	<u>2024</u>	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Actuarially determined contribution	\$ 2,538,087	\$ 2,480,119	\$ 2,316,400	\$ 2,173,496	\$ 2,194,631
Contributions in relation to the actuarially determined contribution	3,065,244	2,754,407	2,252,102	2,173,496	1,834,554
Contribution deficiency (excess)	\$ (527,157)	\$ (274,288)	\$ 64,298	\$ 0	\$ 360,077
Covered-employee payroll	\$ 3,334,258	\$ 2,975,539	\$ 2,974,486	\$ 3,240,175	\$ 3,179,407
Contributions as a percentage of covered-employee payroll	91.93%	92.57%	75.71%	67.08%	57.70%
	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Actuarially determined contribution	\$ 2,150,924	\$ 2,064,689	\$ 2,080,231	\$ 2,015,441	\$ 1,826,637
Contributions in relation to the actuarially determined contribution	2,150,924	2,064,689	2,080,231	1,801,476	1,414,530
Contribution deficiency (excess)	\$ 0	\$ 0	\$ 0	\$ 213,965	\$ 412,107
Covered-employee payroll	\$ 3,187,983	\$ 3,085,809	\$ 2,918,844	\$ 2,812,001	\$ 2,818,219
Contributions as a percentage of covered-employee payroll	67.47%	66.91%	71.27%	64.06%	50.19%

The total pension liability as of December 31, 2024 was determined using the following actuarial assumptions:

Actuarial Cost Method	Entry Age Method
Asset Method	Market Value of Assets
Interest Rates	
Discount Rate	6.75%
Expected Long Term Rate of Return	6.75%
Municipal Bond Rate	N/A
Inflation	2.25%
Annual Pay Increases	4.00% - 12.50% (varies by service)
Measurement Date	December 31, 2024
Ad-hoc Cost-of-living Increases	3.0% (1.125% for those hired on or after January 1, 2011)
Mortality Rates	
Healthy (pre-commencement)	Pub-2010 Public Safety Employee Mortality Table without adjustment, with generational improvement scale MP-2021 applied from 2010
Healthy (post-commencement)	Pub-2010 Public Safety Healthy Retiree Mortality Table with 1.081 adjustment for males, with generational improvement scale MP-2021 applied from 2010
	The Pub-2010 Public Safety Survivor Mortality Table with 1.098 adjustment for females, with generational improvement scale MP-2021 applied from 2010 is used for survivors
Disabled	Pub-2010 Disabled Retiree Mortality Table with 1.178 adjustment for males, with generational improvement scale MP-2021 applied from 2013
All other demographic assumptions	As described in the assumptions section of the January 1, 2025 funding report
Experience Study	An actuarial experience study was provided December 1, 2021 to the Department of Insurance reflecting experience for the years 2017 - 2020 from numerous Funds valued by the Department of Insurance, including the Village of Oak Brook.

Actuarial Cost Method	Entry Age Normal Cost Method
Amortization Method	Closed level percentage of payroll amortization of 100% of the Unfunded Actuarial Accrued Liability using a 2.75% payroll growth assumption over the period ending on December 31, 2040 (17-year amortization in 2024)
Asset Method	5 year smoothing of assets gains and losses
Interest Rates	6.75%, net of investment expenses
Inflation	2.25%
Annual Pay Increases	4.00% - 12.50% (varies by service)
Ad-hoc Cost-of-living Increases	3.0% (1.125% for those hired on or after January 1, 2011)
Mortality Rates	
Healthy (pre-commencement)	Pub-2010 Public Safety Employee Mortality Table without adjustment, with generational improvement scale MP-2021 applied from 2010
Healthy (post-commencement)	Pub-2010 Public Safety Healthy Retiree Mortality Table with 1.081 adjustment for males, with generational improvement scale MP-2021 applied from 2010 The Pub-2010 Public Safety Survivor Mortality Table with 1.098 adjustment for females, with generational improvement scale MP-2021 applied from 2010 is used for survivors
Disabled	Pub-2010 Disabled Retiree Mortality Table with 1.178 adjustment for males, with generational improvement scale MP-2021 applied from 2010
	20% of deaths are assumed to be in the line of duty.
Retirement Rates	Recommended rates from the 2021 IL Firefighters' Pension Investment Experience study:

Tier I		Tier II	
Age	Rate	Age	Rate
50-51	12%	50-54	3%
52-53	15%	55	30%
54-59	20%	56-59	20%
60-62	25%	60-62	25%
63-64	33%	63-64	33%
65-69	50%	65-69	50%
70+	100%	70+	100%

Disability Rates

Recommended rates from the 2021 IL Firefighters' Pension Investment Experience study. Sample rates include:

Age	Rate
20	0.010%
30	0.068%
40	0.420%
50	0.900%

80% of disabilities are assumed to be in the line of duty.

Termination Rates

Recommended rates from the 2021 IL Firefighters' Pension Investment Experience study. Sample rates include:

Age	Rate
20	10.00%
30	4.00%
40	1.20%
50	1.00%

Marital Status and Ages

80% of participants are assumed married with female spouses 3 years younger.

Expense Load

Equal to the administrative expenses paid in the prior year.

Funding Policy

Statutory minimum contribution, with additional funding at the discretion of the Village.

Eligibility for Participation

Firefighters of the Village of Oak Brook

Accrual of Benefits

For employees hired prior to January 1, 2011, the normal retirement benefit is equal to 50% of the final salary plus 2.5% of any service over 20 years (with a maximum of 30) times the final salary. There is a minimum benefit of \$1,159.27 per month. The benefit is paid as a 100% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participant as the survivor.

For employees hired on or after January 1, 2011, the normal retirement benefit is equal to 2.5% of the final average salary times benefit service (maximum 30 years). The benefit is paid as a 66.67% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participant as the survivor.

Benefits

Normal Retirement

Eligibility	For employees hired prior to January 1, 2011, the normal retirement date is the first day of the month on or after completion of 20 years of service and attainment of age 50. For employees hired on or after January 1, 2011, the normal retirement date is the first day of the month on or after completion of 10 years of service and attainment of age 55.
Benefit	Unreduced Accrued Benefit payable immediately.

Early Retirement

Eligibility	For employees hired prior to January 1, 2011 and terminating with less than 20 years of service For employees hired on or after January 1, 2011 who has attained age 50 and has 10 years of service.
Benefit	For those hired prior to January 1, 2011, a reduced Accrued Benefit shall be paid at age 60 based on the schedule below. For those hired on or after January 1, 2011, the Accrued Benefit is reduced by 0.5% for each month prior to age 55.

Benefit Service	Accrual Percentage	Benefit Service	Accrual Percentage
10	15.0%	15	30.0%
11	17.6%	16	33.6%
12	20.4%	17	37.4%
13	23.4%	18	41.4%
14	26.6%	19	45.6%

Termination

Eligibility	For employees hired prior to January 1, 2011, age 60 with 8 years of service. For employees hired after or on January 1, 2011, age 55 with 10 years of service.
Benefit	Accrued benefit. Refund of contributions for employees that do not meet the eligibility criteria above.

Disability In The Line of Duty

Eligibility	For participants who become disabled in the line of duty.
Benefit	The greater of 65% of the final salary or the accrued benefit

Disability Not In The Line of Duty

Eligibility	For participants who become disabled outside of the line of duty.
Benefit	50% of the final salary

Death In the Line of Duty

Eligibility	For participants who die in the line of duty.
Benefit	The benefit is 100% of final salary paid to the survivor.

Death Not In the Line of Duty

Eligibility	For participants who die outside of the line of duty.
Benefit	For those hired before January 1, 2011 and greater than 20 years of service, a benefit of 100% of the accrued benefit is paid to the survivor. For those with more than 10 years of service, but less than 20 years of service, a benefit of 54% of the final salary is paid to the survivor. For those hired on or after January 1, 2011, a benefit equal to the greater of 54% of final salary and 66-2/3% of the accrued benefit is paid to the survivor.

Compensation

Final Salary is the salary attached to the rank held on the last day of service, or one year prior to the last day, whichever is greater.

Final Average Salary is the average monthly salary obtained by dividing the total salary of the firefighter during the 48 consecutive months of service within the last 60 months of service in which the total salary was the highest by the number of months of service in that period. Salary will not exceed \$106,800 adjusted from January 1, 2011 with the lesser of 3% and 100% of the CPI on November 1.

Credited Service

For Vesting and Benefit Accrual purposes, pension service credit is based on elapsed time from hire.

Employee Contributions

9.455% of Compensation

COLA

Eligibiity	All Employees
Benefit	For employees hired prior to January 1, 2011 a compound COLA of 3% is granted each year after attainment of age 55 and 1 year of payments For employees hired after or on January 1, 2011 a simple COLA of the lesser of 3% and 50% of the CPI on November 1 is granted each year after attainment of age 60 and 1 year of payments. For disabled employees, a simple COLA is available after attainment of age 60 and 1 year of payments. For employees hired prior to January 1, 2011 the COLA is 3%. For employees hired after or on January 1, 2011, the COLA is the lesser of 3% and 50% of the CPI on November 1.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation.

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.



Village of Oak Brook Police Pension Fund

January 1, 2025
Actuarial Valuation Report

Actuarial Certification	3
Executive Summary	5
Summary Results	5
Changes Since Prior Valuation and Key Notes	6
History of Valuation Results	7
Identification of Risks	8
Plan Maturity Measures	9
Assets and Liabilities	10
Present Value of Future Benefits	10
Funding Liabilities	11
Asset Information	12
Reconciliation of Gain/Loss	14
Contribution Requirements	15
Development of Actuarially Determined Contribution	15
Demographic Information	16
Participant Reconciliation	18
Plan Provisions	20
Actuarial Assumptions	23
Other Measurements	25
Minimum Contribution	26
Low-Default-Risk Obligation Measure	27

At the request of the plan sponsor, this report summarizes the Village of Oak Brook Police Pension Fund as of January 1, 2025. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- Actuarially Determined Contribution; and
- Statutory Minimum Contribution.

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by the employer. Asset information has been provided to us by the administrator. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the employer. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

In preparing the results, Nyhart used Proval valuation software developed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing pension valuations. We coded the plan provisions, assumptions, methods, and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any material weaknesses or limitations in the software, and have determined it is appropriate for performing this valuation.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart



Matthew Branding, FSA, EA, CERA



John Toweson, ASA, EA

May 9, 2025

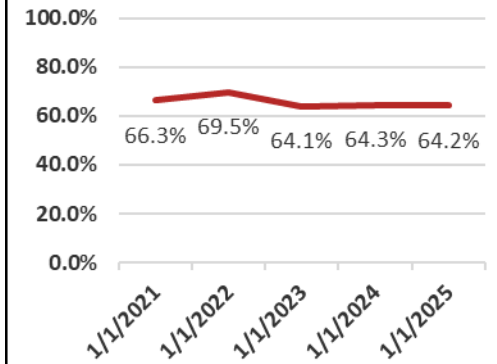
Date

Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The Accrued Liability is based on the Entry Age Normal % Salary actuarial cost method.

	January 1, 2024	January 1, 2025
Funded Status Measures		
Accrued Liability	\$75,469,095	\$78,623,395
Actuarial Value of Assets	\$48,533,977	\$50,471,160
Unfunded Accrued Liability	\$26,935,118	\$28,152,235
Funded Percentage (AVA)	64.3%	64.2%
Funded Percentage (MVA)	59.2%	61.7%
Cost Measures		
Total Actuarially Determined Contribution	\$3,336,140	\$3,568,804
Expected Employee Contributions	(469,228)	(493,962)
Net Actuarially Determined Contribution	\$2,866,912	\$3,074,842
- as a Percentage of Payroll	62.6%	63.8%
Asset Measures		
Market Value of Assets (MVA)	\$44,689,405	\$48,474,907
Actuarial Value of Assets (AVA)	\$48,533,977	\$50,471,160
Actuarial Value/Market Value	108.6%	104.1%
Participant Information		
Active Participants	42	42
Terminated Vested Participants	12	11
Retirees, Beneficiaries, and Disabled Participants	48	50
Total	102	103
Payroll	\$4,580,309	\$4,821,747

History of Funded Ratio



Changes since Prior Valuation and Key Notes

There have been no changes to the assumptions or plan provisions since the last valuation.

History of Valuation Results

	1/1/2021	1/1/2022	1/1/2023	1/1/2024	1/1/2025
Plan Funding					
Accrued Liability	\$64,108,697	\$66,163,676	\$72,486,028	\$75,469,095	\$78,623,395
Actuarial Value of Assets	42,524,633	46,008,928	46,446,823	48,533,977	50,471,160
Unfunded Accrued Liability	\$21,584,064	\$20,154,748	\$26,039,205	\$26,935,118	\$28,152,235
Funded Percentage	66.3%	69.5%	64.1%	64.3%	64.2%
Normal Cost (NC)	\$925,403	\$931,194	\$1,010,891	\$1,069,607	\$1,098,837
NC as a Percent of Covered Payroll	22.1%	22.1%	23.5%	23.4%	22.8%
Actual Contribution	\$2,133,229	\$2,052,526	\$2,847,989	\$3,063,084	To Be Determined
Actuarially Determined Contribution (ADC)	\$2,133,229	\$2,097,159	\$2,679,240	\$2,866,912	\$3,074,842
ADC (% of Pay)	51.0%	49.7%	62.3%	62.6%	63.8%
Interest Rate	6.75%	6.75%	6.75%	6.75%	6.75%
Rate of Return					
Actuarial Value of Assets	8.5%	9.9%	3.8%	5.4%	4.5%
Market Value of Assets	10.9%	12.8%	-17.0%	12.2%	9.1%
Demographic Information					
Active Participants	41	40	41	42	42
Retired Participants	33	34	37	38	40
Beneficiaries	5	5	5	5	5
Disabled Participants	4	5	5	5	5
Terminated Vested Participants	6	8	10	12	11
Total Participants	89	92	98	102	103
Covered Payroll	\$4,179,054	\$4,221,825	\$4,300,995	\$4,580,309	\$4,821,747
Average Covered Pay	\$101,928	\$105,546	\$104,902	\$109,055	\$114,804

Identification of Risks

The results presented in this report are shown as single point values. However, these values are derived using assumptions about future markets and demographic behavior. If actual experience deviates from our assumptions, the actual results for the plan will consequently deviate from those presented in this report. Therefore, it is critical to understand the risks facing this pension plan. The following table shows the risks we believe are most relevant to the Village of Oak Brook Police Pension Fund. The risks are generally ordered with those we believe to have the most significance at the top. Also shown are possible methods by which a more detailed assessment of the risk can be performed.

Type of Risk Additional Information

Investment Return	Portfolio risk and substantial equity position leave the plan open to adverse market results, which could increase costs in the future.
Participant Longevity	The plan has adopted the mortality tables suggested by the 2021 Consolidated Investment Experience study for valuation purposes. There is no guarantee anticipated mortality experience will mirror your plan's future experience. Deviation from expected mortality rates could impact long-term liabilities and plan cost.
Early Retirement	The plan has a relatively generous provisions regarding retirement eligibility; if more employees than expected retire or avail themselves of early retirement options, then this could impact estimated plan liabilities.
Salary Growth	The plan has experienced volatility in observed salary increases in the recent past; as benefits are based on final average salary, the salary growth assumption is key to accurately calculating liabilities and future costs.

Type of Risk Method to Assess Risk

Investment Return	Scenario Testing; Asset Liability Study
Participant Longevity	Scenario Testing; Sensitivity Testing
Early Retirement	Scenario Testing; Sensitivity Testing
Salary Growth	Scenario Testing; Sensitivity Testing

Plan Maturity Measures - January 1, 2025

Each pension plan has a distinct life-cycle. New plans promise future benefits to active employees and then accumulate assets to pre-fund those benefits. As the plan matures, benefits are paid and the pre-funded assets begin to decumulate until ultimately, the plan pays out all benefits. A plan's maturity has a dramatic influence on how risks should be viewed. The following maturity measures illustrate where the Village of Oak Brook Police Pension Fund falls in its life-cycle.

Duration of Liabilities: 13.0

Duration is the most common measure of plan maturity. It is defined as the sensitivity of the liabilities to a change in the interest rate assumption. The metric also approximates the weighted average length of time, in years, until benefits are expected to be paid. A plan with high duration is, by definition, more sensitive to changes in interest rates. A plan with low duration is more susceptible to risk if asset performance deviates from expectations as there would be less time to make up for market losses in adverse market environments while more favorable environments could result in trapped surplus from gains. Conversely, high duration plans can often take on more risk when investing, and low duration plans are less sensitive to interest rate fluctuations.

Demographic Distribution - Ratio of Actively Accruing Participants to All Participants: 40.8%

A plan with a high ratio is more sensitive to fluctuations in salary (if a salary-based plan) and statutory changes. A plan with a low ratio is at higher risk from demographic experience. Such a plan should pay close attention to valuation assumptions as there will be less opportunity to realize future offsetting gains or losses when current experience deviates from assumptions. Plans with a low ratio also have limited opportunities to make alterations to plan design to affect future funded status.

Asset Leverage - Ratio of Payroll for Plan Participants to Market Value of Assets: 9.9%

Younger plans typically have a large payroll base from which to draw in order to fund the plan while mature plans often have a large pool of assets dedicated to providing benefits to a population primarily consisting of members no longer on payroll. Plans with low asset leverage will find it more difficult to address underfunding, as the contributions needed to make up the deficit will represent a higher percentage of payroll than for a plan with high asset leverage.

Benefit Payment Percentage - Ratio of Annual Benefit Payments to Market Value of Assets: 8.8%

As a plan enters its decumulation phase, a larger percentage of the pre-funded assets are paid out each year to retirees. A high percentage is not cause for alarm as long as the plan is nearly fully funded. However, such a plan is more sensitive to negative asset performance, especially if cash contributions are not an option to make up for losses.

Present Value of Future Benefits

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

January 1, 2025

Present Value of Future Benefits

Active Participants

Retirement	\$26,237,404
Disability	2,499,936
Death	297,902
Termination	1,757,351
Total Active	\$30,792,593

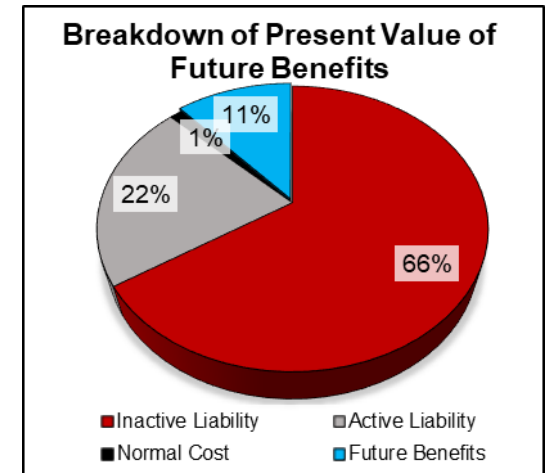
Inactive participants

Retired Participants	\$50,655,265
Beneficiaries	1,909,860
Disabled Participants	4,383,646
Terminated Vested Participants	2,277,540
Total Inactive	\$59,226,311

Total \$90,018,904

Present Value of Future Payrolls \$53,233,176

Present Value of Future Employee Contributions \$5,229,890



Accrued Liability

The Funding Liability measures the present value of benefits earned as of the valuation date, using the actuarial assumptions described in the assumption section of this report and the Entry Age Normal % Salary actuarial cost method.

January 1, 2025

Funding Liabilities

Active Participants

Retirement	\$17,980,973
Disability	830,867
Death	70,015
Termination	515,229
Total Active	\$19,397,084

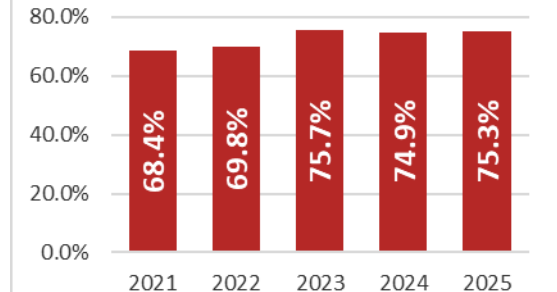
Inactive Participants

Retired Participants	\$50,655,265
Beneficiaries	1,909,860
Disabled Participants	4,383,646
Terminated Vested Participants	2,277,540
Total Inactive	\$59,226,311

Total \$78,623,395

Normal Cost \$1,098,837

History of the Percentage of Inactive Liability



Asset Information

The amount of assets backing the pension promise is typically the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

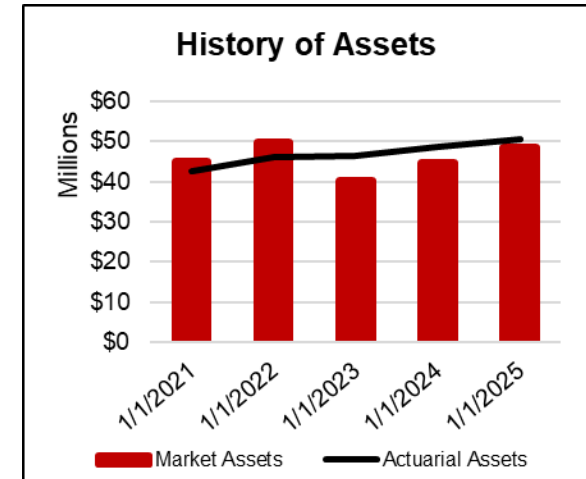
January 1, 2025

Market Value Reconciliation

Market Value of Assets, Beginning of Prior Year	\$44,689,405
Contributions	
Employer Contributions	\$3,063,084
Member Contributions	696,146
Total	\$3,759,230
Investment Income	4,036,571
Benefit Payments	(3,964,014)
Administrative Expenses	(46,285)
Market Value of Assets, Beginning of Current Year	\$48,474,907
Return on Market Value	9.1%

Actuarial value of assets

Value at Beginning of Current Year	\$50,471,160
------------------------------------	--------------



Asset Information (continued)

Plan Assets are used to develop funded percentages and contribution requirements.

	January 1, 2025
1. Expected Market Value of Assets	
(a) Market Value of Assets, Beginning of Prior Year	\$44,689,405
(b) Contributions	3,759,230
(c) Benefit Payments	(3,964,014)
(d) Administrative Expenses	(46,285)
(e) Expected Return	3,008,061
(f) Expected Market Value of Assets, Beginning of Current Year	<u>\$47,446,397</u>
2. Market Value of Assets, Beginning of Current Year	\$48,474,907
3. Actual Return on Market Value	\$4,036,571
4. Amount Subject to Phase-in [(3)-(1e)]	\$1,028,510
5. Phase-in of Asset Gain/(Loss)	
(a) Current Year [80% x \$1,028,510]	\$822,808
(b) First Prior Year [60% x \$2,183,904]	1,310,343
(c) Second Prior Year [40% x (\$11,661,919)]	(4,664,768)
(d) Third Prior Year [20% x \$2,676,822]	535,364
(e) Total Phase-in	<u>(\$1,996,253)</u>
6. Actuarial Value of Assets, Beginning of Current Year [(2)-(5e)]	\$50,471,160
7. Return on Actuarial Value of Assets	4.5%

Reconciliation of Gain/Loss

January 1, 2025

Liability (Gain)/Loss

Actuarial Liability, Beginning of Prior Year	\$75,469,095
Normal Cost	1,069,607
Benefit Payments	(3,964,014)
Expected Interest	<u>5,032,577</u>
Expected Actuarial Liability, Beginning of Current Year	\$77,607,265
Actual Actuarial Liability, Before Changes	\$78,623,395
Liability (Gain)/Loss	\$1,016,130

Asset (Gain)/Loss

Actuarial Value of Assets, Beginning of Prior Year	\$48,533,977
Contributions	3,759,230
Benefit Payments and Administrative Expenses	(4,010,299)
Expected Return	<u>3,267,570</u>
Expected Actuarial Value of Assets, Beginning of Current Year	\$51,550,478
Actual Actuarial Value of Assets, Beginning of Current Year	\$50,471,160
Asset (Gain)/Loss	\$1,079,318

Total (Gain)/Loss

\$2,095,448

Development of Actuarially Determined Contribution

The actuarially determined contribution is the annual amount needed to fund the plan to 100% by the end of the 2040 fiscal year as a level percentage of payroll, using the Entry Age Normal % Salary actuarial cost method. The actuarially determined contribution is subject to the State statutory minimum, which is the annual amount needed to fund the plan to 90% by the end of the 2040 fiscal year as a level percentage of payroll, using the Projected Unit Credit actuarial cost method.

In accordance with ASOP No. 4, we reviewed the plan's funding method (liability method, amortization method and period, asset smoothing method), contribution policy & allocation procedures, and the computation of the actuarially determined contribution. We believe each to be reasonable, both individually and in combination, as expected plan costs are expected to be fully funded over a reasonable timeframe.

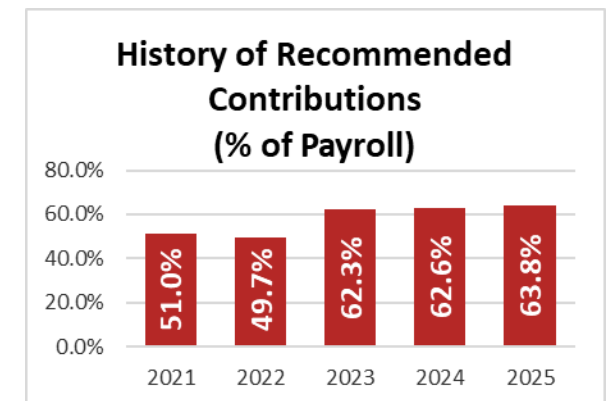
January 1, 2025

Funded Position

1. Entry Age Normal % Salary Accrued Liability	\$78,623,395
2. 100% of Entry Age Normal % Salary Accrued Liability	\$78,623,395
3. Actuarial Value of Assets	50,471,160
4. Unfunded Actuarial Accrued Liability (UAAL) (2 – 3)	\$28,152,235

Actuarially Determined Contribution

1. Normal Cost	\$1,098,837
2. Administrative Expenses	46,285
3. Amortization of UAAL	2,307,167
4. Applicable Interest	116,515
5. Total Actuarially Determined Contribution*	\$3,568,804
6. Expected Employee Contributions*	493,962
7. Net Actuarially Determined Village Contribution (5 – 6)	\$3,074,842
8. Minimum Contribution (Public Act 096-1495 Tax Levy Requirement)	\$2,399,202
9. Final Actuarially Determined Contribution [max (7,8)]	\$3,074,842
As a Percentage of Expected Payroll	63.8%



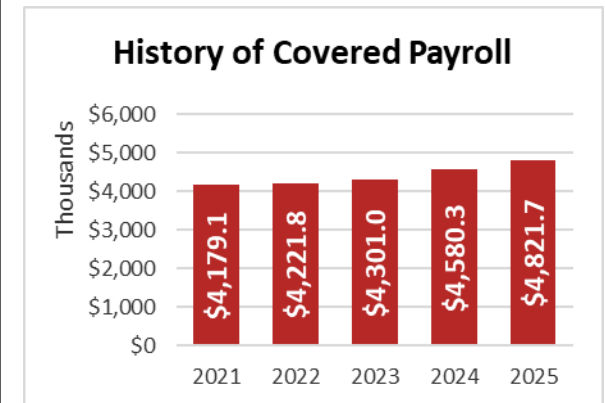
The Plan's Normal Cost plus interest on the Unfunded Actuarial Accrued Liability is \$2,479,512 .

A contribution greater than the Normal Cost plus interest on the Unfunded Actuarial Accrued Liability will reduce the Unfunded Actuarial Accrued Liability, if all other assumptions are met. A contribution less than the Normal Cost plus interest on the Unfunded Actuarial Accrued Liability will increase the Unfunded Actuarial Accrued Liability, if all other assumptions are met. Consider making a contribution greater than the Normal Cost plus interest on the Unfunded Actuarial Accrued Liability in order to pay down the Plan's shortfall more rapidly if that amount is greater than your funding policy contribution.

Demographic Information

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

	January 1, 2024	January 1, 2025
Participant Counts		
Active Participants	42	42
Retired Participants	38	40
Beneficiaries	5	5
Disabled Participants	5	5
Terminated Vested Participants	12	11
Total Participants	102	103
Active Participant Demographics		
Average Age	38.4	38.6
Average Service	10.4	10.5
Average Compensation	\$109,055	\$114,804
Covered Payroll	\$4,580,309	\$4,821,747



Demographic Information (continued)

	January 1, 2024	January 1, 2025
Retiree Statistics		
Average Age	67.7	68.1
Average Monthly Pension Benefit	\$7,217	\$7,446
Beneficiary Statistics		
Average Age	71.9	72.9
Average Monthly Pension Benefit	\$3,378	\$3,378
Disabled Participants Statistics		
Average Age	65.4	66.4
Average Monthly Pension Benefit	\$4,988	\$5,075
Terminated Participants Statistics		
Average Age	38.6	40.0
Average Monthly Pension Benefit*	\$4,507	\$4,455

* Average monthly pension benefit does not include participants eligible for a return of contributions only.

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	42	12	5	38	5	102
Active						
To Retired	(1)	0	0	1	0	0
To Disabled	0	0	0	0	0	0
To Terminated Vested	(1)	1	0	0	0	0
Terminated Nonvested (return of employee contributions)	0	0	0	0	0	0
Terminated Vested						
To Retired	0	(1)	0	1	0	0
Return of employee contributions	0	(1)	0	0	0	(1)
Disabled						
To Death	0	0	0	0	0	0
Retired						
To Death with Beneficiary	0	0	0	0	0	0
To Death without Beneficiary	0	0	0	0	0	0
Beneficiaries						
To Death	0	0	0	0	0	0
Expired Child Coverage	0	0	0	0	0	0
Additions	2	0	0	0	0	2
Departures	0	0	0	0	0	0
Current Year	42	11	5	40	5	103

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service										Total	Average Pay
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up		
Under 25		2									2	\$88,611
25 to 29		5	1								6	\$99,130
30 to 34	1	6	3	1							11	\$104,241
35 to 39		1	2	3							6	\$113,398
40 to 44		1	1	1		1					4	\$123,257
45 to 49			1		2	6					9	\$136,980
50 to 54						2	2				4	\$124,215
55 to 59											0	
60 to 64											0	
65 to 69											0	
70 & up											0	
Total	1	15	8	5	2	9	2	0	0	0	42	\$114,803

Eligibility for Participation

Police Officers of the Village of Oak Brook

Accrual of Benefits

For employees hired prior to January 1, 2011, the normal retirement benefit is equal to 50% of the final salary plus 2.5% of any service over 20 years (with a maximum of 30) times the final salary. There is a minimum benefit of \$1,000 per month. The benefit is paid as a 100% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participants as the survivor.

For employees hired after or on January 1, 2011, the normal retirement benefit is equal to 2.5% of the final average salary times benefit service (maximum 30 years.) The benefit is paid as a 66.67% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participants as the survivor.

Benefits

Normal Retirement

Eligibility	For employees hired prior to January 1, 2011, the normal retirement date is the first day of the month on or after completion of 20 years of service and attainment of age 50. For employees hired after or on January 1, 2011, the normal retirement date is the first day of the month on or after completion of 10 years of service and attainment of age 55.
Benefit	Unreduced Accrued Benefit payable immediately.

Early Retirement

Eligibility	For employees hired prior to January 1, 2011 and terminating with less than 20 years of service For employees hired after or on January 1, 2011 who has attained age 50 and has 10 years of service.
Benefit	For those hired prior to January 1, 2011 the Accrued Benefit of 2.5% of final salary times service shall be paid at age 60. For those hired after or on January 1, 2011 the Accrued Benefit is reduced by 0.5% for each month prior to age 55.

Termination

Eligibility	For employees hired prior to January 1, 2011, age 60 with 8 years of service. For employees hired after or on January 1, 2011, age 55 with 10 years of service.
Benefit	Accrued benefit. Refund of contributions for employees that do not meet the eligibility criteria above.

Disability In The Line of Duty

Eligibility	For participants who become disabled in the line of duty.
Benefit	The greater of 65% of the final salary or the accrued benefit

Disability Not In The Line of Duty

Eligibility	For participants who become disabled outside of the line of duty.
Benefit	50% of the final salary

Death In the Line of Duty

Eligibility	For participants who die in the line of duty.
Benefit	The benefit is 100% of final salary paid to the survivor.

Death Not In the Line of Duty

Eligibility	For participants who die outside of the line of duty.
Benefit	For those hired before 1/1/2011 with greater than 20 years of service, a benefit of 100% of the accrued benefit is paid to the survivor. For those with more than 10 years of service, but less than 20 years of service, a benefit of 50% of the final salary is paid to the survivor. For those hired after 1/1/2011, a benefit equal to the greater of 54% of Final Salary and 66-2/3% of the accrued benefit is paid to the survivor.

Compensation

Final Salary is the salary attached to the rank held on the last day of service, or one year prior to the last day, whichever is greater.

Final Average Salary is the average monthly salary obtained by dividing the total salary of the police officer during the 48 consecutive months of service within the last 60 months of service in which the total salary was the highest by the number of months of service in that period. Salary will not exceed \$106,800 adjusted from January 1, 2011 with the lesser of 3% and 50% (100% effective January 1, 2020) of the CPI on November 1.

Credited Service

For Vesting and Benefit Accrual purposes, pension service credit is based on elapsed time from hire.

Employee Contributions

9.91% of Compensation

COLA

Eligibility All Employees

Benefit For employees hired prior to January 1, 2011 a compound COLA of 3% is granted each year after attainment of age 55 and 1 year of payments.

For employees hired after or on January 1, 2011 a simple COLA of the lesser of 3% and 50% of the CPI on November 1 is granted each year after attainment of age 60 and 1 year of payments.

For disabled employees, a simple COLA is available after attainment of age 60 and 1 year of payments. For employees hired prior to January 1, 2011 the COLA is 3%. For employees hired after January 1, 2011, the COLA is the lesser of 3% and 50% of the CPI on November 1.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law and applicable regulations.

Valuation Date	January 1, 2025																				
Participant and Asset Information Collected as of	January 1, 2025																				
Actuarial Cost Method (CO)	Entry Age Normal % Salary Cost Method																				
Amortization Method – Actuarially Determined Contribution (CO)	Closed level percentage of payroll amortization of 100% of the Unfunded Actuarial Accrued Liability using a 2.75% payroll growth assumption over the period ending on December 31, 2040 (16-year amortization in 2025)																				
Asset Method	5-year smoothing of asset gains and losses																				
Interest Rates (CO)	6.75%, net of investment expenses																				
Inflation (FE)	2.50%																				
Annual Pay Increases (FE)	Recommended rates from the 2022 Consolidated Investment Fund Experience Study. Sample increases include: <table><tr><td>Service</td><td>Rate</td><td>Service</td><td>Rate</td></tr><tr><td>0</td><td>11.00%</td><td>20</td><td>3.75%</td></tr><tr><td>5</td><td>6.00%</td><td>25</td><td>3.75%</td></tr><tr><td>10</td><td>4.00%</td><td>30</td><td>3.50%</td></tr><tr><td>15</td><td>3.75%</td><td>35</td><td>3.50%</td></tr></table>	Service	Rate	Service	Rate	0	11.00%	20	3.75%	5	6.00%	25	3.75%	10	4.00%	30	3.50%	15	3.75%	35	3.50%
Service	Rate	Service	Rate																		
0	11.00%	20	3.75%																		
5	6.00%	25	3.75%																		
10	4.00%	30	3.50%																		
15	3.75%	35	3.50%																		
Ad-hoc Cost-of-living Increases	3.0% (1.25% for those hired after 1/1/2011)																				
Mortality Rates (FE)																					
Healthy (pre-commencement)	Pub-2010 Public Safety Employee Mortality Table without adjustment, with generational improvement scale MP-2021 applied from 2010																				
Healthy (post-commencement)	Pub-2010 Public Safety Employee Mortality Table with 1.15 adjustment for males, with generational improvement scale MP-2021 applied from 2010 The Pub-2010 Public Safety Survivor Mortality Table with 1.15 adjustment for females, with generational improvement scale MP-2021 applied from 2010 is used for survivors																				
Disabled	Pub-2010 Disabled Retiree Mortality Table with 1.08 adjustment for males, with generational improvement scale MP-2021 applied from 2010 10% of deaths are assumed to be in the line of duty																				

Retirement Rates (FE)

Recommended rates from the 2022 Consolidated Investment Fund Experience study:

Tier I		Tier II	
Age	Rate	Age	Rate
50-54	20%	50-54	5%
55-62	25%	55	40%
63	33%	56-62	25%
64	40%	63	33%
65-69	55%	64	40%
70+	100%	65-69	55%
		70+	100%

Disability Rates (FE)

Recommended rates from the 2022 Consolidated Investment Fund Experience study. Sample rates include:

Age	Rate
20	0.000%
30	0.133%
40	0.399%
50	0.675%

60% of disabilities are assumed to be in the line of duty

Termination Rates (FE)

Recommended rates from the 2022 Consolidated Investment Fund Experience study. Sample rates include:

Service	Rate
0	13.00%
5	4.50%
10	2.25%
14+	1.25%

Marital Status and Ages (FE)

80% of participants are assumed to be married with female spouses 3 years younger.

Expense Load

Equal to the administrative expenses paid in the prior year.

Funding Policy

Statutory minimum contribution, with additional funding at the discretion of the Village.

FE indicates an assumption representing an estimate of future experience

MD indicates an assumption representing observations of estimates inherent in market data

CO indicates an assumption representing a combination of an estimate of future experience and observations of market data

The actuarial report also shows the necessary items required for plan reporting and any state requirements.

- ✓ Minimum contribution (Public Act 096-1495 Tax Levy Requirement)
- ✓ Low-Default-Risk Obligation Measure (LDROM)

Minimum Contribution (Public Act 096-1495 Tax Levy Requirement)

	January 1, 2025
1. Accrued liability using projected unit credit cost method	\$77,719,466
2. 90% of Accrued liability	\$69,947,519
3. Actuarial value of assets	<u>50,471,160</u>
4. Unfunded liability to be amortized [(2)-(3)]	\$19,476,359
5. Total normal cost using projected unit credit cost method	\$1,156,272
6. Administrative expenses	46,285
7. 16-year level pay amortization of (4)	1,596,151
8. Applicable interest	<u>94,456</u>
9. Minimum contribution (5 + 6 + 7 + 8)	\$2,893,164
10. Expected employee contributions	<u>493,962</u>
11. Net employer minimum contribution (9 – 10)	\$2,399,202

Actuarial Cost Method

Projected Unit Credit

Amortization Method

Closed level percentage of payroll amortization of 90% of Unfunded Actuarial Accrued Liability using a 2.75% payroll growth assumption over the period ending on December 31, 2040 (16-year amortization in 2025)

Asset Method

5-year smoothing of asset gains and losses

Interest Rate

6.75%, net of investment expenses

The statutory minimum contribution outlined in Illinois statutes targets reaching 90% funded on a Projected Unit Credit basis by 2040. By design this results in the unfunded actuarial accrued liability not being fully funded by the end of the amortization period. This was put in place as temporary budget relief and should not be viewed as a viable long term contribution strategy. We recommend the fund follow the more robust actuarially determined contribution method, targeting 100% funded by 2040.

Low-Default-Risk Obligation Measure (LDROM)

For reports issued after February 15, 2023 the Plan's actuary is generally required to disclose liabilities under an alternative low-default-risk based discount rate. This LDROM liability measure represents the estimated asset value as of the measurement date the Plan would need in order to purchase a low-default-risk fixed income securities portfolio with durations that are reasonably consistent with the timing of benefits expected to be paid from the plan.

	January 1, 2025
LDROM liability	\$ (90,443,601)
Market value of assets	\$ <u>48,474,907</u>
LDROM funded status	\$ (41,968,694)

The LDROM liability measure is for informational purposes only. The plan sponsor has no requirements to contribute to the Plan to meet this threshold, and the funded status on this basis is not reported to any government agency or used for any restrictions.

If Plan assets are invested to earn in excess of a fixed income portfolio, a shortfall on this basis may not necessarily mean the security of participant benefits is at risk. If the plan is fully funded, or nearly fully funded, on the LDROM measure, the plan sponsor may want to consider reducing investment risk in order to offer greater benefit security and lower contribution volatility. We did not perform an analysis of assumption or provision changes resulting from a potential shift in investment policy due to the limited scope of our engagement.

The above LDROM liability measure applies a single effective discount rate of 5.65% which would produce approximately the same discounted cashflows as the FTSE Above Median AA Curve as of December 31, 2024. All other data, assumptions, methods and provisions are the same as those detailed in this report.



Village of Oak Brook Police Pension Fund

December 31, 2024
GASB Nos. 67 & 68 Report

Actuarial Certification	3
Summary	5
Statement of Fiduciary Net Position	6
Statement of Changes in Fiduciary Net Position	7
Schedule of Changes in Net Pension Liability and Related Ratios	8
Pension Expense	10
Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions	11
Rate of Return	13
Discount Rate and Net Pension Liability Sensitivity	14
Schedule of Contributions	15
Actuarial Assumptions for Total Pension Liability	16
Actuarial Assumptions for Actuarially Determined Contributions	17
Plan Provisions	19

This report is prepared in accordance with our understanding of GASB Nos. 67 & 68 for the purpose of disclosing pension plans in financial statements. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report.

The information presented in this report is based on:

- the actuarial assumptions included in this report;
- the plan provisions;
- participant information furnished to us by the Plan Administrator;
- asset information furnished to us by the Plan Trustee.

We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we may have made assumptions we believe are reasonable for the purpose of the measurement. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report.

The interest rate, other economic assumptions, and demographic assumptions have been selected by the plan sponsor with our recommendations. The assumptions used, in our opinion, are reasonable and represent a reasonable expectation of future experience under the plan. All calculations have been made in accordance with generally accepted actuarial principles and practice.

A summary of any assumptions not included in this report, the plan provisions and the participant information is included in the Actuarial Valuation Report for funding purposes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement.

In preparing the results, Nyhart used Proval valuation software developed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing pension valuations. We coded the plan provisions, assumptions, methods, and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any material weaknesses or limitations in the software, and have determined it is appropriate for performing this valuation.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.

To our knowledge there have been no significant events prior to the current year's measurement date or as of the date of this report which could materially affect the results contained herein.

Neither Nyhart nor any of its employees have any relationships with the plan or plan sponsor which could impair or appear to impair the objectivity of this report.

Nyhart



Matthew Branding, FSA, EA, CERA



John Toweson, ASA, EA

05/9/2025

Net Pension Liability

The components of the net pension liability at December 31

	<u>12/31/2024</u>	<u>12/31/2023</u>
Total pension liability	\$ 78,623,395	\$ 75,469,095
Plan fiduciary net position	(48,474,907)	(44,689,405)
Net pension liability	\$ 30,148,488	\$ 30,779,690
Plan fiduciary net position as a percent of the total pension liability	61.65%	59.22%
Pension Expense for the Fiscal Year Ended December 31	\$ 4,413,746	\$ 3,896,559

Actuarial Assumptions

The total pension liability was determined using the following actuarial assumptions

Inflation	2.50%	2.50%
Salary increases, including inflation	Graded	Graded
Investment rate of return, including inflation, and net of investment expense	6.75%	6.75%

Plan Membership

The total pension liability was determined based on the plan membership as of December 31

	<u>2024</u>	<u>2023</u>
Inactive plan members and beneficiaries currently receiving benefits	50	48
Inactive plan members entitled to but not yet receiving benefits	11	12
Active plan members	42	42
Total members	103	102

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Statement of Fiduciary Net Position

Assets	12/31/2024	12/31/2023
Cash and deposits	\$ 243,394	\$ 3,019,825
Securities lending cash collateral	0	0
Total cash	\$ 243,394	\$ 3,019,825
Receivables:		
Contributions	\$ 0	\$ 0
Due from broker for investments sold	0	0
Investment income	0	0
Other	61,351 *	3,295
Total receivables	\$ 61,351	\$ 3,295
Investments:		
Money Market Mutual Funds	\$ 0	\$ 0
Fixed Income	0	0
Stock Equities	0	0
Mutual Funds	0	0
Illinois Police Pension Investment Fund	48,171,002	41,675,815
Total investments	\$ 48,171,002	\$ 41,675,815
Total assets	\$ 48,475,747	\$ 44,698,935
Liabilities		
Payables:		
Investment management fees	\$ 0	\$ 0
Due to broker for investments purchased	0	0
Collateral payable for securities lending	0	0
Other	840	9,530
Total liabilities	\$ 840	\$ 9,530
Net position restricted for pensions	\$ 48,474,907	\$ 44,689,405

*includes \$58,001 that is due from the Village for employer contributions that were recorded in accrued payroll on the Village trial balance.

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Statement of Changes in Fiduciary Net Position

	<u>12/31/2024</u>	<u>12/31/2023</u>
Additions		
Contributions:		
Employer	\$ 3,063,084	\$ 2,847,989
Member	696,146	545,052
Nonemployer contributing entity	0	0
Total contributions	\$ 3,759,230	\$ 3,393,041
Investment income:		
Net increase in fair value of investments	\$ 3,786,001	\$ 4,643,812
Interest and dividends	276,785	295,331
Less investment expense, other than from securities lending	(26,215)	(54,165)
Net income other than from securities lending	\$ 4,036,571	\$ 4,884,978
Securities lending income	0	0
Less securities lending expense	0	0
Net income from securities lending	\$ 0	\$ 0
Net investment income	\$ 4,036,571	\$ 4,884,978
Other	0	0
Total additions	\$ 7,795,801	\$ 8,278,019
Deductions		
Benefit payments, including refunds of member contributions	\$ 3,964,014	\$ 3,771,802
Administrative expense	46,285	44,204
Other	0	0
Total deductions	\$ 4,010,299	\$ 3,816,006
Net increase in net position	\$ 3,785,502	\$ 4,462,013
Net position restricted for pensions		
Beginning of year	44,689,405	40,227,392
End of year	\$ 48,474,907	\$ 44,689,405

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Schedule of Changes in Net Pension Liability and Related Ratios

	12/31/2024	12/31/2023	12/31/2022	12/31/2021	12/31/2020
Total pension liability					
Service cost	\$ 1,069,607	\$ 1,010,891	\$ 931,194	\$ 925,403	\$ 869,540
Interest	5,032,577	4,833,744	4,404,897	4,277,324	4,215,181
Changes of benefit terms	0	0	0	0	0
Differences between expected and actual experience	1,016,130	910,234	2,598,147	220,178	(698,928)
Changes of assumptions	0	0	2,062,373	(35,250)	(324,515)
Benefit payments, including refunds of member contributions	(3,964,014)	(3,771,802)	(3,674,259)	(3,332,676)	(3,060,323)
Net change in total pension liability	3,154,300	2,983,067	6,322,352	2,054,979	1,000,955
Total pension liability - beginning	75,469,095	72,486,028	66,163,676	64,108,697	63,107,742
Total pension liability - ending (a)	\$ 78,623,395	\$ 75,469,095	\$ 72,486,028	\$ 66,163,676	\$ 64,108,697
Plan fiduciary net position					
Contributions - employer	\$ 3,063,084	\$ 2,847,989	\$ 2,052,526	\$ 2,133,229	\$ 1,803,644
Contributions - member	696,146	545,052	396,203	572,232	521,151
Contributions - nonemployer contributing member	0	0	0	0	0
Net investment income	4,036,571	4,884,978	(8,340,710)	5,680,397	4,427,403
Benefit payments, including refunds of member contributions	(3,964,014)	(3,771,802)	(3,674,259)	(3,332,676)	(3,060,323)
Administrative expenses	(46,285)	(44,204)	(44,446)	(52,226)	(38,098)
Other	0	0	0	0	0
Net change in plan fiduciary net position	\$ 3,785,502	\$ 4,462,013	\$ (9,610,686)	\$ 5,000,956	\$ 3,653,777
Plan fiduciary net position - beginning	44,689,405	40,227,392	49,838,078	44,837,122	41,183,345
Plan fiduciary net position - ending (b)	\$ 48,474,907	\$ 44,689,405	\$ 40,227,392	\$ 49,838,078	\$ 44,837,122
Net pension liability - ending (a) - (b)	\$ 30,148,488	\$ 30,779,690	\$ 32,258,636	\$ 16,325,598	\$ 19,271,575
Plan fiduciary net position as a percentage of the total pension liability	61.65%	59.22%	55.50%	75.33%	69.94%
Covered-employee payroll	\$ 4,821,747	\$ 4,580,309	\$ 4,300,995	\$ 4,221,825	\$ 4,179,054
Net pension liability as percentage of covered-employee payroll	625.26%	672.00%	750.03%	386.70%	461.15%

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Schedule of Changes in Net Pension Liability and Related Ratios

	12/31/2019	12/31/2018	12/31/2017	12/31/2016	12/31/2015
Total pension liability					
Service cost	\$ 852,541	\$ 890,871	\$ 833,296	\$ 800,389	\$ 816,276
Interest	4,041,408	3,902,722	3,650,633	3,563,145	3,338,238
Changes of benefit terms	63,841	0	0	0	0
Differences between expected and actual experience	778,897	199,802	(347,589)	(856,825)	(48,037)
Changes of assumptions	(196,672)	(182,060)	1,964,218	96,439	1,597,133
Benefit payments, including refunds of member contributions	(2,904,890)	(2,531,903)	(2,315,047)	(2,364,839)	(2,346,686)
Net change in total pension liability	2,635,125	2,279,432	3,785,511	1,238,309	3,356,924
Total pension liability - beginning	60,472,616	58,193,184	54,407,673	53,169,364	49,812,440
Total pension liability - ending (a)	\$ 63,107,741	\$ 60,472,616	\$ 58,193,184	\$ 54,407,673	\$ 53,169,364
Plan fiduciary net position					
Contributions - employer	\$ 2,057,112	\$ 1,946,714	\$ 1,748,025	\$ 1,527,927	\$ 1,336,683
Contributions - member	378,699	410,316	386,727	383,238	358,499
Contributions - nonemployer contributing member	0	0	0	0	0
Net investment income	6,529,172	(2,385,632)	4,461,837	2,176,018	(429,965)
Benefit payments, including refunds of member contributions	(2,904,890)	(2,531,903)	(2,315,047)	(2,364,839)	(2,346,686)
Administrative expenses	(41,392)	(54,667)	(35,776)	(39,522)	(38,647)
Other	0	0	0	0	0
Net change in plan fiduciary net position	\$ 6,018,701	\$ (2,615,172)	\$ 4,245,766	\$ 1,682,822	\$ (1,120,116)
Plan fiduciary net position - beginning	35,164,644	37,779,816	33,534,050	31,851,228	32,971,344
Plan fiduciary net position - ending (b)	\$ 41,183,345	\$ 35,164,644	\$ 37,779,816	\$ 33,534,050	\$ 31,851,228
Net pension liability - ending (a) - (b)	\$ 21,924,396	\$ 25,307,972	\$ 20,413,368	\$ 20,873,623	\$ 21,318,136
Plan fiduciary net position as a percentage of the total pension liability	65.26%	58.15%	64.92%	61.63%	59.91%
Covered-employee payroll	\$ 3,932,044	\$ 3,849,863	\$ 3,892,216	\$ 3,829,224	\$ 3,735,548
Net pension liability as percentage of covered-employee payroll	557.58%	657.37%	524.47%	545.11%	570.68%

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Pension Expense

Fiscal year ending	<u>12/31/2024</u>	<u>12/31/2023</u>
Service cost	\$ 1,069,607	\$ 1,010,891
Interest on total pension liability	5,032,577	4,833,744
Projected earnings on pension plan investments	(3,008,061)	(2,701,074)
Changes of benefit terms	0	0
Employee contributions	(696,146)	(545,052)
Pension plan administrative expense	46,285	44,204
Other changes	0	0
Current period recognition of deferred outflows/(inflows) of resources		
Differences between Expected & Actual Experience in measurement of the Total Pension Liability	\$ 809,154	\$ 761,707
Changes of assumptions	340,522	301,186
Differences between Projected & Actual Earnings on Pension Plan Investments	819,808	190,953
Total	<u>\$ 4,413,746</u>	<u>\$ 3,896,559</u>

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

Differences between expected and actual experience in measurement of the total pension liability for fiscal year ending:	Initial Balance	Initial Amortization Period	Annual Recognition	12/31/2024 Balance
December 31, 2024	\$ 1,016,130	5.0	\$ 203,226	\$ 812,904
December 31, 2023	\$ 910,234	5.0	\$ 182,047	\$ 546,140
December 31, 2022	\$ 2,598,147	5.0	\$ 519,629	\$ 1,039,260
December 31, 2021	\$ 220,178	5.0	\$ 44,036	\$ 44,034
December 31, 2020	\$ (698,928)	5.0	\$ (139,784)	\$ 0
			<u>\$ 809,154</u>	<u>\$ 2,442,338</u>

Changes in assumptions for fiscal year ending:	Initial Balance	Initial Amortization Period	Annual Recognition	12/31/2024 Balance
December 31, 2024	\$ 0	5.0	\$ 0	\$ 0
December 31, 2022	\$ 2,062,373	5.0	\$ 412,475	\$ 824,948
December 31, 2021	\$ (35,250)	5.0	\$ (7,050)	\$ (7,050)
December 31, 2020	\$ (324,515)	5.0	\$ (64,903)	\$ 0
			<u>\$ 340,522</u>	<u>\$ 817,898</u>

Differences between projected and actual earnings on pension plan investments for fiscal year ending:	Initial Balance	Initial Amortization Period	Annual Recognition	12/31/2024 Balance
December 31, 2024	\$ (1,028,510)	5.0	\$ (205,702)	\$ (822,808)
December 31, 2023	\$ (2,183,904)	5.0	\$ (436,781)	\$ (1,310,342)
December 31, 2022	\$ 11,661,919	5.0	\$ 2,332,384	\$ 4,664,767
December 31, 2021	\$ (2,676,822)	5.0	\$ (535,364)	\$ (535,366)
December 31, 2020	\$ (1,673,637)	5.0	\$ (334,729)	\$ 0
			<u>\$ 819,808</u>	<u>\$ 1,996,251</u>

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 2,442,338	\$ 0
Changes of Assumptions	\$ 824,948	\$ (7,050)
Net difference between projected and actual earnings on pension plan investments	\$ 4,664,767	\$ (2,668,516)
	<u>\$ 7,932,053</u>	<u>\$ (2,675,566)</u>

The balances as of December 31, 2024 of the deferred outflows/(inflows) of resources will be recognized in pension expense for the fiscal year ending December 31.

12/31/2025	\$ 2,508,896
12/31/2026	\$ 3,007,277
12/31/2027	\$(257,210)
12/31/2028	\$(2,476)
12/31/2029	\$ 0
Thereafter	\$ 0

The long-term expected rate of return on pension plan investments was determined using a building -block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These expected future real rates of return are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2024 are summarized in the following table:

Asset class	Target allocation	Long-term expected real rate of return
Money Market Mutual Funds	0.0%	0.00%
Fixed Income	0.0%	0.00%
Stock Equities	0.0%	0.00%
Mutual Funds	0.0%	0.00%
Illinois Police Pension Investment Fund	100.0%	4.20%
Cash	0.0%	0.00%
Total	100.0%	

Long-term expected rate of return is 6.75%.

Money-weighted rate of return is 9.06%.

Discount rate

The discount rate used to measure the total pension liability was 6.75%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Professional judgment on future contributions has been applied in those cases where contribution patterns deviate from the actuarially determined rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the net pension liability to changes in the discount rate

The following presents the net pension liability, calculated using the discount rate of 6.75 %, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (5.75%) or 1-percentage-point higher (7.75%) than the current rate:

	1% Decrease (5.75%)	Current Discount Rate (6.75%)	1% Increase (7.75%)
Net pension liability	\$ 40,777,943	\$ 30,148,488	\$ 21,463,023

Village of Oak Brook Police Pension Fund
GASB Nos. 67 & 68 Report as of Fiscal Year Ending December 31, 2024
Schedule of Contributions

	<u>2024</u>	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Actuarially determined contribution	\$ 2,866,912	\$ 2,679,240	\$ 2,097,159	\$ 2,133,229	\$ 2,169,845
Contributions in relation to the actuarially determined contribution	3,063,084	2,847,989	2,052,526	2,133,229	1,803,644
Contribution deficiency (excess)	\$ (196,172)	\$ (168,749)	\$ 44,633	\$ 0	\$ 366,201
Covered-employee payroll	\$ 4,580,309	\$ 4,300,995	\$ 4,221,825	\$ 4,179,054	\$ 3,932,044
Contributions as a percentage of covered-employee payroll	66.88%	66.22%	48.62%	51.05%	45.87%
	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
Actuarially determined contribution	\$ 2,057,112	\$ 1,946,714	\$ 1,748,025	\$ 1,708,330	\$ 1,550,233
Contributions in relation to the actuarially determined contribution	2,057,112	1,946,714	1,748,025	1,527,927	1,336,683
Contribution deficiency (excess)	\$ 0	\$ 0	\$ 0	\$ 180,403	\$ 213,550
Covered-employee payroll	\$ 3,849,863	\$ 3,892,216	\$ 3,829,224	\$ 3,735,548	\$ 3,631,184
Contributions as a percentage of covered-employee payroll	53.43%	50.02%	45.65%	40.90%	36.81%

The total pension liability as of December 31, 2024 was determined using the following actuarial assumptions:

Actuarial Cost Method	Entry Age Method
Asset Method	Market Value of Assets
Interest Rates	
Discount Rate	6.75%
Expected Long Term Rate of Return	6.75%
Municipal Bond Rate	N/A
Crossover	N/A
Inflation	2.50%
Annual Pay Increases	3.50% to 11.00%, varying by service
Measurement Date	December 31, 2024
Ad-hoc Cost-of-Living Increases	3.0% (1.25% for those hired on or after January 1, 2011)
Mortality Rates	
Healthy (pre-commencement)	Pub-2010 Public Safety Employee Mortality Table without adjustment, with generational improvement scale MP-2021 applied from 2010
Healthy (post-commencement)	Pub-2010 Public Safety Employee Mortality Tab with 1.15 adjustment for males, with generational improvement scale MP-2021 applied from 2010
	For survivors, Pub-2010 Public Safety Survivor Mortality Table with 1.15 adjustment for females, with generational improvement scale MP-2021 applied from 2010
Disabled	Pub-2010 Disabled Retiree Mortality Table with 1.08 adjustment for males, with generational improvement scale MP-2021 applied from 2010
All other assumptions	As described in the assumptions section of the actuarial determined contribution
Experience Study	All other assumptions are described in the Illinois Police Officers' Pension Investment Fund Actuarial Experience Study dated March 4, 2022 reflecting experience for the years 2017-2020.

Actuarial Cost Method

Entry Age Method

Amortization Method

Closed level percentage of payroll amortization of 100% of the Unfunded Actuarial Accrued Liability using a 2.75% payroll growth assumption over the period ending on December 31, 2040 (17-year amortization in 2024)

Asset Method

5 year smoothing of asset gains and losses

Interest Rates

6.75%, net of investment and administrative expenses

Inflation

2.50%

Annual Pay Increases

3.50% to 11.00%, varying by service

Ad-hoc Cost-of-living Increases

3.0% (1.25% for those hired after 1/1/2011)

Mortality Rates

Healthy (pre-commencement)

Pub-2010 Public Safety Employee Mortality Table without adjustment, with generational improvement scale MP-2021 applied from 2010

Healthy (post-commencement)

Pub-2010 Public Safety Employee Mortality Tab with 1.15 adjustment for males, with generational improvement scale MP-2021 applied from 2010

For survivors, Pub-2010 Public Safety Survivor Mortality Table with 1.15 adjustment for females, with generational improvement scale MP-2021 applied from 2010

Disabled

Pub-2010 Disabled Retiree Mortality Table with 1.08 adjustment for males, with generational improvement scale MP-2021 applied from 2010

Retirement Rates

Recommended rates from the 2022 Consolidated Investment Fund Experience study:

Tier I		Tier II	
Age	Rate	Age	Rate
50-54	20%	50-54	5%
55-62	25%	55	40%
63	33%	56-62	25%
64	40%	63	33%
65-69	55%	64	40%
70+	100%	65-69	55%
		70+	100%

Disability Rates

Recommended rates from the 2022 Consolidated Investment Fund experience study.
Sample rates include:

Age	Rate
20	0.00%
30	0.133%
40	0.399%
50	0.675%

60% of disabilities are assumed to be in the line of duty

Termination Rates

Recommended rates from the 2022 Consolidated Investment Fund experience study.
Sample rates include:

Service	Rate
0	13.00%
5	4.50%
10	2.25%
14+	1.25%

Marital Status and Ages

80% of participants are assumed to be married with female spouses 3 years younger.

Expense Load

Equal to the administrative expenses paid in the prior year.

Funding Policy

Statutory minimum contribution, with additional funding at the discretion of the village.

Eligibility for Participation

Police Officers of the Village of Oak Brook

Accrual of Benefits

For employees hired prior to January 1, 2011, the normal retirement benefit is equal to 50% of the final salary plus 2.5% of any service over 20 years (with a maximum of 30) times the final salary. There is a minimum benefit of \$1,000 per month. The benefit is paid as a 100% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participant as the survivor.

For employees hired on or after January 1, 2011, the normal retirement benefit is equal to 2.5% of the final average salary times benefit service (maximum 30 years). The benefit is paid as a 66.67% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participant as the survivor.

Benefits

Normal Retirement

Eligibility	For employees hired prior to January 1, 2011, the normal retirement date is the first day of the month on or after completion of 20 years of service and attainment of age 50. For employees hired on or after January 1, 2011, the normal retirement date is the first day of the month on or after completion of 10 years of service and attainment of age 55.
Benefit	Unreduced Accrued Benefit payable immediately.

Early Retirement

Eligibility	For employees hired prior to January 1, 2011 and terminating with less than 20 years of service For employees hired on or after January 1, 2011 who has attained age 50 and has 10 years of service.
Benefit	For those hired prior to January 1, 2011 the Accrued Benefit of 2.5% of final salary times service shall be paid at age 60. For those hired on or after January 1, 2011 the Accrued Benefit is reduced by 0.5% for each month prior to age 55.

Termination

Eligibility	For employees hired prior to January 1, 2011, age 60 with 8 years of service. For employees hired after or on January 1, 2011, age 55 with 10 years of service.
Benefit	Accrued benefit. Refund of contributions for employees that do not meet the eligibility criteria above.

Disability In The Line of Duty

Eligibility	For participants who become disabled in the line of duty.
Benefit	The greater of 65% of the final salary or accrued benefit

Disability Not In The Line of Duty

Eligibility	For participants who become disabled outside of the line of duty.
Benefit	50% of the final salary

Death In the Line of Duty

Eligibility	For participants who die in the line of duty.
Benefit	The benefit is 100% of final salary paid to the survivor.

Death Not In the Line of Duty

Eligibility	For participants who die outside of the line of duty.
Benefit	For those hired before January 1, 2011 and greater than 20 years of service, a benefit of 100% of the accrued benefit is paid to the survivor. For those with more than 10 years of service, but less than 20 years of service, a benefit of 50% of the final salary is provided to the survivor. For those hired on or after January 1, 2011, a benefit equal to the greater of 54% of final salary and of 66-2/3% of the accrued benefit is paid to the survivor.

Compensation

Final Salary is the salary attached to the rank held on the last day of service, or one year prior to the last day, whichever is greater.

Final Average Salary is the average monthly salary obtained by dividing the total salary of the police officer during the 48 consecutive months of service within the last 60 months of service in which the total salary was the highest by the number of months of service in that period. Salary will not exceed \$106,800 adjusted from January 1, 2011 with the lesser of 3% and 100% of the CPI on November 1.

Credited Service

For Vesting and Benefit Accrual purposes, pension service credit is based on elapsed time from date of hire.

Employee Contributions

9.91% of Compensation

COLA

Eligibility	All Employees
Benefit	For employees hired prior to January 1, 2011, a compound COLA of 3% is granted each year after attainment of age 55 and 1 year of payments. For employees hired after or on January 1, 2011, a simple COLA of the lesser of 3% and 50% of the CPI on November 1 is granted each year after attainment of age 60 and 1 year of payments. For disabled employees, a simple COLA is available after attainment of age 60 and 1 year of payments. For employees hired prior to January 1, 2011, the COLA is 3%. For employees hired after January 1, 2011, the COLA is the lesser of 3% and 50% of the CPI on November 1.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.



GASB 75 INTERIM ACTUARIAL VALUATION

Fiscal Year Ending December 31, 2024

VILLAGE OF OAK BROOK

CONTACT

Andrew Smith, ASA, MAAA
andrew.smith@nyhart.com

PHONE

General (317) 845-3500

Table of Contents

	Page
Certification	1
Executive Summary	3
GASB Disclosures	
Schedule of Changes in Net OPEB Liability and Related Ratios	4
OPEB Expense	6
Deferred Outflows / (Inflows) of Resources	7
Sensitivity Results	10
Projection of GASB Disclosures	11
Discussion of Discount Rates	12
Summary of Key Actuarial Assumptions	13
Actuary's Notes	15

January 8, 2025

**Marilyn Fumero
Village of Oak Brook
1200 Oak Brook Road
Oak Brook, IL 60523**

This report summarizes the interim GASB actuarial valuation for the Village of Oak Brook 2024 fiscal year . To the best of our knowledge, the report presents a fair position of the funded status of the plan in accordance with GASB Statement No . 75 (Accounting and Financial Reporting by Employers for Post-Employment Benefits Other Than Pensions). This report may not be appropriate for other purposes . Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above . Failure to do so may result in misrepresentation or misinterpretation of this report.

The information presented herein is based on the actuarial assumptions and substantive plan provisions summarized in this report and participant information furnished to us by the Plan Sponsor . We have reviewed the employee census provided by the Plan Sponsor for reasonableness when compared to the prior information provided but have not audited the information at the source, and therefore do not accept responsibility for the accuracy or the completeness of the data on which the information is based . When relevant data may be missing, we may have made assumptions we feel are neutral or conservative to the purpose of the measurement . We are not aware of any significant issues with and have relied on the data provided .

The discount rate, other economic assumptions, and demographic assumptions have been selected by the Plan Sponsor with the concurrence of Nyhart . In our opinion, the actuarial assumptions are individually reasonable and in combination represent our estimate of anticipated experience of the Plan . All calculations have been made in accordance with generally accepted actuarial principles and practice .

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following :

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement .

To our knowledge, there have been no significant events prior to the current year's measurement date or as of the date of this report that could materially affect the results contained herein.

Neither Nyhart nor any of its employees has any relationship with the plan or its sponsor that could impair or appear to impair the objectivity of this report. Our professional work is in full compliance with the American Academy of Actuaries "Code of Professional Conduct" Precept 7 regarding conflict of interest. The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.

Should you have any questions please do not hesitate to contact us.



Andrew Smith, ASA, MAAA
Actuary



Cody Kocher, FSA, MAAA
Actuary

Executive Summary

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Summary of Results

Presented below is the summary of GASB 75 results for the fiscal year ending December 31, 2024 compared to the prior fiscal year as shown in the Village's Notes to Financial Statement.

	As of December 31, 2023		As of December 31, 2024	
Total OPEB Liability	\$	5,153,599	\$	4,762,184
Actuarial Value of Assets	\$	0	\$	0
Net OPEB Liability	\$	5,153,599	\$	4,762,184
Funded Ratio		0.0%		0.0%

	FY 2023		FY 2024	
OPEB Expense	\$	326,850	\$	157,514
Annual Employer Contributions	\$	317,864	\$	259,630

	As of December 31, 2023		As of December 31, 2024	
Discount Rate		3.26%		4.08%
Expected Return on Assets		N/A		N/A

	As of December 31, 2024	
Total Active Participants		122
Total Retiree Participants		16

The active participants' number above may include active employees who currently have no health care coverage .

* The counts as of December 31, 2024 were provided by the Village and were not used as the basis for determining the liability as of December 31, 2024 for the interim valuation.

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Schedule of Changes in Net OPEB Liability and Related Ratios

OPEB Liability	FY 2024		FY 2023		FY 2022		FY 2021		FY 2020
Total OPEB Liability									
Total OPEB Liability - beginning of year	\$	5,153,599	\$	6,791,769	\$	7,848,239	\$	7,396,543	\$ 6,238,356
Service cost		360,969		371,025		528,266		522,041	399,277
Interest		175,577		260,598		168,995		165,607	212,958
Change of benefit terms		0		0		0		0	0
Changes in assumptions		(262,933)		531,192		(1,119,160)		226,690	765,452
Differences between expected and actual experience		(405,398)		(2,483,121)		(367,568)		(247,647)	(7,464)
Benefit payments		(259,630)		(317,864)		(267,003)		(214,995)	(212,036)
Net change in total OPEB liability	\$	(391,415)	\$	(1,638,170)	\$	(1,056,470)	\$	451,696	\$ 1,158,187
Total OPEB Liability - end of year	\$	4,762,184	\$	5,153,599	\$	6,791,769	\$	7,848,239	\$ 7,396,543
Plan Fiduciary Net Position									
Plan fiduciary net position - beginning of year	\$	0	\$	0	\$	0	\$	0	\$ 0
Contributions - employer		259,630		317,864		267,003		214,995	212,036
Contributions - active employees		0		0		0		0	0
Net investment income		0		0		0		0	0
Benefit payments		(259,630)		(317,864)		(267,003)		(214,995)	(212,036)
Trust administrative expenses		0		0		0		0	0
Net change in plan fiduciary net position	\$	0	\$	0	\$	0	\$	0	\$ 0
Plan fiduciary net position - end of year	\$	0	\$	0	\$	0	\$	0	\$ 0
Net OPEB Liability - end of year	\$	4,762,184	\$	5,153,599	\$	6,791,769	\$	7,848,239	\$ 7,396,543
Plan fiduciary net position as % of total OPEB liability		0.0%		0.0%		0.0%		0.0%	0.0%
Covered employee payroll	\$	14,198,683	\$	12,613,879	\$	12,389,356	\$	11,422,917	\$ 12,267,429
Net OPEB liability as % of covered payroll		33.5%		40.9%		54.8%		68.7%	60.3%

* FY 2024 contributions/benefit payments include \$51,882 actual pay-as-you-go costs and \$207,748 estimated implicit subsidy benefit payments. The difference between the expected and actual benefit payments is included in the experience gain/loss.

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Schedule of Changes in Net OPEB Liability and Related Ratios (Continued)

OPEB Liability	FY 2019		FY 2018	
Total OPEB Liability				
Total OPEB Liability - beginning of year	\$	5,638,174	\$	5,552,825
Service cost		306,833		325,218
Interest		239,677		205,569
Change of benefit terms		0		0
Changes in assumptions		791,275		(315,894)
Differences between expected and actual experience		(508,380)		79,566
Benefit payments		(229,223)		(209,110)
Net change in total OPEB liability	\$	600,182	\$	85,349
Total OPEB Liability - end of year	\$	6,238,356	\$	5,638,174
Plan Fiduciary Net Position				
Plan fiduciary net position - beginning of year	\$	0	\$	0
Contributions - employer		229,223		209,110
Contributions - active employees		0		0
Net investment income		0		0
Benefit payments		(229,223)		(209,110)
Trust administrative expenses		0		0
Net change in plan fiduciary net position	\$	0	\$	0
Plan fiduciary net position - end of year	\$	0	\$	0
Net OPEB Liability - end of year	\$	6,238,356	\$	5,638,174
Plan fiduciary net position as % of total OPEB liability		0.0%		0.0%
Covered employee payroll	\$	11,909,451	\$	11,490,969
Net OPEB liability as % of covered payroll		52.4%		49.1%

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

OPEB Expense

OPEB Expense	FY 2024		FY 2023	
Discount Rate				
Beginning of year		3.26%		3.72%
End of year		4.08%		3.26%
Service cost	\$	360,969	\$	371,025
Interest		175,577		260,598
Change of benefit terms		0		0
Projected earnings on OPEB plan investments		0		0
Reduction for contributions from active employees		0		0
OPEB plan administrative expenses		0		0
Current period recognition of deferred outflows / (inflows) of resources				
Differences between expected and actual experience	\$	(452,383)	\$	(407,339)
Changes in assumptions		73,351		102,566
Net difference between projected and actual earnings on OPEB plan investments		0		0
Total current period recognition	\$	(379,032)	\$	(304,773)
Total OPEB expense	\$	157,514	\$	326,850

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Deferred Outflows / (Inflows) of Resources

Deferred Outflows / (Inflows) of Resources represents the following items that have not been recognized in the OPEB Expense :

1. Differences between expected and actual experience of the OPEB plan
2. Changes of assumptions
3. Differences between projected and actual earnings in OPEB plan investments (for funded plans only)

The initial amortization period for the first two items noted above is based on expected future service lives while the difference between the projected and actual earnings in OPEB plan investment is amortized over five years . All balances are amortized linearly on a principal only basis and new bases will be created annually for each of the items above.

Differences between expected and actual experience for FYE	Initial Balance	Initial Amortization Period	Annual Recognition	Unamortized Balance as of December 31, 2024
December 31, 2018	\$ 79,566	8	\$ 9,946	\$ 9,944
December 31, 2019	\$ (508,380)	8	\$ (63,548)	\$ (127,092)
December 31, 2020	\$ (7,464)	8	\$ (933)	\$ (2,799)
December 31, 2021	\$ (247,647)	8	\$ (30,956)	\$ (123,823)
December 31, 2022	\$ (367,568)	8	\$ (45,946)	\$ (229,730)
December 31, 2023	\$ (2,483,121)	9	\$ (275,902)	\$ (1,931,317)
December 31, 2024	\$ (405,398)	9	\$ (45,044)	\$ (360,354)

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Deferred Outflows / (Inflows) of Resources (Continued)

Changes in assumptions for FYE	Initial Balance	Initial Amortization Period	Annual Recognition	Unamortized Balance as of December 31, 2024
December 31, 2018	\$ (315,894)	8	\$ (39,487)	\$ (39,485)
December 31, 2019	\$ 791,275	8	\$ 98,909	\$ 197,821
December 31, 2020	\$ 765,452	8	\$ 95,682	\$ 287,042
December 31, 2021	\$ 226,690	8	\$ 28,336	\$ 113,346
December 31, 2022	\$ (1,119,160)	8	\$ (139,895)	\$ (699,475)
December 31, 2023	\$ 531,192	9	\$ 59,021	\$ 413,150
December 31, 2024	\$ (262,933)	9	\$ (29,215)	\$ (233,718)

Net Difference between projected and actual earnings in OPEB plan investments for FYE	Initial Balance	Initial Amortization Period	Annual Recognition	Unamortized Balance as of December 31, 2024
December 31, 2020	\$ 0	N/A	\$ 0	\$ 0
December 31, 2021	\$ 0	N/A	\$ 0	\$ 0
December 31, 2022	\$ 0	N/A	\$ 0	\$ 0
December 31, 2023	\$ 0	N/A	\$ 0	\$ 0
December 31, 2024	\$ 0	N/A	\$ 0	\$ 0

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Deferred Outflows / (Inflows) of Resources (Continued)

As of fiscal year ending December 31, 2024	Deferred Outflows	Deferred Inflows
Differences between expected and actual experience	\$ 9,944	\$ (2,775,115)
Changes in assumptions	1,011,359	(972,678)
Net difference between projected and actual earnings in OPEB plan investments	N/A	N/A
Total	\$ 1,021,303	\$ (3,747,793)

Annual Amortization of Deferred Outflows / (Inflows)

The balances as of December 31, 2024 of the deferred outflows / (inflows) of resources will be recognized in OPEB expense in the future fiscal years as noted below.

FYE	Balance
2025	\$ (379,032)
2026	\$ (349,484)
2027	\$ (384,856)
2028	\$ (479,598)
2029	\$ (476,981)
Thereafter	\$ (656,539)

GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Sensitivity Results

The following presents the Net OPEB Liability as of December 31, 2024, calculated using the discount rate assumed and what it would be using a 1% higher and 1% lower discount rate.

- The current discount rate is 4.08%.
- The 1% decrease in discount rate would be 3.08%.
- The 1% increase in discount rate would be 5.08%.

As of December 31, 2024	Net OPEB Liability	
1% Decrease	\$	5,243,518
Current Discount Rate	\$	4,762,184
1% Increase	\$	4,341,518

The following presents the Net OPEB Liability as of December 31, 2024, using the health care trend rates assumed and what it would be using 1% higher and 1% lower health care trend rates.

- The current health care trend rate starts at an initial rate of 8.00%, decreasing to an ultimate rate of 4.50%.
- The 1% decrease in health care trend rates would assume an initial rate of 7.00%, decreasing to an ultimate rate of 3.50%.
- The 1% increase in health care trend rates would assume an initial rate of 9.00%, decreasing to an ultimate rate of 5.50%.

As of December 31, 2024	Net OPEB Liability	
1% Decrease	\$	4,160,839
Current Trend Rates	\$	4,762,184
1% Increase	\$	5,500,757

* Current Post-65 health care trend rates are set to 6.50% decreasing by 0.25% annually to an ultimate rate of 4.50%. The sensitivity results above account for 1% increases/decreases in these rates as well.

Projection of GASB Disclosures

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

The Total OPEB Liability (TOL) is expected to change on an annual basis as a result of expected and unexpected events. Under normal circumstances, it is generally expected to have a net increase each year. Below is a list of the most common events affecting the total OPEB liability and whether they increase or decrease the liability.

Expected Events

- Increases in TOL due to additional benefit accruals as employees continue to earn service each year
- Increases in TOL due to interest as the employees and retirees age
- Decreases in TOL due to benefit payments

Unexpected Events

- Increases in TOL when actual health care costs increase more than expected. A liability decrease occurs when the reverse happens.
- Increases in TOL when more new retirements occur than expected or fewer terminations occur than anticipated. Liability decreases occur when the opposite outcomes happen.
- Increases or decreases in TOL depending on whether benefits are improved or reduced.

Projection of Total OPEB Liability (TOL)	FY 2024		FY 2025	
TOL as of beginning of year	\$	5,153,599	\$	4,762,184
Normal cost as of beginning of year		360,969		305,402
Exp. benefit payments during the year		(259,630)		(246,408)
Interest adjustment to end of year		175,577		201,781
Exp. TOL as of end of year	\$	5,430,515	\$	5,022,959
Actuarial Loss / (Gain)		(668,331)		TBD
Actual TOL as of end of year	\$	4,762,184	\$	TBD

Discount rate as of beginning of year	3.26%	4.08%
Discount rate as of end of year	4.08%	TBD

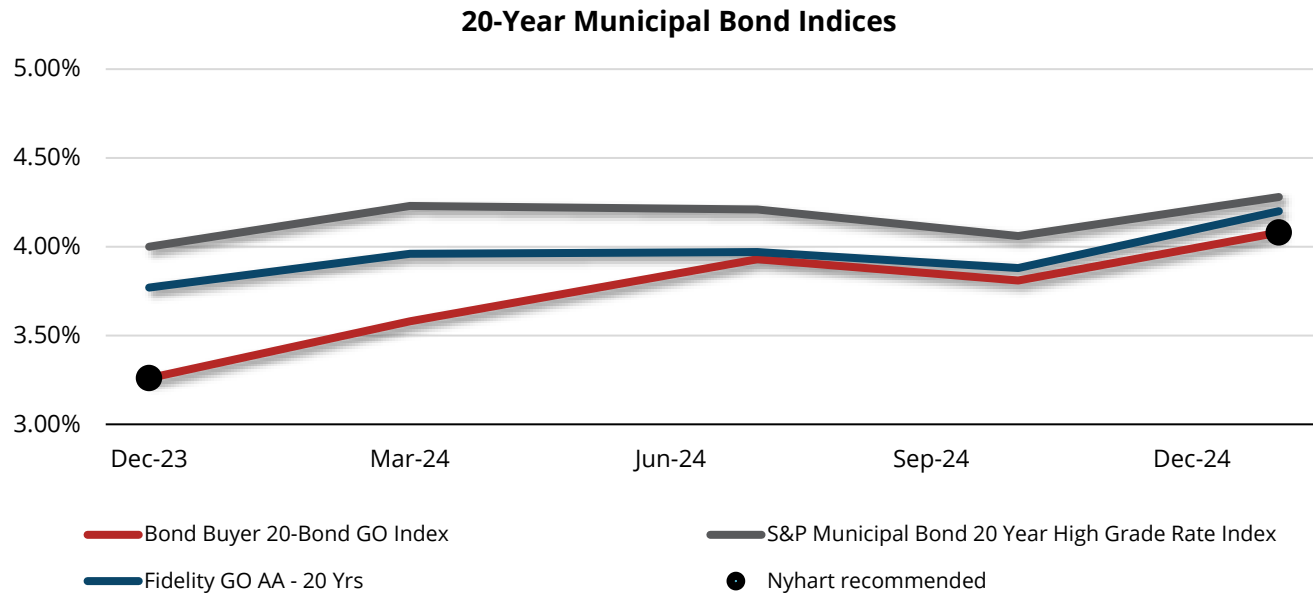
Discussion of Discount Rates

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Under GASB 75, the discount rate used in valuing OPEB liabilities for unfunded plans as of the Measurement Date must be based on a yield for 20-year tax-exempt general obligation municipal bonds with an average rating of AA /Aa or higher (or equivalent quality on another rating scale).

For the current valuation, the discount rate was selected from the range of indices as shown in the table below, where the range is given as the spread between the lowest and highest rate shown.

	Bond Buyer Go 20-Bond Municipal Bond Index	S&P Municipal Bond 20-Year High Grade Rate Index	Fidelity 20-Year Go Municipal Bond Index	Bond Index Range	Actual Discount Rate Used
Yield as of December 31, 2023	3.26%	4.00%	3.77%	3.26% - 4.00%	3.26%
Yield as of December 31, 2024	4.08%	4.28%	4.20%	4.08% - 4.28%	4.08%



Summary of Key Actuarial Assumptions

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

For a complete summary of actuarial methods and assumptions, refer to the GASB 75 actuarial valuation report for the fiscal year ending December 31, 2023.

Measurement Date	For fiscal year ending December 31, 2024, a December 31, 2024 measurement date was used.
Actuarial Valuation Date	January 1, 2024 Liabilities as of December 31, 2024 are based on an actuarial valuation date of January 1, 2024 projected to December 31, 2024, reflecting actual premiums and contributions. Liabilities as of December 31, 2023 are based on an actuarial valuation date of January 1, 2024 with no adjustments to get to the December 31, 2023 measurement date.
Discount Rate	4.08% as of December 31, 2024 and 3.26% as of December 31, 2023 for accounting disclosure purposes. Refer to the Discussion of Discount Rates section for more information on the selection of the discount rate, which is determined by the Plan Sponsor in concurrence with Nyhart.
Payroll Growth	Payroll growth for general employees including general wage inflation of 2.75% (includes 2.25% price inflation and 0.50% productivity increases and other macroeconomic forces) plus merit/longevity increases as shown below, which are based on the Illinois Municipal Retirement Fund (IMRF) actuarial valuation as of December 31, 2022. The assumptions from these state-wide valuations provide reasonable estimates of experience for municipal employers such as the Village of Oak Brook. Sample merit/productivity increases are shown in the table below:

Age	0 YOS	1 YOS	2 YOS	3 YOS	4 YOS	5 YOS
25	7.1%	6.4%	3.6%	2.7%	2.2%	2.5%
30	7.1%	6.4%	3.6%	2.7%	2.2%	2.0%
35	7.1%	6.4%	3.6%	2.7%	2.2%	1.3%
40	7.1%	6.4%	3.6%	2.7%	2.2%	1.0%
45	7.1%	6.4%	3.6%	2.7%	2.2%	0.7%
50	7.1%	6.4%	3.6%	2.7%	2.2%	0.5%
55	7.1%	6.4%	3.6%	2.7%	2.2%	0.3%
60	7.1%	6.4%	3.6%	2.7%	2.2%	0.1%

The payroll growth rate for Police employees is assumed to be 3.75%, and the payroll growth rate for Fire employees is assumed to be 4.25%.

Summary of Key Actuarial Assumptions

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Cost Method

Allocation of Actuarial Present Value of Future Benefits for services prior and after the Measurement Date was determined using Entry Age Normal Level % of Salary method where:

- Service Cost for each individual participant, payable from date of employment to date of retirement, is sufficient to pay for the participant’s benefit at retirement; and
- Annual Service Cost is a constant percentage of the participant’s salary that is assumed to increase according to the Payroll Growth.

Health Care Trend Rates	FYE	Pre-65	Post-65
	2024	*	*
	2025	8.00%	6.50%
	2026	7.50%	6.25%
	2027	7.00%	6.00%
	2028	6.50%	5.75%
	2029	6.00%	5.50%
	2030	5.50%	5.25%
	2031	5.00%	5.00%
	2032	4.50%	4.75%
	2033+	4.50%	4.50%

The initial trend rate was based on a combination of employer history, national trend surveys, and professional judgment.

The ultimate trend rate was selected based on historical medical CPI information.

* FYE 2024 trend was adjusted based on actual rate changes from 1/1/2024 to 1/1/2025

Retiree Contributions

Retiree contributions are assumed to increase according to health care trend rates.

Models

ProVal

Valuation software developed by Winklevoss Technologies, LLC. This software is widely used for the purpose of performing postretirement medical valuations. We coded the plan provisions, assumptions, methods and participant data summarized in this report, and reviewed the liability and cost outputs for reasonableness. We are not aware of any weakness or limitations in the software and have determined it is appropriate for performing this valuation.

HealthMAPS Manual

Aging factors are used to develop per capita costs by age for plans with limited credible exposure to develop plan-specific factors. We are not aware of any weakness or limitations in the factors and have determined they are appropriate for performing this valuation.

Actuary's Notes

Village of Oak Brook Interim GASB 75 Valuation for Fiscal Year Ending December 31, 2024

Interim year valuation results have been projected from the prior year's valuation, with adjustments for actual premium increases from January 1, 2024 to January 1, 2025. The impact of this change was a decrease in the Village's liabilities.

Pre-65 health care trend rates have been reset to an initial rate of 8.00% decreasing by 0.50% annually to an ultimate rate of 4.50%. Additionally, the post-65 trend has been updated to an initial rate of 6.50% decreasing by 0.25% annually to an ultimate rate of 4.50%. The impact of this change was an increase in liabilities.

We have updated the discount rate assumption based on the yield for 20-year-tax-exempt general obligation municipal bonds as of December 31, 2024 (measurement date). The discount rate is 4.08% as of December 31, 2024 and 3.26% as of December 31, 2023. Refer to the Discussion of Discount Rates section for more information on selection of the discount rate. The impact of this change was a decrease in the Village's liabilities.

Premium Rates

The Village's pre-65 health plans are provided through Blue Cross Blue Shield of Illinois. Although multiple plan options are available to active employees, all pre-65 retirees who elect health coverage must enroll in the Non-Represented PPO plan or the HMO plan.

The monthly premium rates effective on January 1, 2024 and January 1, 2025 for the Non-Represented PPO plan and HMO plan are as shown below. All rates include prescription drug coverage.

	Non-Represented PPO		HMO Plan	
	EE Only	EE + SP	EE Only	EE + SP
Eff. 1/1/2025	\$ 1,106.55	\$ 2,195.88	\$ 711.91	\$ 1,412.76
Eff. 1/1/2024	\$ 1,106.55	\$ 2,195.88	\$ 733.93	\$ 1,456.45

The Village's post-65 health plans are fully-insured through the Hartford. The monthly premium rates effective January 1, 2025 are as shown below:

Ages	Premium
65 – 69	\$ 163.71
70 – 74	\$ 200.92
75 – 79	\$ 242.40
80+	\$ 258.78

Post-65 prescription drug coverage is provided through Express Scripts at a cost of \$257.81 per month, regardless of age.



National First Responders Day Proclamation October 28, 2025

WHEREAS, first responders—including public works professionals, firefighters, police officers, emergency medical technicians, 911 operators, paramedics, and other emergency personnel—stand on the front lines of our communities, selflessly serving and protecting the citizens of the Village of Oak Brook in times of crisis; and,

WHEREAS, first responders respond swiftly and courageously to emergencies, often putting their own lives at risk to ensure the safety and well-being of others, whether in natural disasters, accidents, medical emergencies, or public health and safety threats; and,

WHEREAS, it is in the public interest for the citizens, civic leaders, and children in the Village of Oak Brook to gain knowledge of and maintain an ongoing interest and understanding of the importance of public works and other first responder efforts in their respective communities; and,

WHEREAS, as of 2019 the US Senate has included language recognizing public works alongside fellow/other first responders,

NOW, THEREFORE, BE IT RESOLVED, I, Laurence E. Herman, do hereby designate October 28, 2025, as National First Responders Day. I urge all citizens to join with representatives of the American Public Works Association and government agencies in activities, events, and ceremonies paying tribute to our public works first responders alongside law enforcement, firefighters, paramedics, emergency medical technicians, 911 operators, and other emergency personnel, to recognize the substantial contributions they make to protecting our national health, safety, and advancing the quality of life for all.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28th day of October 2025.

Laurence E. Herman
Village President
Oak Brook, Illinois

Netasha Scarpiniti
Village Clerk
Oak Brook, Illinois



ITEM 7.A.1.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Approving An Amended Aqua Wheeling Agreement

FROM: Tim O'Malley, Public Works Director

BUDGET SOURCE/BUDGET IMPACT: Increased Revenue to Offset Water Fund Charges

RECOMMENDED MOTION: I move the Village Board approve Resolution R-2319 A Resolution Approving the Delivery Agreement By and Between the Village of Oak Brook and Aqua Illinois, Inc., pending final attorney review and approval.

Background/History:

On October 19, 2019, the Board of Trustees approved the Authorization to Approve the First Amendment to the Asset Purchase Agreement, for the Sale of Non-Resident Portions of the Village's Water System to Aqua Illinois, Inc. This was followed by the authorization of staff to investigate the potential interest in outside operators to purchase the non-resident portions of the Village's water system, which extends outside the Village's corporate limits.

The Village is seeking approval to add safeguards to this Wheeling Agreement in the form of Performance Bond language and the addition of a two-way flow meter to maintain water flow pressure during increased usage, i.e., fire event. The Performance Bond will ensure the Village will be compensated in the event Aqua's contractual obligations are not met. Per the Environmental Protection Agency, the Village isn't allowed to discontinue water to be wheeled to a contractual provider, based on default of payment to the Village. These items have been discussed and approved by Aqua and the DuPage Water Commission prior to presenting to the Board.

The key provisions of the Amended Aqua Wheeling Agreement include:

- **Term:** Twenty (20) years, renewable for three additional ten-year terms.
- **Performance Bond:** Aqua must furnish a \$1,800,000.00 bond, adjusted bi-annually, to guarantee payment obligations.
- **Two-Way Flow Meter:** Aqua will install and maintain a two-way flow meter near Drury Lane.
- **Interconnections:** Aqua will design, construct, and maintain necessary interconnections,

subject to Village approval.

- **Water Pressure:** The Village will supply water at a reasonably constant pressure.
- **Legal Recourse:** The Village has rights and remedies, including reimbursement of fees and costs, and the ability to seek reasonable deposits, in the event Aqua fails to make payments.

FINANCIAL ANALYSIS

A financial analysis has been conducted to assess the revenue implications of the Amended Aqua Wheeling Agreement for the Village. The key findings are:

- **Increased Revenue Potential:** The Amended Wheeling Agreement, starting in 2026, uses a new rate. The proposed rate is \$1.95 per 1,000 gallons with a 3% annual increase.
- **Cost Neutrality of Water:** The cost of the water supplied to Aqua from the DuPage Water Commission is a pass-through cost, meaning the Village is only acting as a conduit and is not responsible for the water costs.

Year	DWC Base Charge (Per T-gal)*	2022 Wheeling Agreement Revenue**	2022 Agreement Margin***	2025 Wheeling Agreement Revenue**	2025 Agreement Margin****	Net Increase \$	Net Increase %
1	\$5.80	\$26,012	2.0%	\$470,420	33.6%	\$444,408	1708.5%
2	\$6.09	\$27,313	2.0%	\$484,533	33.0%	\$457,220	1674.0%
3	\$6.39	\$71,695	5.0%	\$499,069	32.4%	\$427,373	596.1%
4	\$6.71	\$75,280	5.0%	\$514,041	31.6%	\$438,760	582.8%
5	\$7.05	\$158,088	10.0%	\$529,462	31.1%	\$371,373	234.9%
6	\$7.40	\$165,993	10.0%	\$545,346	30.5%	\$379,353	228.5%
7	\$7.77	\$261,439	15.0%	\$561,706	30.0%	\$300,267	114.9%
8	\$8.16	\$274,511	15.0%	\$578,557	29.4%	\$304,046	110.8%
9	\$8.57	\$384,315	20.0%	\$595,914	28.8%	\$211,599	55.1%
10	\$9.00	\$403,531	20.0%	\$613,791	28.2%	\$210,261	52.1%
11	\$9.45	\$423,707	20.0%	\$632,205	27.7%	\$208,498	49.2%
12	\$9.92	\$444,893	20.0%	\$651,171	27.2%	\$206,279	46.4%
13	\$10.42	\$467,137	20.0%	\$670,706	26.7%	\$203,569	43.6%
14	\$10.94	\$490,494	20.0%	\$690,828	26.2%	\$200,333	40.8%
15	\$11.48	\$515,019	20.0%	\$711,552	25.7%	\$196,533	38.2%
16	\$12.06	\$540,770	20.0%	\$732,899	25.2%	\$192,129	35.5%
17	\$12.66	\$567,808	20.0%	\$754,886	24.7%	\$187,078	32.9%
18	\$13.29	\$596,199	20.0%	\$777,533	24.2%	\$181,334	30.4%
19	\$13.96	\$626,009	20.0%	\$800,858	23.8%	\$174,850	27.9%
20	\$14.66	\$657,309	20.0%	\$824,884	23.3%	\$167,575	25.5%
		\$7,177,523		\$12,640,360		\$5,462,838	76.1%
* Assumes 5% annual DWC base water fee growth							
** Assumes constant water consumption of 224,241 T-gals annually							
*** Per 2022 Interim Wheeling Agreement, Years 1-2 (2%), Years 3-4 (5%), Years 5-6 (10%), Years 7-8 (15%), Year 9+ (20%)							
**** 2025 Proposed Wheeling Agreement \$1.95 per T-gal, growing by 3% compounded annually, for the life of the agreement							
***** Years 21+ remain the same for the 2022 Agreement, but continue to grow 3% annually under the proposed 2026 Agreement							

Increased revenue has significant potential to fund Village improvements.

Risk Mitigation:

- **Performance Bond:** The \$1,800,000.00 performance bond will mitigate financial risk by ensuring the Village will be compensated if Aqua fails to meet its payment obligations.
- **Two-Way Flow Meter:** The two-way flow meter will ensure the Village maintains adequate

water pressure and flow for its own needs, including fire suppression.

- **Clear Legal Recourse:** The Village will have clear legal recourse if Aqua fails to pay.

Recommendation:

Staff recommends the Village Board approve Resolution R-2319 A Resolution Approving the Delivery Agreement By and Between the Village of Oak Brook and Aqua Illinois, Inc., pending final attorney review and approval.

Attachments:

1. R-2319 AQUA Wheeling Agreement 10-28-25
2. Aqua - Oak Brook Long Term Water Purchase Agreement FINAL - signed by Aqua 09-09-25
3. Exhibit B - Mag Meter 8000 specs

THE VILLAGE OF OAK BROOK
COOK AND DUPAGE COUNTIES, ILLINOIS

RESOLUTION
NUMBER 2025-AQUA-AG-R-2319

A RESOLUTION
APPROVING THE DELIVERY AGREEMENT BY AND
BETWEEN THE VILLAGE OF OAK BROOK AND AQUA
ILLINOIS, INC

LAURENCE E. HERMAN, Village President
NETASHA SCARPINITI, Village Clerk

NAVEEN JAIN
MICHAEL MANZO
MELISSA MARTIN
JAMES NAGLE
A. SURESH REDDY
EDWARD TIESENGA

Village Board

Published in pamphlet form by authority of the
President and the Board of Trustees of the Village of Oak Brook
on the 28th day of October 2025

RESOLUTION NO. 2025-AQUA-AG-R-2319

A RESOLUTION
APPROVING THE DELIVERY AGREEMENT BY AND BETWEEN THE VILLAGE OF OAK
BROOK AND AQUA ILLINOIS, INC

WHEREAS, the Village of Oak Brook is a municipal corporation with authority provided for and granted pursuant to the Illinois Municipal Code to exercise certain powers and perform certain functions pertaining to its local government and affairs;

WHEREAS, the Village of Oak Brook (hereinafter referred to as "Village") upon approval of the Village President and Board of Trustees (collectively, the "Corporate Authorities") may enter into an agreement with another party pursuant to Illinois Statute;

WHEREAS, Aqua Illinois, Inc. is an Illinois Corporation ("Aqua"), being a public utility regulated by the Illinois Commerce Commission within the meaning of Section 3-105 of the Public Utilities Act, 220 ILCS 511-101 et seq.;

WHEREAS, the Village owns and operates a water distribution system serving the incorporated areas of the Village (the "Village System") and Aqua owns and operates a water distribution system that currently serves five discrete and non-contiguous service areas, referred to as Unincorporated Oak Brook Zones ("Aqua System");

WHEREAS, Aqua and the Village desire to enter into a water transmission and delivery agreement for the delivery of DuPage Water Commission water from the Village's System to the Aqua System ("Wheeling") in the form and manner described in the Delivery Agreement Among The Village Of Oak Brook And Aqua Illinois, Inc. (the "Agreement"), attached hereto and incorporated herein as Exhibit A;

WHEREAS, Staff recommends the Corporate Authorities to approve the Agreement with Aqua, as further detailed in and subject to the terms and conditions of said Agreement;

WHEREAS, the Village of Oak Brook Corporate Authorities are of the opinion that it is in the best interests of the Village of Oak Brook to authorize the foregoing actions.

NOW, THEREFORE, BE IT RESOLVED, in open meeting assembled, by the Village President and Board of Trustees of the Village of Oak Brook, DuPage and Cook Counties, Illinois as follows:

Section One – Recitals

The Corporate Authorities hereby find that all of the recitals hereinbefore stated as contained in the preamble to this Resolution are full, true, and correct and do hereby, by reference, incorporate and make them part of this Resolution as legislative findings.

Section Two – Approval

The Corporate Authorities does hereby approve the Agreement with Aqua, subject to the terms and conditions set forth in said Agreement, attached hereto and incorporated herein as Exhibit A.

Section Three – Authorization and Direction

The Village Manager is hereby authorized to execute, and if necessary the Village Clerk is hereby authorized to attest the Agreement, substantially in the form attached hereto as Exhibit A, with such changes therein as shall be approved by the Village attorney and the officials of the Village executing the same, their execution thereof to constitute exclusive evidence of their approval to any and all changes or revisions therein from and after the execution and delivery of such Agreement.

Section Four - Other Actions Authorized

The officers, employees and/or agents of the Village shall take all actions necessary or reasonably required to carry out and give effect to the intent of this Resolution and otherwise to consummate the transactions contemplated herein, and shall take all actions necessary in conformity therewith including, without limitation, the execution and delivery of all documents required to be delivered in connection with the transaction contemplated herein.

Section Five - Authorization of Expenditures

The Corporate Authorities hereby authorize and direct the expenditure of all costs related to the execution of the Agreement, additionally, the Village is authorized and directed to allocate and spend all necessary funds to fulfill the requirements of the attached Agreement.

Section Six - Acts of Village Officials

That all past, present and future acts and doings of the officials of the Village that are in conformity with the purpose and intent of this resolution are hereby, in all respects, ratified, approved, authorized and confirmed.

Section Seven – Effective Date

This resolution shall be in full force and effect from and after its passage, approval and publication as provided by law.

Section Eight - Publication

This resolution shall be published in book or pamphlet form as provided by the Illinois Municipal Code.

Section Nine – Conflict Clause

All resolutions, parts of resolutions or board actions in conflict herewith are hereby repealed to the extent of such conflict.

Section Ten – Saving Clause

If any section, paragraph, clause or provision of this resolution is declared by a court of law to be invalid or unconstitutional, the invalidity or unconstitutionality thereof shall not affect the validity of any other provisions of this resolution, which are hereby declared to be separable.

Section Eleven – Recording

This resolution shall be entered into the minutes and upon the journals of the Board of Trustees of the Village of Oak Brook.

PASSED THIS 28th day of October 2025.

Ayes: _____

Nays: _____

Absent: _____

APPROVED THIS 28th day of October 2025.

LAURENCE E. HERMAN,
Village President

ATTEST:

NETASHA SCARPINITI,
Village Clerk

EXHIBIT A

Agreement

DELIVERY AGREEMENT
AMONG THE VILLAGE OF OAK BROOK AND AQUA ILLINOIS, INC

This Delivery Agreement (the "Agreement"), dated as of _____, 2025, by and between the VILLAGE OF OAK BROOK, a municipal corporation of the State of Illinois existing by virtue of its creation consistent with the Illinois Municipal Code set forth in 65 ILCS 5/1-1-1 *et seq.* (the "Village"), and AQUA ILLINOIS, INC, an Illinois Corporation ("Aqua"), a public utility regulated by the Illinois Commerce Commission within the meaning of Section 3-105 of the Public Utilities Act, 220 ILCS 511-101 *et seq.* DUPAGE WATER COMMISSION, DuPage, Cook, and Will Counties, State of Illinois, a county water commission and public corporation under Division 135 of Article 11 of the Illinois Municipal Code, 65 ILCS 5/11-135-1 *et seq.*, and the Water Commission Act of 1985, 70 ILCS 3720/0.01 *et seq.* (the "Commission"), is a signatory to this Agreement as to form approving the arrangement and as an intended third party beneficiary of this Agreement.

WITNESSETH:

WHEREAS, the Commission owns and maintains a transmission and distribution system as a supplier of potable water to member customers that contract for such service ("Commission's Waterworks System"); and

WHEREAS, the Commission and Village are parties to that certain *Water Purchase and Sale Contract* dated as of January 18, 2024 ("Village – Commission Contract"); and

WHEREAS, the Village owns and operates a water distribution system serving the incorporated areas of the Village (the "Village System") and is a customer of the Commission for the Village System; and

WHEREAS, the Commission and Aqua are parties to that certain *Water Purchase and Sale Contract* dated as of January 18, 2024 as amended by that *Addendum to Water Purchase and Sale Contract* dated February 15, 2024 ("Aqua - Commission Contract"); and

WHEREAS, Aqua and Village (and Commission as signatory for the purposes stated therein) are parties to that certain *Interim Delivery Agreement* dated November 29, 2022. (“Interim Delivery Agreement”); and

WHEREAS, Aqua owns and operates a water distribution system that currently serves five discrete and non-contiguous service areas, referred to as Unincorporated Oak Brook Zones (“Aqua System”)

WHEREAS, the Aqua System is adjacent to the Village System and the Aqua System is currently supplied Commission water through the Village System pursuant to the Interim Delivery Agreement; and

WHEREAS, the Village System and the Aqua System are hydraulically connected and the Village System is currently serving and is capable of continuing to serve the Aqua System with water from the Commission's Waterworks System through the Village System; and

WHEREAS, Aqua and the Village desire to enter into a water transmission and delivery agreement for the delivery of Commission water from the Village's System to the Aqua System (“Wheeling”) in the form of this Agreement; and

NOW, THEREFORE, in consideration of the foregoing recitals and of the mutual covenants and agreements herein contained, Aqua, the Village (and the Commission to the extent stated herein) hereby agree as follows:

Section 1. The Interim Delivery Agreement is replaced and abrogated in its entirety by the terms hereof as of the Effective Date.

Section 2. Agreement to Deliver. Effective December 1, 2025, (the “Effective Date”) and throughout the Term of this Agreement, subject to the terms hereof, the Village agrees to transmit and deliver water from the Commission through the Village System to the Aqua System subject to availability of such water from the Commission. Subject to the terms and conditions of this Agreement, the Village will deliver the full water supply to the Aqua System through existing interconnection points. The interconnections points between the Village System and the Aqua System (“Interconnections”) are as shown on Exhibit A. Notwithstanding any requirement of the

Aqua - Commission Agreement to the contrary, title to all water supplied by the Commission shall remain in the Commission to the point of delivery to the Village System and thereupon shall pass to the Village and then Aqua as their interests may appear.

Section 3. Aqua System Interconnection to Village.

The Interconnections shall be metered as follows:

1. The Interconnections are at the locations as shown on Exhibit "A".
2. The Interconnections are currently metered by meters shown on Exhibit "B". The Parties agree to such Interconnections and meters as are currently in place and acceptable to each.

No later than 18 months days following the execution of this Agreement, Aqua shall design, construct, operate, own, and thereafter maintain a two-way flow meter near the Drury Lane subject to the Village's review and approval; such approval not to be unreasonably withheld. Additionally, Aqua shall, when necessary at its cost (unless the Parties agree otherwise) further design, construct, operate, maintain, and replace the Interconnections at the existing locations or different proposed locations ("Interconnection Modifications") to the extent such are necessary or convenient for obtaining or measuring the flow of water from the Village System to the Aqua System. The further Interconnection Modifications shall be subject to the Village's reasonable approval.

Subject to normal operating constraints, adequate delivery, and pressure of the supply of water delivered to Village, Village will supply water at the Delivery Points at a reasonably constant pressure.

Village agrees and hereby grants to Aqua the right to use any Right of Way to lay and repair any pipe, main or facilities of any part of the Interconnection that is within the Village right of way. If any further Interconnections or mains to an Interconnection are necessary or convenient, for the Aqua System, upon request of Aqua to the Village the Village agrees that it will allow the use of Village right of way, subject to the Village's reasonable review of such use. Aqua's use of the Village Right of Way shall be, subject to generally applicable permitting requirements of the Village.

Section 4. Metering / Station Access.

Aqua shall provide access to the Flow Meters, which have been installed at the Interconnections, to the Village and Commission at reasonable times for purposes of examination, inspection, and verification of meter readings, but the readings of each meter for billing purposes, calibration, and adjustment of the equipment therein shall be done only by the employees or agents of Aqua.

Aqua shall inform the Village of any replacement of the Flow Meters. Any change in the type of the Flow Meters shall be subject to the Village's reasonable approval.

Section 5. Meter Readings. Aqua shall read the Flow Meters at the Interconnection on a monthly basis corresponding to the Commission readings for the Village System and shall provide the Village with copies of the readings. Such readings shall establish the volume of water from the Village to the Aqua System (the "Aqua System Volume").

During the term of this Agreement, Aqua and the Village shall jointly submit to the Commission by January 15 of each year a notarized statement with the amount of gallons delivered from the Village to Aqua for the previous calendar year.

Section 6. Prices; Terms of Payment.

A. Aqua's Payments to the Village.

Aqua shall pay the Village on monthly basis based on the volume of water determined by the Flow Meter readings in Section 4 at the same volumetric rate the Village pays the Commission plus the Wheeling Rate set out in Subsection 6C.

Aqua shall allow the Village to audit all Flow Meter readings, end user customer volume reports or any other reasonable reports, readings or data used to determine Aqua System Volume, including, upon reasonable advance notice by the Village to Aqua, allowing access to any Flow Meters for physical inspection by the Village's representatives.

B. Village's Payments to the Commission.

The Village shall make all required payments to the Commission in accordance with the terms of the Village Customer Contract without any deduction for the volume of water delivered to the Aqua System.

C. Village Wheeling Rate.

Village will charge Aqua a wheeling rate of \$1.95 per 1,000 gallons of water ("Wheeling Rate"). Beginning January 1, 2026 this Wheeling Rate will increase 3% annually on January 1st of each subsequent year throughout the Term of this Agreement.

Section 7. Water Storage Capacity.

The Village shall maintain, during the entire term of this Agreement and any renewal or extension of it, effective water storage capacity equal to the water storage capacity required by the Charter Customer Contract for the Village System.

Section 8. Water Allocation Permit Operation.

A. The Village currently serves water to the Aqua System pursuant to that certain Allocation Permit No. 2009-142 ("Village Permit") issued by the Illinois Department of Natural Resources ("IDNR") under 17 Ill. Adm. Code 3730, *Allocation of Water from Lake Michigan* ("Allocation Regulations"). The Village shall continue to provide water to the Aqua System pursuant to the Village Permit until Aqua has received its own allocation from IDNR for the Aqua System.

B. Aqua shall use data collected by the existing Flow Meters to apply to the IDNR for issuance of allocation permits under the Allocation Regulations for the Aqua System which are independent of the Village Permit ("Aqua System Permits"). The applications for the Aqua System Permits shall be based on metered usage data for the Aqua System and shall include only such amount as is attributable to such Aqua System pursuant to the Allocation Regulations. Upon Aqua's submittal of any such request, the Village agrees to file with the IDNR separate modification applications that are necessary to reflect a corresponding reduction in the allocation

allowed by the Village Permit.

C. Until the IDNR's issuance of the Aqua System Permits, the Village, as the named permittee of the Village Permit:

1. shall continue to be responsible to comply with all legal and regulatory requirements of the Village Permit and the Allocation Regulations that are applicable to the Aqua System; and
2. shall continue to be responsible for, and submit to, the IDNR all required LMO-2 data on an annual basis, as required by the Village Permit then in effect.

D. Aqua shall indemnify and hold harmless the Village pursuant to subsections 10 (E) and 10 (F) for any non-compliance with the Village Permit or the Allocation Regulations that is caused by or attributable to the Aqua System and for any reporting violation attributable to Aqua's failure to provide requested existing data for the LMO-2 data reports to the IDNR.

E. Aqua shall provide to the Village, when requested, all usage and water loss information for the Aqua System necessary to complete the LMO-2 data reports to the IDNR.

F. Aqua shall provide the Village a license to access portions of the Aqua System that are reasonably necessary for the Village to comply with its obligations pursuant to subsection (C) hereof, and the Village agrees to coordinate such access with Aqua.

Section 9. Limitations on Supply of Water.

A. Curtailment. If at any time it becomes necessary for the Commission to limit generally its delivery of Lake water to its customers for any reason, then the Village and Aqua together shall take all reasonable and appropriate actions to provide that such Lake water as is delivered by the Commission is shared by the Village and Aqua on a pro rata basis.

B. Limitation on Supply to Village. If at any time it becomes necessary for the Commission to limit its delivery of Lake water to the Village System (but not to the Aqua System) for any reason pursuant to the Commission – Village Contract and specifically related to the Village, then the Village shall take all reasonable and appropriate actions, including without limitation the

imposition of water use limitations on customers of the Village System, to limit the use of Lake water in the Village System so that the Lake water to which the portion of the Aqua System serving the Aqua System is entitled is delivered by the Village to the Aqua System.

C. Limitation on Supply to Aqua. If at any time it becomes necessary for the Commission to limit its delivery of Lake water to the Aqua System (but not to the Village System) for any reason specifically related to Aqua, then Aqua shall take all reasonable and appropriate actions, including without limitation the imposition of water use limitations on customers of the Aqua System, and the Village shall, and shall be entitled to, make all necessary and appropriate adjustments to the Village System, to assure that the appropriate amount of Lake water to which the Village System is entitled is delivered to the Village System during such period of curtailment to Aqua.

D. No Liability of Commission. Aqua and the Village each hereby acknowledge and agree that the Commission shall not be obligated to enforce the provisions of this Section 9 but may do so in its sole discretion and that the Commission shall not be liable either to Aqua or to the Village for any damages occasioned by or in any way related to any limitation on, or delay in, the delivery of Lake water to them or to either one of them.

Section 10. Releases and Indemnification.

A. Indemnification of the Commission by Aqua. To the fullest extent permitted by law, Aqua hereby releases the Commission, and its respective officers, agents and employees, from and agrees that the Commission, and its respective officers, agents and employees, shall not be liable for, and agree to indemnify and hold the Commission, and its respective officers, agents and employees, harmless from: (1) any liabilities for any loss or damage to property or any injury to, or death of, any person that may be occasioned by or related to any cause whatsoever pertaining to the construction, installation, removal, relocation, replacement, extension, improvement, maintenance, or operation of the Aqua System or the Alternate Connection Facilities, (2) any liabilities, losses, or damages, or claims therefor, arising out of the failure, or claimed failure, of Aqua to comply with its covenants or obligations contained in this Agreement, or (3) the failure to supply Lake Water or for any interruption of the Lake Water supply, including, in each such case, any attorneys' fees.

B. Indemnification of the Commission by the Village. To the fullest extent permitted by law, the Village hereby releases the Commission and its respective officers, agents and employees from, and agrees that the Commission and its respective officers, agents and employees shall not be liable for, and agrees to indemnify and hold the Commission and its respective officers, agents and employees harmless from (1) any liabilities, losses, or damages, or claims therefor, arising out of the failure, or claimed failure, of the Village to comply with its covenants or obligations contained in this Agreement, (2) any liabilities, losses, or damages, or claims therefor, arising out of the failure, or claimed failure, of Aqua to comply with its covenants or obligations contained in this Agreement, or (3) the failure of the Village to supply Lake Water to Aqua or any interruption of the Lake Water supply to Aqua, in any case caused by the Village.

C. Indemnification of the Commission by Aqua and the Village. Unless otherwise prohibited by law, Aqua and the Village agree to indemnify and hold the Commission, and its respective officers, agents and employees, harmless to the fullest extent permitted by law from any losses, costs, charges, expenses (including attorneys' fees), judgments, and liabilities incurred by the Commission, and its respective officers, agents and employees, in connection with any action, suit, or proceeding instituted or threatened by any third party in connection with this Agreement.

D. Indemnification Claims Made by the Commission. If any such claim provided for in subsections (A), (B) or (C), is asserted, the Commission shall give prompt notice to Aqua or the Village or both, as applicable, and Aqua or the Village or both, as applicable, if requested by the Commission, shall assume the defense thereof, it being understood, however, that neither Aqua nor the Village shall settle or consent to the settlement of any such claim without the written consent of the Commission. In connection with any such claims, litigation or liabilities, the Commission and its respective officers, agents, employees, representatives and assigns shall have the right to defense counsel of their choice. Aqua and the Village, as applicable, shall be solely liable for all costs of such defense and for all expenses, fees, judgments, settlements and all other costs arising out of such claims, litigation, or liabilities. Aqua and the Village, as applicable, shall have the right to participate in the defense of any such claim, or litigation and, upon the request of the Commission as stated above, shall assume the defense of the Commission, and its respective officers, agents and employees.

E. Indemnification of the Village by Aqua. Other than in the case of intentional misconduct by the Village, Aqua hereby releases and holds harmless the Village, and its respective officers, agents and employees, from, and agrees that the Village, its respective officers, agents or employees, shall not be liable for, any damages resulting from failure to supply Lake water or for any interruption of the Lake water supply to the fullest extent allowed by law; provided that the foregoing shall not excuse the Village from using its good faith efforts to comply with its respective obligations pursuant to Section 1 of this Agreement. Aqua hereby agrees to indemnify, save, and hold harmless the Village, and its respective officers, agents and employees, from and against all claims, litigation, and liability, including legal defense costs and expenses and attorneys' fees, asserted against the Village, or any of its respective officers, agents or employees, from any liabilities for any loss or damage to property or any injury to, or death of, any person that may be occasioned by or related to any cause whatsoever pertaining to the construction, installation, removal, relocation, replacement, extension, improvement, maintenance, or operation of the Aqua System or the Alternate Connection Facilities to the fullest extent allowed by law.

F. Indemnification Claims Made by the Village. If any such claim provided for in subsection (E), is asserted, the Village shall give prompt notice to Aqua and Aqua, if requested by the Village, shall assume the defense thereof, it being understood, however, Aqua shall not settle or consent to the settlement of any such claim without the written consent of the Village. In connection with any such claims, litigation or liabilities, the Village and its respective officers, agents, employees, representatives and assigns shall have the right to defense counsel of their choice. Aqua shall be solely liable for all costs of such defense and for all expenses, fees, judgments, settlements and all other costs arising out of such claims, litigation, or liabilities. Aqua shall have the right to participate in the defense of any such claim, or litigation and, upon the request of the Village, as stated above, shall assume the defense of the Village, as well as its respective officers, agents, employees, representatives and assigns.

Section 10. Interpretation: Compliance with Existing Contracts. This Agreement shall be deemed to be a separate written contract between the Village, the Commission and Aqua. Except where expressly provided in this Agreement, nothing in this Agreement shall be construed to be, or applied in any manner, inconsistent with the terms of the Village – Commission Contract or the Aqua - Commission Contract (the "Prior Contracts"), and if there is any conflict or inconsistency

between the terms of this Agreement and the terms of either one or both of those Prior Contracts, then the terms of those Prior Contracts shall control.

The Village shall at all times comply with all terms and conditions of this Agreement and the Village – Commission Contract, and Aqua shall at all times comply with all terms and conditions of this Agreement and the Aqua - Commission Contract , including without limitation the making of all payments due thereunder or hereunder promptly to the Commission. Under no circumstances shall any dispute of any nature under this Agreement or Aqua's inability to receive water through the Interconnections provided by this Agreement, excuse, delay, or in any other way affect the Village's or Aqua's performances under such Prior Contracts or this Agreement, including without limitation the making of all such payments.

Section 11. Term / Bond / Payment Remedies.

- A. The term of this Agreement shall be from the Effective Date for a period of twenty (20) years. This Agreement may be renewed for three additional ten-year terms upon mutual written agreement of the Parties hereto prior to the expiration of the then applicable term.
- B. Aqua shall, within thirty (30) days of the execution of the Agreement, furnish a bond in the amount of one million eight hundred thousand dollars and zero cents (\$1,800,000.00) representing the approximated amount of twelve months of volumetric payments by Aqua to the Village pursuant to Section 6(A) to guarantee the faithful performance of the payment obligations to be performed pursuant to this Agreement. The bond shall be issued by an admitted surety insurer, authorized to act as a surety in the State of Illinois. This bond shall be renewed and adjusted bi-annually for the entire term of the Agreement and subsequent amendments to extend the Agreement.
- C. In addition to, and without any limitation of Aqua's indemnification obligations to the Village , any other rights or remedies at law or in equity of the Village contained in this Agreement, in the event Aqua fails to pay the Village for any undisputed amounts owed pursuant to Section 6(A) above, Aqua agrees: (i) the Village shall be entitled to reimbursement of all fees and costs, and expenses, including attorney's fees, to secure such payment; (ii) to waive trial by jury in any legal proceeding initiated by the Village to secure such payment; and (iii) the Village may seek, s any reasonable deposits

customarily given in the utility industry to secure adequate assurance of future payments, as an appropriate equitable remedy.

Section 12. Governing Law. This Agreement shall be construed exclusively under the applicable laws of, but not the conflict of law rules of, the State of Illinois.

Section 13. Amendment. This Agreement shall not be modified, revised, amended, or annulled in any way except in writing approved by all parties hereto.

Section 14. Notices. All notices or communications provided for herein shall be in writing and shall be delivered in person or by certified United States mail, return receipt requested, postage prepaid, addressed as follows:

To the Village:

Village Manager
Village of Oak Brook
1200 Oak Brook Road
Oak Brook, Illinois 60523

To Aqua:

Aqua Illinois, Inc.
President
1000 S. Schuyler Avenue
Kankakee, IL 60901

To the Commission:

General Manager
DuPage Water Commission
600 East Butterfield Road
Elmhurst, IL 60126

until and unless other addresses are specified by notice given in accordance herewith.

Section 15. Legal Authority. Each party represents and warrants to the others that it has full legal authority to enter this Agreement; that the officers and representatives signing this Agreement have been duly authorized to sign by their respective party; that entering this Agreement will not conflict with or violate the terms of any other agreement or obligation to which each respective party hereto is obligated or bound.

Section 16. Regulatory Approval. This Agreement is subject to all governmental authorizations needed for, including, but not necessarily limited to, adoption and approval from Illinois Commerce Commission.

Section 17. Cooperation. The parties agree to cooperate with each other and to use commercially reasonable efforts in the implementation of this Agreement, and to sign or cause to be signed, in a timely fashion, any and all necessary instruments, documents and petitions, and to take such other actions as may be reasonably necessary in order to effectuate the purposes of this Agreement.

Section 18. Execution in Counterparts. This Agreement may be executed in any number of counterparts (including by means of email or other electronic signature), each of which shall be deemed to be an original, but all of which together shall constitute but one and the same instrument. Execution and delivery by facsimile or in any electronic (i.e., "pdf" or "tif") format shall be effective as delivery of a manually executed counterpart of this Agreement. To the extent applicable, the foregoing constitutes the election of the parties to invoke any applicable law authorizing electronic signatures.

Section 19. Third-Party Beneficiary. For all purposes of this Agreement, the Commission shall be expressly deemed an intended third-party beneficiary of this Agreement, and as such shall be entitled to rely upon and shall have the express right to enforce the terms and conditions of this Agreement to the extent it affects the Commission. Further, this Agreement may not be modified, amended or terminated without the consent of the Commission in its sole discretion.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the Village and Aqua have caused this Agreement to be properly signed and attested to by their respective officers, and their seals affixed hereto, all as of the day and date first hereinabove set forth.

VILLAGE OF OAK BROOK

By:

Name:

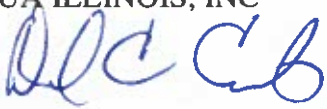
Title:

(Corporate Seal)

ATTEST:

Village Clerk

AQUA ILLINOIS, INC

By: 

Name: David C Carter

Title: President

Approved as to form approving the arrangement pursuant to the Aqua Customer Contract
and as an intended third-party beneficiary of this Agreement pursuant to Section 19.

DUPAGE WATER COMMISSION

By:

Name:

Title:

(Corporate Seal)

ATTEST:

Clerk

Color & Symbol Key

ACUA Den Broek
Water Systems
Boundary

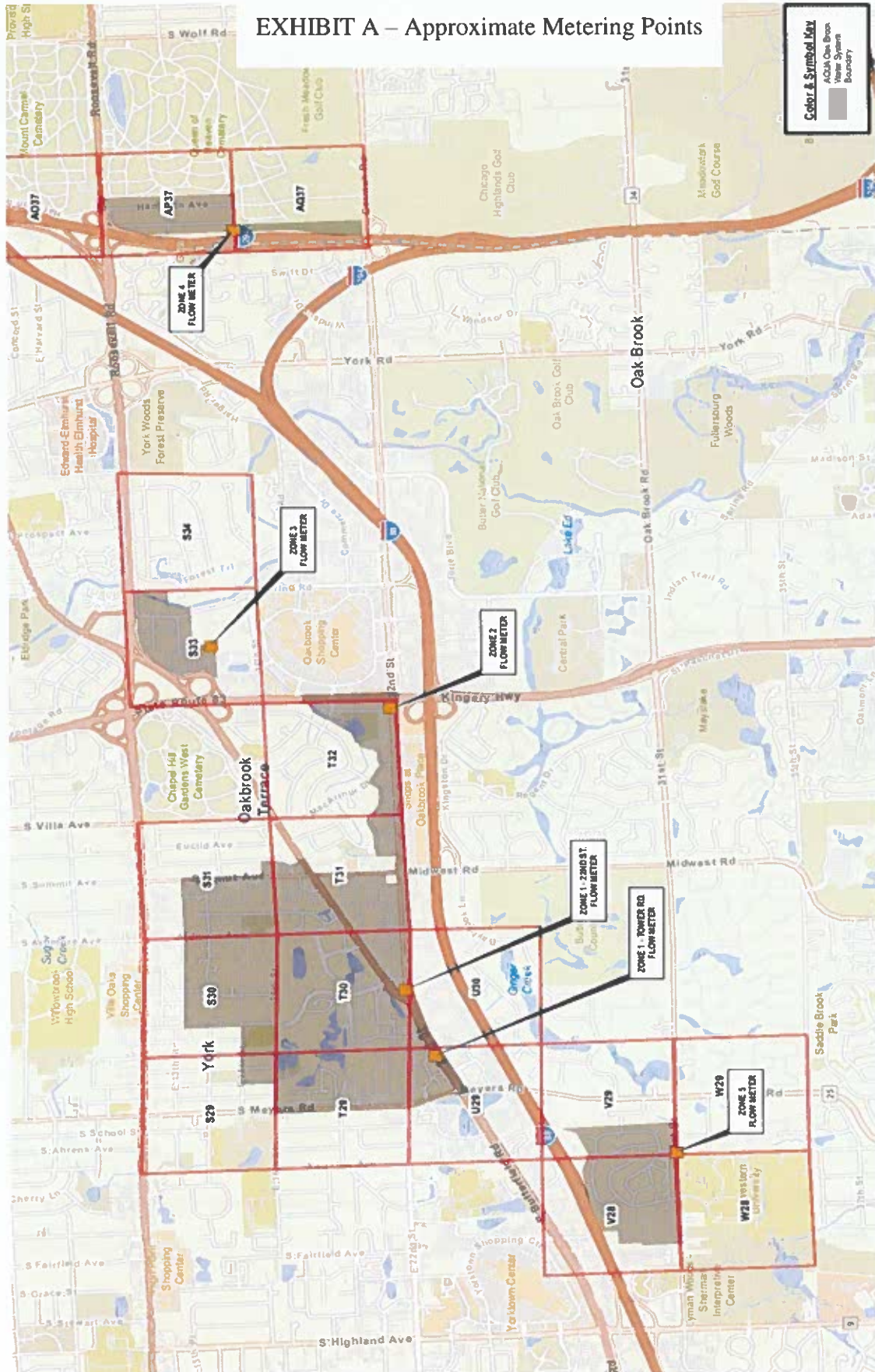


EXHIBIT B
Meter Information

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Overview



MAG 8000 is a comprehensive meter which intelligent information and high performance measurement as well as the easy to install concept take cost of ownership and customer service to a new level for water meter.

Benefits

Easy to install

- Compact or remote solution with factory mounted cable and customer setting from factory
- IP68/NEMA 6P enclosure. Sensor can be buried
- Flexible power supply - internal or external battery pack or mains power supply with battery back-up possibilities

Superior measurement

- Down to 0.2% maximum uncertainty
- OIML R 49 type approval
- Bi-directional measurement

Long lasting performance/Low cost of Ownership

- Verification according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), Annex MI-001
- No moving parts means less wear and tear
- 6 years maintenance-free operation in typical revenue application
- Robust construction build for the application

Intelligent information, easy to access

- Advanced information on site
- Data logger
- Advanced statistics and diagnostics
- Add-on communication modules

Application

MAG 8000 has been developed as a stand alone water meter for applications within:

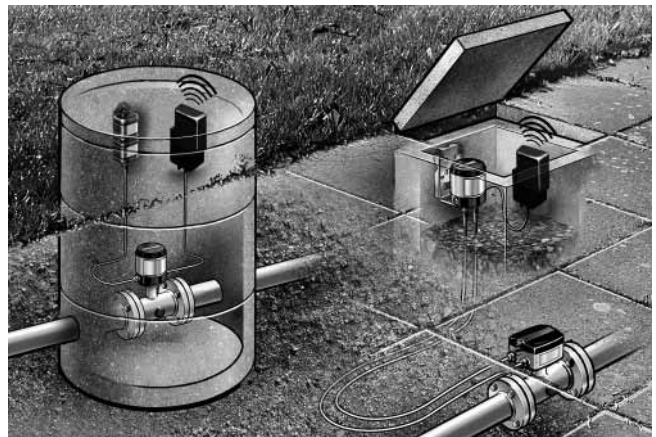
- Abstraction
- Distribution network
- Revenue and bulk metering
- Irrigation

Design

MAG 8000 is designed according to OIML R 49 and CEN EN 14154 water meter standards with focus on minimized power consumption.

The product program consists of

- Basic and advanced version
- A Custody Transfer version for water billing, with type approval after OIML R 49 and verified according to MI-001 for DN 50 to DN 300 (2" to 12") pending up to DN 600 (24")
- Sensor sizes from DN 25 to 1200 (1" to 48")
- Compact and remote installation in IP68/NEMA 6P enclosure and factory-mounted cable
- SIMATIC PDM and Flow Tool PC configuration softwares



Add-on communication module (left), PC-IrDA connection (right)

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Function

MAG 8000 is a microprocessor-based water meter with graphical display and key for optimum customer operation and information on site. The transmitter drives the magnetic field in the sensor, evaluates the flow signal from the sensor and calculates the volume passing through. It delivers the required information via the integrated pulse output or communication interfaces as part of a system solution. Its intelligent functionality, information and diagnostics ensure optimum meter performance and information to optimize water supply and billing.

Certificate" with all specific data that define the quality status of the measurement.

The Qualification Certificate consists of two pages with information about the actual status of the sensor:

PART 1 provides general settings, sensor and battery info, totalizer values and pulse output settings.

Part 2 provides detailed information about electronic and sensor functionality and a main parameter list for evaluating the functionality of the MAG 8000 water meter.



MAG 8000 and MAG 8000 CT can be ordered as a Basic or an Advanced version. Both versions are configured to achieve 6 years battery operation in typical revenue applications.



Features / Version	MAG 8000 Basic	MAG 8000 Advanced
Measuring frequency in battery power mode (Manually selected)	1/15, 1/30 or 1/60 Hz	from 6.25 to 1/60 Hz depending of sensor size
Output MAG 8000/MAG 8000CT	2 FW/RV/AI/CA (max. 50 Hz pulse rate)	2 FW/RV/AI/CA (max. 100 Hz pulse rate)
Communication	Add-on	Add-on
Data logger	Yes	Yes
Insulation test	No	Yes
Leakage detection	No	Yes
Meter utilization	No	Yes
Statistics	No	Yes
Tariff	No	Yes
Settle date (Revenue)	No	Yes

In MAG 8000 CT revenue parameters and data are protected against manipulation. Verification and sealings is used to obtain the MI-001 approval (MID).

Some information is accessible via the display whereas all information is accessible via the IrDA communication interface with the PDM software. Data and parameters are registered in a EEPROM. They can all be read, but changing the information demands a software password or a hardware key attached to the printed circuit board.

The SIMATIC PDM tool gives the possibility of testing and verifying the flowmeter on site and creating a printed "Qualification

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

Technical specifications

Meter	MAG 8000 (7ME6810)	MAG 8000 CT (7ME6820)
Accuracy	Standard calibration: ±0.4% of rate ±2 mm/s Extended calibration DN 50 ... DN 300 (2" ... 12"): ±0.2 % of rate ±2 mm/s	OIML R 49 for DN 50 ... DN 300 (2" ... 12"), Class 1 and 2 with turn down up to Q3/Q1 = 400 at Q2/Q1 = 1.6 MI-001 verification for DN 50 ... DN 300 (2" ... 12"), Class 2 with turn down ratio Q3/Q1 = 250, Q3/Q1 = 200 or Q3/Q1 = 160 at Q2/Q1 = 1.6
Media conductivity	Clean water > 20 µs/cm	
Temperature		
Ambient	-20 ... +60 °C (-4 ... +140 °F)	-20 ... +60 °C (-4 ... +140 °F)
Media	0 ... +70 °C (32 ... +158 °F)	0.1 ... +50 °C (32 ... +122 °F)
Storage	-40 ... +70 °C (-22 ... +158 °F)	-40 ... +70 °C (-22 ... +158 °F)
Enclosure rating	IP68/NEMA 6P; Cable glands mounted requires Sylgard potting kit to remain IP68/NEMA 6P, otherwise IP67/NEMA 4 is obtained; Factory-mounted cable provides IP68/NEMA 6P	
Drinking water approvals	• NSF/ANSI Standard 61 (cold water) USA • WRAS (BS 6920 cold water) UK • ACS Listed France • DVGW W270 Germany • Belgaqua (B) • MCERTS (GB)	• NSF/ANSI Standard 61 (cold water) USA • WRAS (BS 6920 cold water) UK • ACS Listed France • DVGW W270 Germany • Belgaqua (B) • MCERTS (GB)
Custody transfer approval	• OIML R 49 approval	• OIML R 49 and OIML R49 MAA approval • MI-001 approval (Number: DK-0200-MI-001-002)
Conformity	• PED: 97/23EC • EMC: EN 61000-6-3, EN 61000-6-2, EN 61326-1	• CEN EN 14154, ISO 4064 • PED: 97/23EC • EMC: EN 61000-6-3, EN 61000-6-2, EN 61326-1
Sensor version	DN 25 ... 1200 (1" ... 48")	DN 50 ... 600 (2" ... 24") in preparation up to DN 600
Measuring principle	Electromagnetic induction	Electromagnetic induction
Excitation frequency		
Basic version		
• Battery-powered	DN 25 ... 150 (1" ... 6"): 1/15 Hz DN 200 ... 600 (8" ... 24"): 1/30 Hz DN 700 ... 1200 (28" ... 48"): 1/60 Hz	DN 50 ... 150 (2" ... 6"): 1/15 Hz DN 200 ... 600 (8" ... 24"): 1/30 Hz
• Mains-powered	DN 25 ... 150 (1" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz DN 700 ... 1200 (28" ... 48"): 1.5625 Hz	DN 50 ... 150 (2" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz
Advanced version		
• Battery-powered	DN 25 ... 150 (1" ... 6"): 1/15 Hz (adjustable up to 6.25 Hz; reduced battery lifetime) DN 200 ... 600 (8" ... 24"): 1/30 Hz (adjustable up to 3.125 Hz; reduced battery lifetime) DN 700 ... 1200 (28" ... 48"): 1/60 Hz (adjustable up to 1.5625 Hz; reduced battery lifetime)	DN 50 ... 150 (2" ... 6"): 1/15 Hz (adjustable up to 6.25 Hz; reduced battery lifetime) DN 200 ... 600 (8" ... 24"): 1/30 Hz (adjustable up to 3.125 Hz; reduced battery lifetime)
• Mains-powered	DN 25 ... 150 (1" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz DN 700 ... 1200 (28" ... 48"): 1.5625 Hz	DN 50 ... 150 (2" ... 6"): 6.25 Hz DN 200 ... 600 (8" ... 24"): 3.125 Hz

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Meter		
	MAG 8000 (7ME6810)	MAG 8000 CT (7ME6820)
Flanges		
EN 1092-1 (DIN 2501)	DN 25 and DN 40 (1" and 1½"): PN 40 (580 psi) DN 50 ... 150 (2" ... 6"): PN 16 (232 psi) DN 200 ... 1200 (8" ... 48"): PN 10 or PN 16 (145 psi or 232 psi)	DN 50 ... 150 (2" ... 6"): PN 16 (232 psi) DN 200 ... 300 (8" ... 12"): PN 10 or PN 16 (145 psi or 232 psi) up to DN 600 (24") in preparation
ANSI 16.5 Class 150 lb	1" ... 24": 20 bar (290 psi)	2" ... 12": 20 bar (290 psi) up to DN 600 (24") in preparation
AWWA C-207	28" ... 48": PN 10 (145 psi)	
AS 4087	DN 50 ... 1200 (2" ... 48"): PN 16 (232 psi)	DN 50 ... 300 (2" ... 12"): PN 16 (232 psi) up to DN 600 (24") in preparation
Liner	EPDM	EPDM
Electrode and grounding electrodes	Hastelloy C276	Hastelloy C276
Grounding straps	Grounding straps are premounted from the factory on each side of the sensor	Grounding straps are premounted from the factory on each side of the sensor
Transmitter		
Installation	Compact (integral) Remote with factory-mounted cable (5, 10, 20 or 30 m)	
Enclosure	Stainless steel top housing (AISI 316) and coated brass bottom. Remote wall mount bracket in stainless steel (AISI 304).	
Cable entries	2 x M20 (one gland for one cable of size 6 ... 8 mm (0.02 ... 0.026 ft) is included in the standard delivery)	
Display	Display with 8 digits for main information. Index, menu and status symbols for dedicated information	
Flow unit	Volume in m ³ and flow rate in m ³ /h	
Europe	Volume in Gallon and flow rate in GPM	
US	Volume in MI and flow rate as MI/d	
Australia		
Optional display units	Volume: m ³ x 100, l x 100, G x 100, G x 1000, MG, CF x 100, CF x 1000, AF, Al, kl Flow: m ³ /min, m ³ /d, l/s, l/min, GPS, GPH, GPD, MGD, CFS, CFM, CFH	
Digital output	2 passive outputs (MOS), individual galvanically isolated Maximum load ± 35 V DC, 50 mA short circuit protected Programmable as pulse volume – forward – reverse – forward/net – reverse/net Programmable as pulse volume (like output A), alarm Max. pulse rate of 50 Hz (only Basic version) and 100 Hz (only Advanced version), pulse width of 5, 10, 50, 100, 500 ms	
Output A function		
Output B function		
Output		
Communication	IrDA: Standard integrated infrared communication interface with MODBUS RTU protocol	
Add-on modules	- RS 232 serial interface with MODBUS RTU (Rx/Tx/GND), point to point with max. 15 m cable - RS 485 serial interface with MODBUS RTU (+/-/GND), multidrop with up to 32 devices with max. 1000 m cable - Encoder interface module (for Itron 200WP) "Sensus protocol"	
Power supply	Auto detection of power source with display symbol for operation power.	
Internal battery pack	2 D-Cell 3.6 V/33 Ah	
External battery pack	4 D-Cell 3.6 V/66 Ah	
Mains power supply	12 ... 24 V AC/DC (10 ... 32 V) 2 VA 115 ... 230 V AC (85 ... 264 V) 2 VA Both mains power supply systems are upgradable for battery backup via internal D-Cell (3.6 V 16.5 Ah) or external battery pack.	
Cable	3 m (9.8 ft) for external connection to mains supply (without cable plug)	

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

Technical specifications

Transmitter

Installation MAG 8000/
MAG 8000CT

Integral (compact) or remote with factory mounted cable in 5, 10, 20 or 30 m lengths with IP68/NEMA 6P connectors. Connection is made at the transmitter bottom.

Enclosure

Stainless steel top housing (AISI 316) and coated brass bottom. Remote wall mount bracket in stainless steel (AISI 304).

Cable entries

2 x M20 (one gland for one cable of size 6 ... 8 mm (0.24 ... 0.31 ") is included in the standard delivery)

Display and key

- Display with 8 digits for main information. Index, menu and status symbols for dedicated information
- Key for toggling through the information and reset customer totalizer and call-up function
- Selectable default information and accessible menus:
 - Operator
 - Meter
 - Service
 - Data Logger
 - Statistic and leakage (only Advanced version)
 - Revenue and Tariffs (only Advanced version)
- Totalized information can be displayed with 1, 2, 3 decimals or automatic adjustment for maximum resolution

Flow unit MAG 8000

• Europe std.

Volume in m³ and flow rate in m³/h

• US std.

Volume in Gallon and flow rate in GPM

• Australian std.

Volume in MI and flow rate as MI/d

Other units selectable:

- Volume: m³ x 100, l x 100, G x 100, G x 1000, MG, CF x 100, CF x 1000, AF, Al, kl
- Flow: m³/min, m³/d, l/s, l/min, GPS, GPH, GPD, MGD, CFS, CFM, CFH

- Other units are ordered from factory or manually configured on-site by sticking a label on the display and changing the scaling factors

Flow unit MAG 8000 CT

• Europe std.

Volume in m³ and flow rate in m³/h

Digital output MAG 8000/
MAG 8000CT

- 2 passive outputs (MOS), individual galvanically isolated
- Maximum load ± 35 V DC, 50 mA short circuit protected
- Output A function
Programmable as pulse volume – forward – reverse – forward/net – reverse/net
- Output B function
Programmable as pulse volume (like output A), alarm or call-up
- Output
Max. pulse rate of 50 Hz (only Basic version) and 100 Hz (only Advanced version), pulse width of 5, 10, 50, 100, 500 ms

Communication

IrDA: Standard integrated infrared communication interface with MODBUS RTU protocol

Add-on modules:

- RS 232 serial interface with MODBUS RTU (Rx/Tx/GND), point to point with max. 15 m cable
- RS 485 serial interface with MODBUS RTU (+/-/GND), multi-drop with up to 32 devices with max. 1000 m cable

MODBUS RTU protocol is an open protocol (further information available on request)
Serial speed 1200, 2400, 4800, 9600, 19200, 38400 Baud

- Encoder interface (for Itron 200WP) "Sensus protocol" for fixed network

Power supply

Auto detection of power source with display symbol for operation power.

Internal battery pack: 2 D-Cell 3.6 V/33 Ah

External battery pack: 4 D-Cell 3.6 V/66 Ah

Mains Power supply:

- 12 ... 24 V AC/DC (10 ... 32 V) 2 VA
- 115 ... 230 V AC (85 ... 264 V) 2 VA

Both mains power supply systems are upgradable for battery backup via internal D-Cell (3.6 V 16.5 Ah) or external battery pack. The power supply has 3 m (9.8 ft) power cable for external connection to mains supply (without cable plug)

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Features

Application identification	Tag number up to 15 characters
Time and date	Real time clock
Totalizer	
MAG 8000/ MAG 8000CT	2 totalizer: Forward, Reverse, Bidirectional netflow calculation and free selectable start value. 1 customer totalizer, following totalizer 1 setting and resettable via display key or software with logging of date and time
Measurement	
Low flow cut-off	0.05% of Q_n (Q3) or free adjustable
Empty pipe detection	Symbolised in display
Data logger	Logging of 26 records: selectable as daily, weekly or monthly logging
Alarm	
Monitoring	Active alarm is indicated on the display Total hours an alarm has been active Numbers of times the alarm has been activated First time an alarm appears Last time the alarm disappears
Fatal faults	Signal insulation – Flow signal immunity is influenced (only Advanced version) Coil current – Fault in driving magnetic sensor field Amplifier – Fault in signal circuit Check sum – Fault in calculation or handling of data
Warning faults	Low Power – customer selectable battery alarm level or power drop out Flow overflow – Flow in sensor exceeds Q_{max} (Q4) (125% Q_n (Q3)) Pulse overflow on output A and B – Selected pulse volume is too small compared to actual flow rate and max. output pulse rate. Consumption – saved data logger consumption exceeds customer selected limit on high or low consumption Leakage – Leakage detected based on customer settings (only Advanced version) Empty pipe – no water in the pipe / sensor Low impedance - measured electrode impedance below customer low impedance level Flow limit – actual flow exceeds selected high flow limited
Meter status (tamper monitoring of revenue data)	Changing totalizers 1 and 2 Changing Tariff totalizer Changing Tariff settings Changing date and time Alarm has been active (see alarm log for details) Fault log has been reset Hardware parameter protection has been broken Meter has been repowered

Data protection

All data stored in an EEPROM. Totalizers 1 and 2 are backed up every 10 min, statistic every hour and power consumption and temperature measurement every 4 hour.

Password protection of all parameters and hardware protection of calibration and revenue parameters.

Battery power management

Optimal battery information on remaining capacity.

Calculated capacity includes all consuming elements and available battery capacity is adjusted related to change in ambient temperature.

Numbers of power-ups

Date and time registered for first and last time power alarm.

Diagnostic

Continuous self test including

Coil current to drive the magnetic field

Signal input circuit

Data calculation, handling and storing

Alarm statistics and logging for fault analyzing

Electrode impedance to check actual media contact

Flow simulation to check pulse and communication signal chain for correct scaling

Number of sensor measurements (excitations)

Transmitter temperature (battery capacity calculation)

Low impedance alarm for change in media

Flow alarm when defined high flow exceeds

Verification mode for fast measure performance check

Insulation test

(only Advanced version)

Test of signal immunity against disturbance and bad installation. Test interval is selectable and measurement is interrupted during the test period of 4 min.

Leakage detection

(only Advanced version)

Monitoring the lowest flow or volume during selected time window within 24 hours. Leakage is detected over a selectable period where monitored value exceed the possible leakage level. Min and max values are stored with date registration. Last store value visible on the display.

Meter Utilization

(only Advanced version)

6 registers for monitoring total time the meter has operated in different flow intervals. Registered intervals are free selectable as % of Q_n (Q3)

Tariff

(only Advanced version)

6 tariff registers count the volume delivered within the selected tariff windows, based on time of day or flow rates or a combination.

Tariff can also be used for consumption profile where consumption is related to different time intervals or flow rates.

Tariff values visible on the display.

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Settling date (only Advanced version)	On a predefined date the totalizer 1 index value is stored. Old values are stored to show the latest two totalized 1 index values. Settling values visible on the display.
Statistic (only Advanced version)	Min. flow rate with time and date registration Max. flow rate with time and date registration Min. daily consumption with date registration Max. daily consumption with date registration Latest 7 days total and daily consumption Actual month consumption Latest month consumption
PC Configuration Software PDM	• Meter configuration – online and offline mode • Own parameter settings • Parameter documentation • Print and export of data and parameters PDM 6.0 Service Pack 2 – Basic and Online version

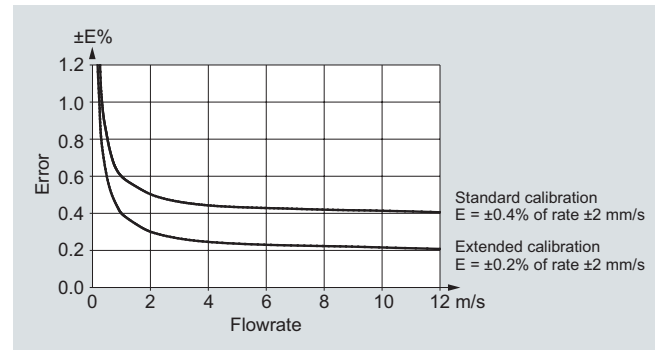
MAG 8000 water meter uncertainty

To ensure continuous accurate measurement, flowmeters must be calibrated. All measuring instrumentation, used in the calibration of the flowmeters, has either been calibrated by a UKAS or DANAK accredited laboratory or has been calibrated against certified master sensors. This provides an unbroken chain of measurement-traceability to national standards.

Siemens Flow Instruments can provide accredited calibration in the flow range from 0.0001 m³/h to 4350 m³/h.

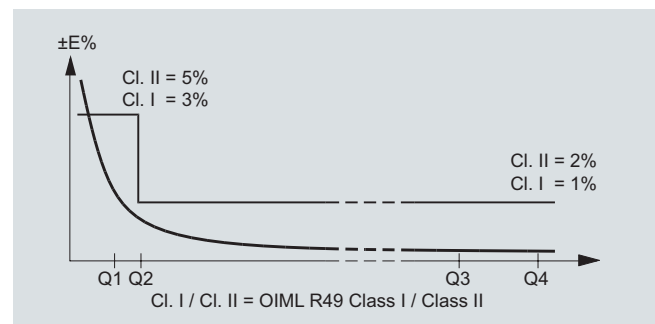
The accreditation bodies DANAK and UKAS have signed the ILAC MRA agreement (International Laboratory Accreditation Corporation - Mutual Recognition Arrangement). Therefore the accreditation ensures international traceability and recognition of the test results in 39 countries world wide, including the US (NIST traceability).

The selected calibration determines the accuracy of the meter. A standard calibration results in max. $\pm 0.4\%$ uncertainty and an extended calibration $\pm 0.2\%$. A calibration certificate follows every sensor and calibration data are stored in the meter unit.



MAG 8000 CT (Revenue program) water meter type approval

MAG 8000 CT program is type approved and verified according to international water meter standard OIML R 49. The Custody Transfer program is approved as Class I and Class II, for the sensor program from DN 50 to DN 300, at different Q3 and Q3/Q1. Q2/Q1 = 1.6 and follows OIML R 49 specification.



SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

OIML R 49 Pattern approval specification for Class I (1%)¹⁾

Size	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	250	250	250	250	250	250	250	250	160
Q4 [m³/h]	78.75	125	200	312.5	500	787.5	1250	2000	2000
Q3 [m³/h]	63	100	160	250	400	630	1000	1600	1600
Q2 [m³/h]	0.40	0.64	1.00	1.60	2.50	4.00	6.40	10.0	16.0
Q1 [m³/h]	0.25	0.40	0.63	1.00	1.60	2.50	4.00	6.40	10.0

OIML R 49 Pattern approval specification for Class II (2%)¹⁾

Size	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	400	400	400	400	400	400	400	400	250
Q4 [m³/h]	78.75	125	200	312.5	500	787.5	1250	2000	2000
Q3 [m³/h]	63	100	160	250	400	630	1000	1600	1600
Q2 [m³/h]	0.25	0.40	0.63	1.00	1.60	2.50	4.00	6.40	10.0
Q1 [m³/h]	0.16	0.25	0.40	0.63	1.00	1.60	2.50	4.00	6.40

¹⁾ The product will be delivered according to requested specifications, which may deviate from the specifications of the approval frame described in tables below.

MAG 8000 CT (Revenue program) MI-001

MAG 8000 CT program is type approved according to international water meter standard OIML R 49. Since the first November 2006 the MI-001 water meter directive is in force, which means that all water meters can be sold across the EU borders if the water meters contain a MI-001 label.

The MAG 8000 CT MI-001 verified and labeled products are a Class II approval according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), Annex MI-001 in the sizes from DN 50 to DN 600.

The MID certification is obtained as a B + D module approval according to the above mentioned directive.

Module B : Type approval according to OIML R 49

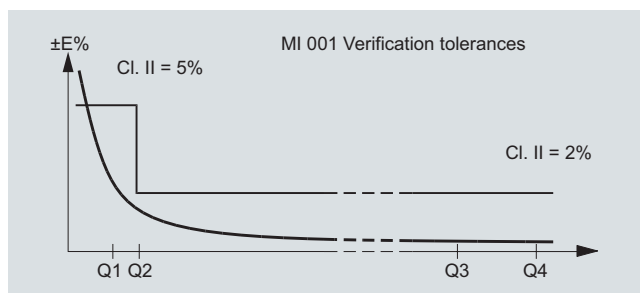
Module D : Quality insurance approval of production

MAG 8000 CT MI-001 verified and labeled products at a given Q3 and Q3/Q4 = 1.25 and Q2/Q1 = 1.6 measuring ranges see below table:

DN	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	25	25	25	25	25	25	25	25	25
Q4 [m³/h]	18.75	31.25	50	78.75	125	200	312.5	500	750
Q3 [m³/h]	15	25	40	63	100	160	250	400	600
Q2 [m³/h]	0.96	1.60	2.60	4.03	6.40	10.24	16.00	25.60	38.4
Q1 [m³/h]	0.60	1.00	1.60	2.52	4.00	6.40	10.00	16.00	24.0

DN	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	63	63	63	63	63	63	63	63	63
Q4 [m³/h]	18.75	31.25	50	78.75	125	200	312.5	500	750
Q3 [m³/h]	15	25	40	63	100	160	250	400	600
Q2 [m³/h]	0.38	0.63	1.02	1.60	2.54	4.06	6.35	10.20	15.24
Q1 [m³/h]	0.24	0.40	0.63	1.00	1.59	2.54	3.97	6.35	9.52

DN	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	80	80	80	80	80	80	80	80	80
Q4 [m³/h]	18.75	31.25	50	78.75	125	200	312.5	500	750
Q3 [m³/h]	15	25	40	63	100	160	250	400	600
Q2 [m³/h]	0.31	0.50	0.80	1.20	2.00	3.20	5.00	8.00	12.0
Q1 [m³/h]	0.19	0.31	0.50	0.75	1.25	2.00	3.13	5.00	7.5



SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

DN	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	160	160	160	160	160	160	160	160	160
Q4 [m³/h]	50	78.75	125	200	312.5	500	787.5	1250	2000
Q3 [m³/h]	40	63	100	160	250	400	630	1000	1600
Q2 [m³/h]	0.40	0.63	1.00	1.60	2.50	4.00	6.30	10.00	16.00
Q1 [m³/h]	0.25	0.39	0.63	1.00	1.56	2.50	3.94	6.30	10.00

DN	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	200	200	200	200	200	200	200	200	200
Q4 [m³/h]	50	78.75	125	200	312.5	500	787.5	1250	2000
Q3 [m³/h]	40	63	100	160	250	400	630	1000	1600
Q2 [m³/h]	0.32	0.50	0.80	1.28	2.00	3.20	5.00	8.00	12.60
Q1 [m³/h]	0.20	0.32	0.50	0.80	1.25	2.00	3.15	5.00	8.00

DN	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")
„R“ Q3/Q1	250	250	250	250	250	250	250	250	250
Q4 [m³/h]	50	78.75	125	200	312.5	500	787.5	1250	2000
Q3 [m³/h]	40	63	100	160	250	400	630	1000	1600
Q2 [m³/h]	0.26	0.40	0.64	1.02	1.60	2.56	4.00	6.40	10.24
Q1 [m³/h]	0.16	0.25	0.40	0.64	1.00	1.60	2.52	4.00	6.40

The Label is placed on the side of the encapsulation.
An example of the product label is shown below:

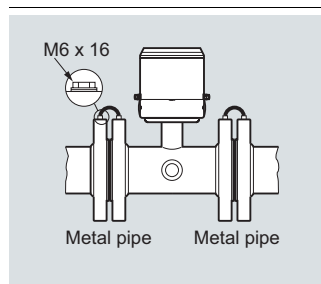


Installation conditions

Please refer to "System information SITRANS F M electromagnetic flowmeters".
MAG 8000 CT has to be mounted in Integral (compact) and horizontal position only, to obtain the MI-001 certification.
Battery packs must be installed with the top part in upwards direction to reach maximum capacity.

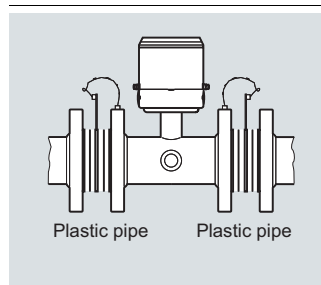
Bonding and grounding

The sensor body must be grounded using grounding/bonding straps and/or grounding rings to protect the flow signal against stray electrical noise and/or lightning. This ensures that the noise is carried through the sensor body and a noise-free measuring area within the sensor body.



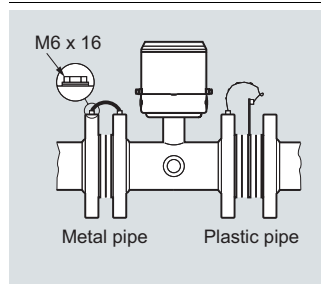
Metal pipelines

On metal pipelines, connect the straps to both flanges.



Plastic pipelines

On plastic pipelines and lined metal pipes, optional grounding rings must be used at both ends.
Grounding rings has to be ordered separately see „grounding ring KIT“



Combination of metal and plastic pipelines

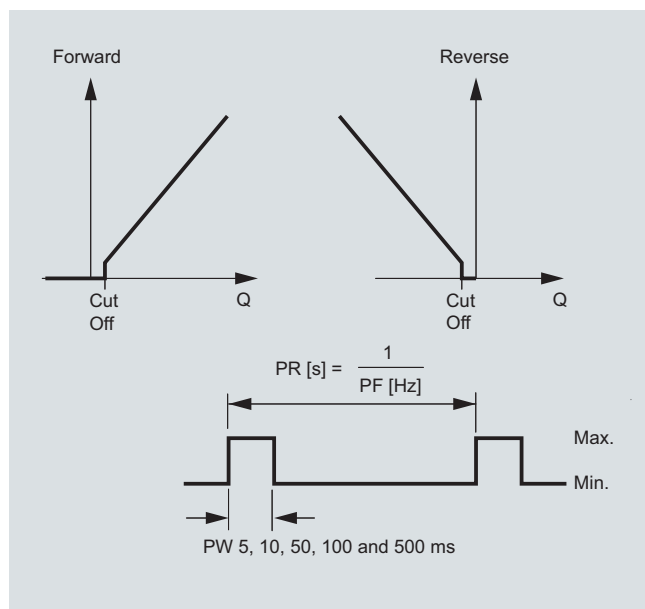
A combination of metal and plastic requires straps for metal pipeline and grounding rings for plastic pipeline.

SITRANS F flowmeters

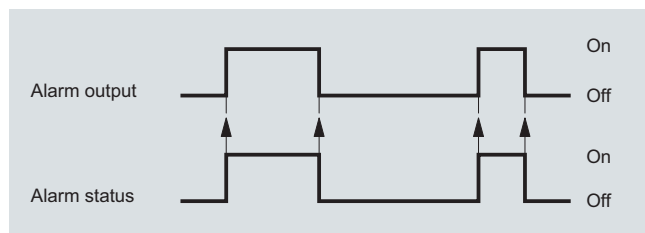
SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Output configuration MAG 8000



Pulse volume: Output A/B configured as volume per pulse, the output delivers a pulse when the preset volume has passed the selected direction, calculated on forward/reverse or Net forward/reverse flow. The volume per pulse is freely scalable, from 0.0001 to 10 000 meter-unit per pulse. PR = pulse rate and PF = pulse frequency.



Alarm: The alarm will follow the internal alarm status.

Output configuration MAG 8000 CT

MAG 8000 CT has same output functionality as MAG 8000, due to MI-001 is only forward flow (output A predefined) and output B as Alarm output available).

Battery lifetime (subject to the assumptions mentioned above)

Excitation frequency (24 h operation)		1/60 Hz	1/30 Hz	1/15 Hz	1/5 Hz	1.5625 Hz	3.125 Hz	6.25 Hz
Two D-Cell battery 33 Ah Internal battery pack	DN 25 ... 200 (1" ... 8")	8 years	8 years	6 years	40 months	8 months	4 months	2 months
	DN 250 ... 600 (10" ... 24")	8 years	6 years	4 years	20 months	4 months	2 months	NA
	DN 700 ... 1 200 (28" ... 48")	6 years	4 years	2 years	1 year	2 months	NA	NA
Four D-Cell battery 66 Ah External battery pack	DN 25 ... 200 (1" ... 8")	N/A	10 years	10 years	80 months	16 months	8 months	4 months
	DN 250 ... 600 (10" ... 24")	N/A	10 years	10 years	40 months	8 months	4 months	NA
	DN 700 ... 1 200 (28" ... 48")	10 years	8 years	4 years	2 years	4 months	NA	NA

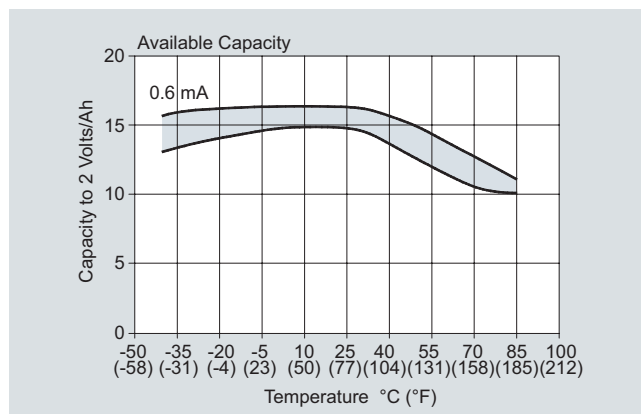
External battery pack can be used as battery backup for mains power supply.

Serial RS 232/RS 485 add-on communication modules are designed for mains powered systems as the battery operation time will be reduced. At 1 hour communication per month (all meter

Battery operation time and calculation

The battery operation time depends on the connected battery pack as well as the operation condition of the meter.

MAG 8000 calculates the remaining capacity every 4 hours and includes all consuming elements. Calculation compensates for temperature influence on battery capacity (drawing).



The effect from other temperatures can be seen from the figure. A variation in temperature from 15 °C to 55 °C (59 to 131 °F) reduces the capacity by 17% in the table from 15 Ah to 12.5 Ah.

At typical revenue scenario of expected battery operation time can be seen in the table.

The measurement for calculating the rest capacity of the battery life time is only completed if the system has no active fatal faults or the empty pipe is active. Maximum battery specification is 10 years operation.

Scenario - Revenue application

Output A	Pulse rate max. 10 Hz
Output B	Alarm or call-up
Meter dialog	1 hour per month
Add-com	None
Temperature profile	• 5% at 0 °C (32 °F) • 80% at 15 °C (59 °F) • 15% at 50 °C (122 °F)

data collected 2 times per day) and the module is connected, the operation time is reduced to:

- RS 232 at low excitation frequency to 10% and at high excitation frequency to 80% of calculated operation time
- RS 485 at low excitation frequency to 50% and at high excitation frequency to 90% of calculated operation time

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Selection and Ordering data	Order No.
SITRANS F M MAG 8000 water meter	7ME6810 -
Diameter	
DN 25 (1")	2 D
DN 40 (1½")	2 R
DN 50 (2")	2 Y
DN 65 (2½")	3 F
DN 80 (3")	3 M
DN 100 (4")	3 T
DN 125 (5")	4 B
DN 150 (6")	4 H
DN 200 (8")	4 P
DN 250 (10")	4 V
DN 300 (12")	5 D
DN 350 (14")	5 K
DN 400 (16")	5 R
DN 450 (18")	5 Y
DN 500 (20")	6 F
DN 600 (24")	6 P
DN 700 (28") ¹⁾	6 Y
DN 750 (30") ¹⁾	7 D
DN 800 (32") ¹⁾	7 H
DN 900 (36") ¹⁾	7 M
DN 1000 (40") ¹⁾	7 R
DN 1050 (42") ¹⁾	7 T
DN 1100 (44") ¹⁾	7 V
DN 1200 (48") ¹⁾	8 B
Flange norm and pressure rating	
EN 1092-1	
PN 10 (DN 200 ... 1200 (8" ... 48"))	B
PN 16 (DN 50 ... 1200 (2" ... 48"))	C
PN 16 none PED (DN 700 ... 1200 (28" ... 48"))	D
PN 40 (DN 25 ... 40 (1" ... 1½"))	F
ANSI B16.5	
Class 150	J
AWWA C-207	
Class D (28" ... 48")	L
AS4087	
PN 16 (DN 50 ... 1200 (2" ... 48"))	N
Sensor version	
EPDM liner and Hastelloy electrodes	3
Calibration	
Standard ± 0.4% of rate ± 2 mm/s	1
Extended ± 0.2% of rate ± 2 mm/s DN 50 ... 300 (2" ... 12")	2
Region version	
Europe (m³, m³/h, 50 Hz)	1
USA (Gallon, GPM, 60 Hz)	2
Australia (ML, l/h, 50 Hz)	3
Transmitter type and installation	
Basic version integral on sensor	A
Basic version remote, 5 m (16.4 ft) mounted cable on sensor with IP68/NEMA 6P plugs	B
Do - 10 m (32.8 ft)	C
Do - 20 m (65.6 ft)	D
Do - 30 m (98.4 ft)	E
Advanced version integral on sensor	K
Advanced version remote, 5 m mounted cable on sensor with IP68/NEMA 6P plugs	L
Do - 10 m (32.8 ft)	M
Do - 20 m (65.6 ft)	N
Do - 30 m (98.4 ft)	P

Selection and Ordering data	Order No.
SITRANS F M MAG 8000 water meter	7ME6810 -
Communication interface	
No additional "add-on" communication module installed	A
Serial RS 485 with MODBUS RTU (Terminated as end device)	B
Serial RS 232 with MODBUS RTU	C
Power supply	
Internal battery (no battery included)	0
Internal battery pack installed ²⁾	1
External battery with 1.5 m (4.9 ft) power cable with IP68/NEMA 6P plugs, no battery included	2
12/24 V AC/DC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	3
115 ... 230 V AC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	4
This device is shipped with a Quick Start guide and the SITRANS F manual CD containing the complete manual library. Printed Operating Instructions are available for purchase via PMD	
¹⁾ The Diameter DN 700 (28") to DN 1200 (48") is only available as <u>remote</u> transmitter type installation. ²⁾ Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Goods, UN 3090 and UN 3091". Special transport documentation is required to observe these regulations. This may influence both transport time and costs.	

Selection and Ordering data	Order code
Additional information	
Please add "-Z" to Order No. and specify Order code(s) and plain text.	
Flow unit	
l/s	L00
MGD	L01
CFS	L02
l/min	L03
m³/min	L04
GPM	L05
CFM	L06
l/h	L07
m³/h	L08
GPH	L09
CFH	L10
GPS	L11
MI/d	L12
m³/d	L13
GPD	L14
Totalizer	
Volume calculation (default totalizer 1 = forward and totalizer 2 = reverse)	
Totalizer 1 = RV, reverse flow	L20
Totalizer 1 = NET, net flow	L22
Totalizer 2 = FW, forward flow	L30
Totalizer 2 = NET, net flow	L31

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Selection and Ordering data Order code

Additional information

Please add “-Z” to Order No. and specify Order code(s) and plain text.

Volume unit

m ³	L40
MI	L41
G	L42
AF	L43
l x 100	L44
m ³ x 100	L45
G x 100	L46
CF x 100	L47
MG	L48
G x 1000	L49
CF x 1000	L50
AI	L51
kl	L52

Pulse set up

(default pulse A = forward and pulse B = Alarm)

A function = RV, reverse flow	L62
A function = FWnet, forward net flow	L63
A function = RVnet, reverse net flow	L64
A function = Off	L65
Volume per pulse A = x 0.0001	L70
Volume per pulse A = x 0.001	L71
Volume per pulse A = x 0.01	L72
Volume per pulse A = x 0.1	L73
Volume per pulse A = x 1	L74
B function = FW, forward flow	L80
B function = RV, reverse flow	L81
B function = FWnet, forward net flow	L82
B function = RVnet, reverse net flow	L83
B function = Alarm	L84
B function = Call up	L85
Volume per pulse B = x 0.0001	L90
Volume per pulse B = x 0.001	L91
Volume per pulse B = x 0.01	L92
Volume per pulse B = x 0.1	L93
Volume per pulse B = x 1	L94

Data logger set up (default month logging)

DataloggerInterval = Daily	M31
DataloggerInterval = Weekly	M32

Factory mounted cables

5 m (16.4 ft) pulse cable A+B	M81
5 m (16.4 ft) communication cable RS 232/RS 485 terminated as end device	M82
20 m (65.6 ft) pulse cable A+B	M84
20 m (65.6 ft) communication cable RS 232/RS 485 terminated as end device	M85
Cello 2 channel, input cable 3 m (9.84 ft) with Brad Harrison micro-change 3 way connector	M87
Cello 2 channel, input cable 5 m (16.4 ft) with MIL-C-26482 spec. connectors	M89
SOFREL data logger cable 2 m with connector for SOFREL GSM module	M92

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

Selection and Ordering data	Order No.
SITRANS F M	
MAG 8000 CT water meter with EPDM liner and Hastelloy electrodes	7 ME 6 8 2 0 -
	0 -
Diameter	
DN 50 (2")	2 Y
DN 65 (2½")	3 F
DN 80 (3")/Q3 150 m³/h (m³) without verification or DN 80 (3")/Q3 40 m³/h (m³) with MI-001 verification	3 M
DN 100 (4")	3 T
DN 125 (5")	4 B
DN 150 (6")	4 H
DN 200 (8")	4 P
DN 250 (10")	4 V
DN 300 (12")	5 D
DN 350 (14")	5 K
DN 400 (16")	5 R
DN 450 (18")	5 Y
DN 500 (20")	6 F
DN 600 (24")	6 P
Flange norm and pressure rating	
EN 1092-1	
PN 16	C
ANSI B16.5	
Class 150	J
AS4087	
PN 16	N
Approval/Verification	
Without verification according to OIML R 49	0
MI-001 Q3/Q1 = 25	1
MI-001 Q3/Q1 = 63	2
MI-001 Q3/Q1 = 80	3
MI-001 Q3/Q1 = 160	4
MI-001 Q3/Q1 = 200	5
MI-001 Q3/Q1 = 250	6
Without verification according to OIML R 49 (Q3/Q1 = 100)	7
Without verification according to OIML R 49 (Q3/Q1 = 250)	8
Region version	
Europe (m³, m³/h, 50 Hz) ¹⁾	1
USA (m³, m³/h, 60 Hz)	2
Transmitter type and installation	
Basic version integral on sensor	A
Basic version remote, 5 m (16.4 ft) mounted cable on sensor with IP68/NEMA 6P plugs	B
Do - 10 m (32.8 ft)	C
Do - 20 m (65.6 ft)	D
Do - 30 m (98.4 ft)	E
Advanced version integral on sensor	K
Advanced version remote, 5 m mounted cable on sensor with IP68/NEMA 6P plugs	L
Do - 10 m (32.8 ft)	M
Do - 20 m (65.6 ft)	N
Do - 30 m (98.4 ft)	P
Communication interface	
No additional "add-on" communication module installed	A
Serial RS 485 with MODBUS RTU (Terminated as end device)	B
Serial RS 232 with MODBUS RTU	C
Encoder interface for ITRON 200WP radio with "Sen- sus" protocol"	D

Selection and Ordering data	Order No.
SITRANS F M	
MAG 8000 CT water meter with EPDM liner and Hastelloy electrodes	7 ME 6 8 2 0 -
	0 -
Power supply	
Internal battery (no battery included)	0
Internal battery pack installed ²⁾	1
External battery with 1.5 m (4.9 ft) power cable with IP68/NEMA 6P plugs, no battery included	2
12/24 V AC/DC power supply with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	3
115 ... 230 V AC power supply with battery backup and 3 m (9.8 ft) power cable for external connection. (no battery included)	4

This device is shipped with a Quick Start guide and the SITRANS F manual CD containing the complete manual library. Printed Operating Instructions are available for purchase via PMD.

²⁾ Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Goods, UN 3090 and UN 3091". Special transport documentation is required to observe these regulations. This may influence both transport time and costs.

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

Selection and Ordering data Order code

Additional information

Please add “-Z” to Order No. and specify Order code(s) and plain text.

Totalizer

Volume calculation (default totalizer 1 = forward and totalizer 2 = reverse)

Totalizer 1 = RV, reverse flow	L20
Totalizer 1 = NET, net flow	L22
Totalizer 2 = FW, forward flow	L30
Totalizer 2 = NET, net flow	L31

Pulse set up

(default pulse A = forward and pulse B = Alarm)

A function = RV, reverse flow	L62
A function = FWnet, forward net flow	L63
A function = RVnet, reverse net flow	L64
A function = Off	L65
Volume per pulse A = x 0.001	L71
Volume per pulse A = x 0.01	L72
Volume per pulse A = x 0.1	L73
Volume per pulse A = x 1	L74
B function = FW, forward flow	L80
B function = RV, reverse flow	L81
B function = FWnet, forward net flow	L82
B function = RVnet, reverse net flow	L83
B function = Alarm	L84
B function = Call up	L85
Volume per pulse B = x 0.001	L91
Volume per pulse B = x 0.01	L92
Volume per pulse B = x 0.1	L93
Volume per pulse B = x 1	L94

Data logger set up (default month logging)

DataloggerInterval = Daily	M31
DataloggerInterval = Weekly	M32

Factory mounted cables

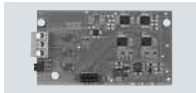
5 m (16.4 ft) pulse cable A+B	M81
5 m (16.4 ft) communication cable RS 232/RS 485 terminated as end device	M82
20 m (65.6 ft) pulse cable A+B	M84
20 m (65.6 ft) communication cable RS 232/RS 485 terminated as end device	M85
Cello 2 channel, input cable 3 m (9.84 ft) with Brad Harrison micro-change 3 way connector	M87
Cello 2 channel, input cable 5 m (16.4 ft) with MIL-C-26482 spec. connectors	M89
5 ft. Encoder interface cable with connector for ITRON 200WP radio	M90
25 ft. Encoder interface cable with connector for ITRON 200WP radio	M91
SOFREL data logger cable 2 m with connector for SOFREL GSM module	M92

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

Accessories

Description	Order No.	
PC Flow Tool on CD (Download for free from www.siemens.com/flow)	◆ FDK-087L6001	
IrDA infrared interface adapter with USB for data acquisition with 1.2 m (3.9 ft) cable	◆ FDK-087L4163	
Battery backup for mains power supply, one pc. D-cell (3.6 V, 16.5 Ah) Attention on note ¹⁾	◆ FDK-087L4201	
Internal battery pack, one set D-cell (3.6 V 33 Ah) and accessories for replacement Attention on note ¹⁾	◆ FDK-087L4150	
External battery pack IP68/NEMA 6P with connector, four D-cell (3.6 V 66 Ah) Attention on note ¹⁾	◆ FDK-087L4151	
Mains power supply 12 ... 24 V AC/DC with battery backup and 3 m (9.8 ft) power cable for external connection (no battery included)	FDK-087L4210	
Mains power supply 115 ... 230 V AC with battery backup up and 3 m (9.8 ft) power cable for external connection (no battery included)	◆ FDK-087L4211	
RS 232 add-on module, point to point communication interface with MODBUS RTU protocol	FDK-087L4212	
RS485 add-on module, multidrop communication interface with MODBUS RTU protocol	◆ FDK-087L4213	
Encoder interface module, with "Sensus" protocol for ITRON 200WP radio, only for use with 7ME6820 route	A5E02475650	
One cable entry 6 ... 8 mm (0.24 ... 0.31 ") M20 brass glands package (1 pc)	FDK-087L4196	
One cable entry 2 ... 5 mm (0.08 ... 0.20 ") M12 brass glands with M20 reduction. Package of 10 pcs	FDK-087L4154	

Description	Order No.	
One cable entry 6 ... 8 mm (0.24 ... 0.31 ") M20 brass glands package (10 pcs)	FDK-087L4155	
One cable entry 8 ... 11 mm (0.31 ... 0.43 ") M20 brass glands package (10 pcs)	FDK-087L4156	
One cable entry 11 ... 15 mm (0.43 ... 0.59 ") M20 brass glands package (10 pcs)	FDK-087L4157	
Two cable entries 3.5 ... 5 mm (0.14 ... 0.20 ") M20 brass glands package (10 pcs)	FDK-087L4158	
Two cable entries 5.5 ... 7.5 mm (0.22 ... 0.30 ") M20 brass glands package (10 pcs)	FDK-087L4159	
IP68/NEMA 6P potting kit	◆ FDK-085U0220	
MAG 8000 Hardware key to access protected parameters	FDK-087L4165	
MAG 8000 demo - training unit pack operating on Alkaline batteries. Transmitter with Flow tool CD, IrDA interface adapter and hardware key (No dangerous goods limitations)	FDK-087L4080	
Alkaline battery for MAG 8000 demo transmitter (3 V 13 Ah) (No dangerous goods limitations)	FDK-087L4142	

◆ Short lead time (details in PMD)

¹⁾ Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Goods, UN 3090 and UN 3091". Special transport documentation is required to observe these regulations. This may influence both transport time and costs.

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter MAG 8000/MAG 8000 CT

MAG 8000 has built in Hastelloy grounding electrodes, when installed in PVC or coated pipelines, grounding rings must be installed additionally.

Grounding rings, type C must be used for the 7ME6810 and 7ME6820 routes (sizes > DN 300) and for the 7ME6880 route (all sizes). Please see grounding rings in the section MAG 3100 Grounding rings and be aware that the mentioned MLFB codes include only 1 grounding ring. Grounding rings DN 25 to DN 300 in stainless steel are packed in pairs and sold as a "grounding ring kit".

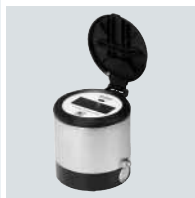
Dimension	Order No.
DN 25	◆ A5E01002946 ^{F)}
DN 40	◆ A5E01002947 ^{F)}
DN 50	◆ A5E01002948 ^{F)}
DN 65	◆ A5E01002950 ^{F)}
DN 80	◆ A5E01002952 ^{F)}
DN 100	◆ A5E01002953 ^{F)}
DN 125	◆ A5E01002954 ^{F)}
DN 150	◆ A5E01002955
DN 200	◆ A5E01002957 ^{F)}
DN 250	◆ A5E01002958 ^{F)}
DN 300	◆ A5E01002962 ^{F)}



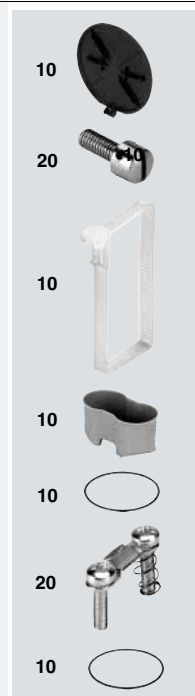
◆ Short lead time (details in PMD)

Spare parts

Description	Order No.
MAG 8000 (Basic version) transmitter compact replacement kit. System number specified by ordering. No battery included	FDK-087L4166
MAG 8000 (Basic version) transmitter remote replacement kit. System number specified by ordering. No battery included	FDK-087L4202
MAG 8000 (Advanced version) transmitter compact replacement kit. No battery included	FDK-087L4203
MAG 8000 (Advanced version) transmitter remote replacement kit. No battery included.	FDK-087L4204
MAG 8000 (Basic version) transmitter PCB replacement kit	A5E01171569 ^{F)}
MAG 8000 (Advanced version) transmitter PCB replacement kit	FDK-087L4168



Description	Order No.
Enclosure top including plastic lid, screws and blank product label	FDK-087L4167
Cable for external battery pack, 1.5 m (4.92 ft) with IP68/NEMA 6P connector	FDK-087L4152
5 ft. Encoder interface cable with IP68/NEMA 6P plugs included, for ITRON 200WP radio	A5E02551263
25 ft. Encoder interface cable with IP68/NEMA 6P plugs included, for ITRON 200WP radio	A5E02551182
Service tool kit package with various component for service and replacement.	FDK-087L4162



F) Subject to export regulations AL: 91999, ECCN: N.

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

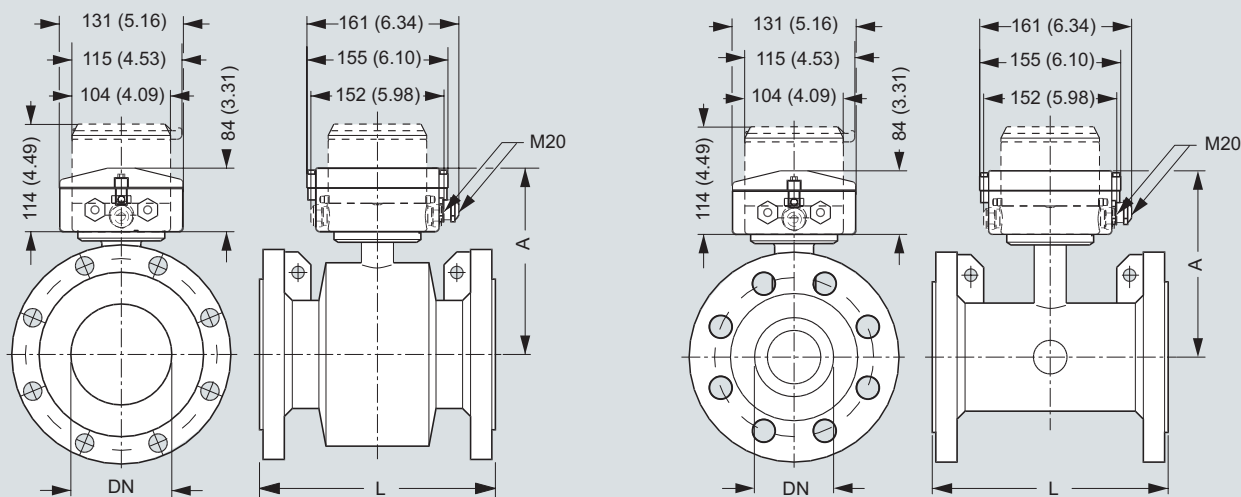
Description	Order No.	
Remote cable set 5 m (16.4 ft) with IP68/NEMA 6P plugs - PG 13.5	FDK-087L4108	
Remote cable set 5 m (16.4 ft) with IP68/NEMA 6P plugs - M20	On request	
Remote cable set 10 m (32.8 ft) with IP68/NEMA 6P plugs - PG 13.5	FDK-087L4109	
Remote cable set 10 m (32.8 ft) with IP68/NEMA 6P plugs - M20	On request	
Remote cable set 20 m (65.6 ft) with IP68/NEMA 6P plugs - PG 13.5	FDK-087L4110	
Remote cable set 20 m (65.6 ft) with IP68/NEMA 6P plugs - M20	On request	
Remote cable set 30 m (98.4 ft) with IP68/NEMA 6P plugs - PG 13.5	FDK-087L4111	
Remote cable set 30 m (98.4 ft) with IP68/NEMA 6P plugs - M20	On request	

SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

Dimensional drawings



DN 25 & 40 (1" & 1½") & DN 350 ... 1200 (14" ... 48")
For EPDM liner DN 50 ... 300 (2" ... 12") (7ME6810 and 7ME6820)

DN 50 ... 300 (2" ... 12")
For Ebonite liner (7ME6880 DN 25 ... 1200 (1" ... 48"))

Dimensions in mm (inch)

Nominal DN size	A	L, lengths						Weight ¹⁾	
		EPDM (7ME6810 and 7ME6820)	EN 1092-1 PN 10	EN 1092-1 PN 16/ PN 16 non PED	EN 1092-1 PN 40	ANSI 16.5 Class 150	AS 4087 PN 16	AWWA C-207 Class D	
mm (inch)	mm (inch)	mm	mm	mm	inch	mm	mm	kg	lbs
25 (1)	194 (7.7)	-	-	200	7.9	200	-	6	13
40 (1½)	204 (8.1)	-	-	200	7.9	200	-	9	20
50 (2)	195 (7.7)	-	200	-	7.9	200	-	11	25
65 (2½)	201 (8)	-	200	-	7.9	200	-	13	29
80 (3)	207 (8.2)	-	200	-	7.9	200	-	15	34
100 (4)	214 (8.5)	-	250	-	9.8	250	-	17	38
125 (5)	224 (8.9)	-	250	-	9.8	250	-	22	50
150 (6)	239 (9.5)	-	300	-	11.8	300	-	28	63
200 (8)	264 (10.5)	350	350	-	13.8	350	-	50	113
250 (10)	291 (11.5)	450	450	-	17.7	450	-	71	160
300 (12)	317 (12.6)	500	500	-	19.7	500	-	88	198
350 (14)	369 (14.6)	550	550	-	21.7	550	-	127	279
400 (16)	394 (15.6)	600	600	-	23.6	600	-	145	318
450 (18)	425 (16.8)	600	600	-	23.6	600	-	175	384
500 (20)	450 (17.8)	600	600	-	26.8	600	-	225	494
600 (24)	501 (19.8)	600	600	-	32.3	600	-	340	747
700 (28)	544 (21.4)	700	875/700	-	N/A	N/A	700	316	694
750 (30)	571 (22.5)	N/A	N/A	-	N/A	N/A	750	N/A	N/A
800 (32)	606 (23.9)	800	1000/800	-	N/A	N/A	800	398	1045
900 (36)	653 (25.7)	900	1125/900	-	N/A	N/A	900	476	1045
1000 (40)	704 (27.7)	1000	1250/1000	-	N/A	N/A	1000	602	1322
1050 (42)	704 (27.7)	N/A	N/A	-	N/A	N/A	1050	N/A	N/A
1100 (44)	755 (29.7)	N/A	N/A	-	N/A	N/A	1100	N/A	N/A
1200 (48)	810 (31.9)	1200	1500/1200	-	N/A	N/A	1200	887	1996

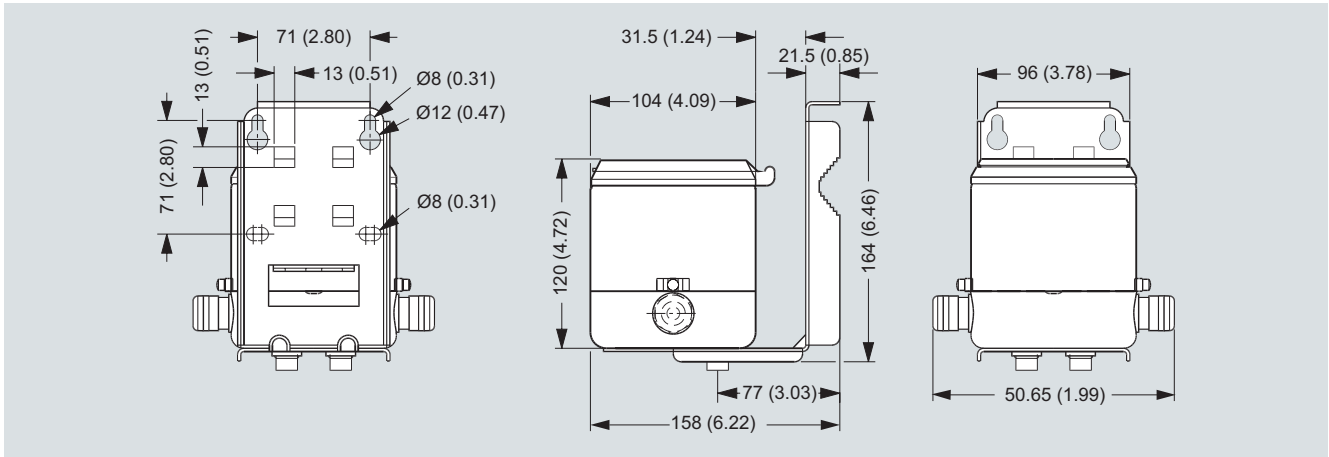
¹⁾ For remote version the sensor weight is reduced with 2 kg (4.5 lb)

SITRANS F flowmeters

SITRANS F M

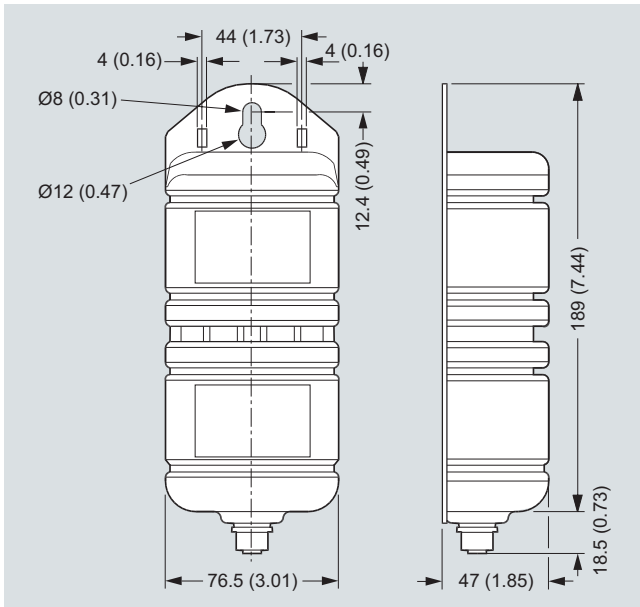
Battery-operated water meter
MAG 8000/MAG 8000 CT

Remote version



Dimensions in mm (inch), weight 3.5 kg (8 lbs)

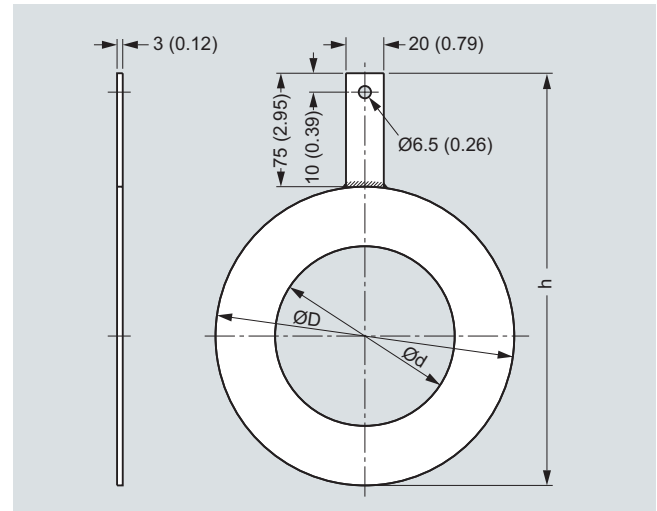
External battery pack



Dimensions in mm (inch), weight 2.0 kg (4.5 lbs)

Battery pack has to be mounted in upwards position to ensure maximum battery capacity.

Grounding rings



Dimensions in mm (inch) for grounding rings MAG 8000 with EPDM lining (7ME6810 and 7ME6820) DN 25 to DN 300

Dimension	Internal diameter (d)	Outside diameter (D)	h
DN 25	27	68	143
DN 40	38	88	163
DN 50	52	100	175
DN 65	64	120	195
DN 80	79	133	208
DN 100	95	158	233
DN 125	115	188	263
DN 150	145	216	336
DN 200	193	268	343
DN 250	246	324	399
DN 300	295	374	449

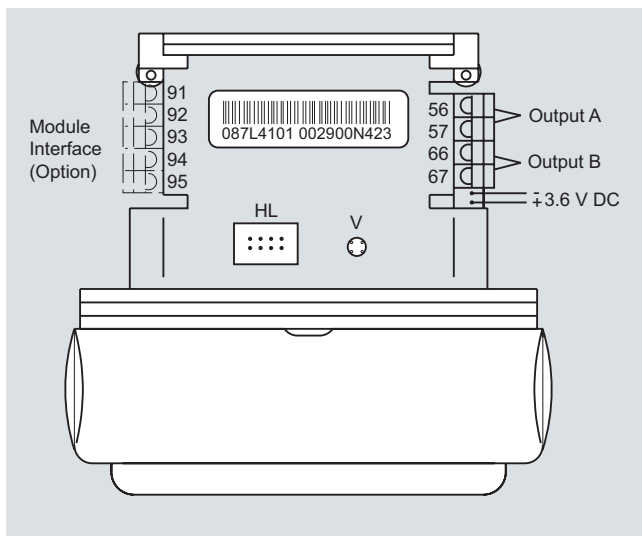
SITRANS F flowmeters

SITRANS F M

Battery-operated water meter
MAG 8000/MAG 8000 CT

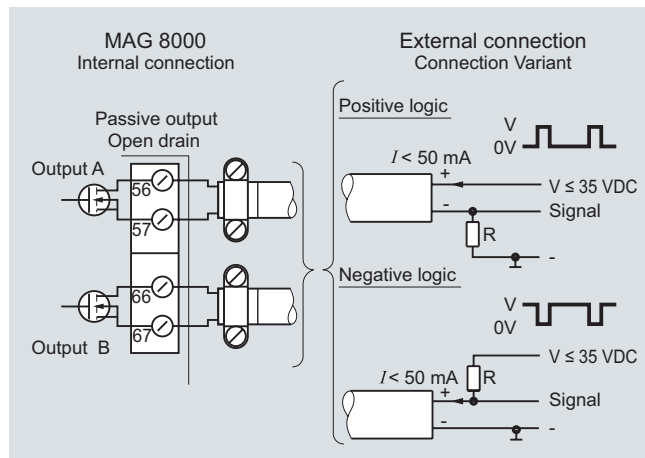
Schematics

Electrical installation and pulse output – Connection diagram



HL = Hardware lock key connection
V = Push button for verification mode

Pulse wire connection



The pulse output can be configured as volume, alarm or call-up.
The output can be connected as positive or negative logic.
R = pull up/down is selected in relation to the Vx power supply
and with a max. current I of 50 mA.

Use shielded cable to avoid EMC problems. Make sure the
shield is correctly mounted under the cable clamp (no pig tail).



ITEM 7.A.2.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Sports Core Pump Station Replacement

FROM: Art Segura, Sports Core Director
Rania Serences, Purchasing and Budgeting Coordinator

BUDGET SOURCE/BUDGET IMPACT: \$331,500.00, Unbudgeted: Account 844-46590

RECOMMENDED MOTION: I move that the Village Board approve Resolution R-2321, a resolution waiving the formal bidding process since this is a sole source purchase, and authorizing an award of contract for the Sports Core Pump Station Replacement Project at Hole #17 of the Oak Brook Golf Course to Leibold Irrigation, Inc., East Dubuque, Illinois, in the amount of \$331,500.00, pending final attorney review and approval.

Background/History:

The pumping station at Hole #17 is the only irrigation system that supplies water to the Bath & Tennis, Soccer, and Golf facilities at the Sports Core. The station is over 25 years old, well beyond its 20-year useful life. One of the primary pumps has recently failed due to a breakdown of the pump shaft. The existing controller is outdated, creating compatibility concerns with new units. Additionally, parts for the current pumps are no longer manufactured, leaving the system subject to irreparable failures.

Removal of the damaged pump requires a crane lift through the skylight due to its height and weight. Should another pump fail, this crane process would need to be repeated, an inefficient and costly approach. Based on the technical assessment, further investment in partial replacement is not advisable.

Analysis:

The Sports Core irrigation system is currently operating at a very limited capacity, creating a high risk of failure during peak season. System failure would jeopardize operations for golf, tennis, and soccer, causing significant revenue loss and community dissatisfaction.

The complete replacement project is \$331,500.00 with a six-month timeline for completion. To avoid too much disruption to the 2026 Sports Core season, work must begin in November 2025.

Sole Source Justification:

Leibold Irrigation is the only contractor in the region authorized to provide Flowtronics/MCI pumping stations, the proprietary brand, and model of the current system. The configuration of the wet well and pump alignment is highly precise, requiring exact installation through the skylight into the wet well. Leibold Irrigation has exclusive access to the required Flowtronics/MCI control panels. Attempting to split the project between multiple vendors for motors, pump heads, and controls would create delays, reduce accountability, and increase the risk of misalignment. Leibold Irrigation is the leading contractor in the area, highly recommended by the Village's pump maintenance provider and neighboring communities and golf courses, including Butler, Butterfield, and Hinsdale.

Warranty:

Warranty includes crane service if needed.

6-Year Warranty on Variable Frequency Drive (includes lightning damage coverage and labor for replacement). Effective from the date of issue of the MCI invoice to Oak Brook Golf Club.

6-Year Warranty on all components in the electrical panel, including power-related damage such as lightning. Parts only.

2-Year Warranty on the station, parts only (see Item 15, Sub 16 in Terms & Conditions).

Recommendation:

Staff recommends that the Village Board approve Resolution R-2321, a resolution waiving the formal bidding process since this is a sole source purchase, and authorizing an award of contract for the Sports Core Pump Station Replacement Project at Hole #17 of the Oak Brook Golf Course to Leibold Irrigation, Inc., East Dubuque, Illinois, in the amount of \$331,500.00, pending final attorney review and approval.

Attachments:

1. Sports Core Pump Station Replacement Res
2. SCPumpReplacementContract

THE VILLAGE OF OAK BROOK
COOK AND DUPAGE COUNTIES, ILLINOIS

RESOLUTION

NUMBER 2025-SC-WTR-PUMP-RPL-R-2321

A RESOLUTION
TO WAIVE THE FORMAL BID PROCESS DUE TO SOLE
SOURCE PURCHASE AND AUTHORIZE AN AWARD OF
CONTRACT TO LEIBOLD IRRIGATION, INC, OF EAST
DUBUQUE, IL., FOR THE SPORTS CORE PUMP STATION
REPLACEMENT PROJECT

LAURENCE E. HERMAN, Village President
NETASHA SCARPINITI, Village Clerk

NAVEEN JAIN
MICHAEL MANZO
MELISSA MARTIN
JAMES NAGLE
A. SURESH REDDY
EDWARD TIESENGA

Village Board

Published in pamphlet form by authority of the
President and the Board of Trustees of the Village of Oak Brook
on this 28th day of October 2025

RESOLUTION NO. 2025-SC-WTR-PUMP-RPL-R-2321

A RESOLUTION

TO WAIVE THE FORMAL BID PROCESS DUE TO SOLE SOURCE PURCHASE AND
AUTHORIZE AN AWARD OF CONTRACT TO LEIBOLD IRRIGATION, INC, OF EAST
DUBUQUE, IL. FOR THE SPORTS CORE PUMP STATION REPLACEMENT PROJECT

WHEREAS, the Village of Oak Brook is a municipal corporation with authority provided for and granted pursuant to the Illinois Municipal Code to exercise certain powers and perform certain functions pertaining to its local government and affairs;

WHEREAS, the Village of Oak Brook (hereinafter referred to as "Village") upon approval of the Village President and Board of Trustees (collectively, the "Corporate Authorities") may enter into a Contract with another party pursuant to Illinois Statute;

WHEREAS, The pumping station at hole #17 of the Oak Brook Golf Course is the only irrigation system that supplies water to the Bath & Tennis Clubhouse, Soccer, and Golf facilities of the Sports Core;

WHEREAS, The pumping station is over twenty-five (25) years old, well beyond its twenty (20) year useful life span and the primary pump has recently failed due to the breakdown of the pump shaft;

WHEREAS, The Sports Core irrigation system is currently operating at a very limited capacity, creating a high risk of failure during peak season;

WHEREAS, Leibold Irrigation Inc., of East Dubuque, IL. (hereinafter referred to as "Company") is the only contractor in the region authorized to provide Flowtronics/MCI pumping stations, the proprietary brand, and model of the Sports Core current pump station;

WHEREAS, Staff is recommending waiving the competitive bidding process due to sole source purchase, and authorize an award of contract to Company in the amount of \$331,500.00, for the Sports Core Pump Station Replacement Project, attached hereto and incorporated herein as Exhibit A (the "Contract");

WHEREAS, the Village of Oak Brook Corporate Authorities are of the opinion that it is in the best interests of the Village of Oak Brook to award the contract for the purposes referenced herein.

NOW, THEREFORE, BE IT RESOLVED, in open meeting assembled, by the Village President and Board of Trustees of the Village of Oak Brook, DuPage and Cook Counties, Illinois as follows:

Section One – Recitals

The Corporate Authorities hereby find that all of the recitals hereinbefore stated as contained in the preamble of this Resolution are full, true, and correct and do hereby, by reference, incorporate and make them part of this Resolution as legislative findings.

Section Two – Approval of Contract

The President and Board of Trustees hereby approve the Contract with Company in substantially the same form attached as Exhibit A.

Section Three – Authorization and Direction

The Village Manager is hereby authorized to execute, and the Village Clerk is hereby authorized to attest the Contract, substantially in the form attached hereto as Exhibit A, with such changes therein as shall be approved by the Village attorney and the officials of the Village executing the same, their execution thereof to constitute exclusive evidence of their approval to any and all changes or revisions therein from and after the execution and delivery of such Contract.

Section Four - Other Actions Authorized

The officers, employees and/or agents of the Village shall take all actions necessary or reasonably required to carry out and give effect to the intent of the Contract and otherwise to consummate the transactions contemplated herein and shall take all actions necessary in conformity therewith including, without limitation, the execution and delivery of all documents required to be delivered in connection with the transaction contemplated herein.

Section Five - Authorization of Expenditures

The Corporate Authorities hereby authorize and direct the expenditure of all costs related to the execution of the Contract, additionally, the Village is authorized and directed to allocate and spend all necessary funds to fulfill the requirements of the Contract and of this Resolution.

Section Six – Waiver of Bidding Process

To the extent that any requirement of bidding would be applicable to the transactions contemplated hereunder, the same is hereby waived.

Section Seven - Acts of Village Officials

That all past, present and future acts and doings of the officials of the Village that are in conformity with the purpose and intent of this Resolution are hereby, in all respects, ratified, approved, authorized and confirmed.

Section Eight – Effective Date

This resolution shall be in full force and effect from and after its passage, approval and publication as provided by law.

Section Nine - Publication

This resolution shall be published in book or pamphlet form as provided by the Illinois Municipal Code.

Section ten – Conflict Clause

All resolutions, parts of resolutions or board actions in conflict herewith are hereby repealed to the extent of such conflict.

Section Eleven – Saving Clause

If any section, paragraph, clause or provision of this resolution is declared by a court of law to be invalid or unconstitutional, the invalidity or unconstitutionality thereof shall not affect the validity of any other provisions of this resolution, which are hereby declared to be separable.

Section Twelve – Recording

This resolution shall be entered into the minutes and upon the journals of the Board of Trustees of the Village of Oak Brook.

PASSED THIS 28th day of October 2025.

Ayes: _____

Nays: _____

Absent: _____

APPROVED THIS 28th day of October 2025.

LAURENCE E. HERMAN,
Village President

ATTEST:

NETASHA SCARPINITI,
Village Clerk

EXHIBIT A

[Contract]



REVIEW OF CONTRACTS

Awarding Agency:

VDB

Type of Contract:

Construction Svcs.

Department:

Sports Core

Program/Account Number:

844-46590

Awarded Contract Price:

\$331,500.00

Budgeted Amount:

—

CONTRACT AMOUNT

☐

Under \$20,000

☐

\$500,001 - \$1,000,000

☒

\$20,000 - \$500,000

☐

Over \$1,000,000

NOTES

Sports Core Pump Station Replacement Project

DEPARTMENT DIRECTOR SIGNATURE

Name:

[Signature]

Date:

10/8/25

INITIAL REVIEWING ATTORNEY SIGNATURE

Name:

[Signature]

Date:

10/10/25

APPROVED BY VILLAGE MANAGER

Name:

Date:

FINAL REVIEW AS TO FORM ATTORNEY SIGNATURE

Name:

[Signature]

Date:

10/10/25

☐

Three (3) Originals signed by other party

Date/Initials

☐

Original provided to staff member for other party

Date/Initials

☐

Original provided to Official Files

Date/Initials

VILLAGE OF OAK BROOK
CONTRACT FOR THE
SPORTS CORE PUMP STATION REPLACEMENT PROJECT

Full Name of Contractor: Leibold Irrigation, Inc. ("**Contractor**")

Principal Office Address: 18950 County Hwy 5 W, East Dubuque, Illinois 61025

Contact Person: Troy Tietjens, Company Representative Telephone Number: (815) 747-6024

TO: Village of Oak Brook ("**Village**")
1200 Oak Brook Road
Oak Brook, Illinois
Attention: Art Segura, Sports Core Director

Contractor warrants and represents that Contractor has carefully examined the Work Site described below and has reviewed and understood all documents included, referred to, or mentioned in this bound set of documents.

1. Work

A. Contract and Work. Contractor acknowledges, and agrees, that Contractor shall, at its sole cost and expense, provide, perform, and complete, in the manner specified and described, and upon the terms and conditions set forth, in this Contract, all of the following, all of which is herein referred to as the "Work":

1. Labor, Equipment, Materials, and Supplies. Provide, perform, and complete, in the manner specified and described in this Contract, all necessary work, labor, services, transportation, equipment, materials, supplies, information, data, and other means and items necessary for the Sports Core Pump Station Replacement Project, as specified in Exhibit A attached hereto, at Hole #17 of the Oak Brook Golf Course, 2606 York Road, Oak Brook, Illinois 60523 ("**Work Site**");
2. Permits. The Village will furnish all permits, licenses, and other governmental approvals and authorizations necessary in connection therewith;
3. Insurance. Procure and furnish insurance certificates specified in this Contract;
4. Taxes. Pay all applicable federal, state, and local taxes;

5. Miscellaneous. Do all other things required of Contractor by this Contract; and

6. Quality. Provide, perform, and complete all of the foregoing in a proper and workmanlike manner, consistent with the standards of recognized professional firms in performing Work of a similar nature, in full compliance with, and as required by or pursuant, to this Contract, and with the greatest economy, efficiency, and expedition consistent therewith, with only new, undamaged, and first quality equipment, materials, and supplies.

B. Performance Standards. Contractor acknowledges and agrees that all Work shall be fully provided, performed, and completed in accordance with the quote submitted by Leibold Irrigation, Inc., dated October 7, 2025, attached hereto as Exhibit A.

C. Responsibility for Damage or Loss. Contractor proposes, and agrees, that Contractor shall be responsible and liable for, and shall promptly and without charge to Village repair or replace, any damage done to, and any loss or injury suffered by, the Village, the Work, the Work Site, or other property or persons as a result of the Work.

D. Inspection/Testing/Rejection. Village shall have the right to inspect all or any part of the Work and to reject all or any part of the Work that is, in Village's judgment, defective or damaged or that in any way fails to conform strictly to the requirements of this Contract and the Village, without limiting its other rights or remedies, may require correction or replacement at Contractor's cost, perform or have performed all Work necessary to complete or correct all or any part of the Work that is defective, damaged, or nonconforming and charge Contractor with any excess cost incurred thereby, or cancel all or any part of any order or this Contract. Work so rejected may be returned or held at Contractor's expense and risk.

2. Contract Price

Contractor acknowledges and agrees that Contractor shall take in full payment for all Work and other matters set forth under Section 1 above, including overhead and profit; taxes, contributions, and premiums; and compensation to all subcontractors and suppliers, the compensation set forth below.

A. SCHEDULE OF PRICES

For providing, performing, and completing all Work on a Time & Material Basis, but Not-To-Exceed the Contract Price of **\$331,500.00**

TOTAL CONTRACT PRICE (in writing):

Three Hundred and Thirty-One Thousand, Five Hundred Dollars Only

B. BASIS FOR DETERMINING PRICES

It is expressly understood and agreed that:

1. All prices stated in the Schedule of Prices are firm and shall not be subject to escalation or change;
2. The Village is not subject to state or local sales, use, and excise taxes, that no such taxes are included in the Schedule of Prices, and that all claim or right to claim any additional compensation by reason of the payment of any such tax is hereby waived and released;
3. All other applicable federal, state, and local taxes of every kind and nature applicable to the Work are included in the Schedule of Prices.

C. TIME OF PAYMENT

It is expressly understood and agreed that final payment shall be made upon completion of the work and final approval by the Village.

All payments may be subject to deduction or setoff by reason of any failure of Contractor to perform under this Contract. Each payment shall include Contractor's certification of the value of, and partial or final waivers of lien covering, all Work for which payment is then requested and Contractor's certification that all prior payments have been properly applied to the payment or reimbursement of the costs with respect to which they were paid.

Payments shall be made pursuant to the terms of the Local Government Prompt Payment Act, 50 ILCS 505/3 *et seq.*

3. Contract Time

Contractor acknowledges and agrees that Contractor shall commence the Work on a mutually agreed upon date following the Village's acceptance of this Contract provided Contractor shall have furnished to the Village all insurance certificates specified in this Contract ("**Commencement Date**"). Contractor further acknowledges and agrees that Contractor shall perform the Work diligently and continuously and shall complete the Work not later than **May 31, 2026** ("**Time of Performance**"). The Village may modify the Time of Performance at any time upon 15 days prior written notice to the Contractor. Delays caused by the Village shall extend the Time of Performance; provided, however, that Contractor shall be responsible for completion of all Work within the Time of Performance, notwithstanding any strike or other work stoppage by employees of either Contractor or of the Village.

4. No Automatic Renewal. Notwithstanding anything to the contrary contained in this Agreement: (a) in no event shall the term of this Agreement be longer than the initial term expressly stated in this Agreement; (b) any automatic renewal or extension (whether or not conditioned upon any notice or absence thereof from either Party) or any similar "evergreen" provision shall be deemed null and void *ab initio*; and (c) the term of this Agreement shall not be extended or renewed except by written agreement duly authorized, executed and delivered by the Parties hereto. In the event of any inconsistency within this Agreement relating to the duration of the initial term hereof, the shorter initial term shall govern. If no initial term is stated in this Agreement, then the term shall be one year from the date on which the term commences.

5. Financial Assurance

A. Insurance. Contractor acknowledges and agrees that Contractor shall provide certificates of insurance evidencing the minimum insurance coverages and limits set forth in Exhibit B within 10 days following the Village's acceptance of this Contract. Such policies shall be in form, and from companies, acceptable to the Village. The insurance coverages and limits set forth Exhibit B shall be deemed minimum coverages and limits and shall not be construed in any way as a limitation on

Contractor's duty to carry adequate insurance or on Contractor's liability for losses or damages under this Contract. The minimum insurance coverages and limits that shall be maintained at all times while providing, performing, or completing the Work are as set forth in Exhibit B.

B. Indemnification. Contractor acknowledges and agrees that Contractor shall indemnify and save harmless the Village its officers, officials, employees and volunteers, against all damages, liability, claims, losses, and expenses (including attorneys' fee) that may arise, or be alleged to have arisen, out of or in connection with Contractor's performance of, or failure to perform, the Work or any part thereof, or any failure to meet the representations and warranties set forth in Section 6 of this Contract.

C. Penalties. Contractor acknowledges and agrees that Contractor shall be solely liable for any fines or civil penalties that are imposed by any governmental or quasi-governmental agency or body that may arise, or be alleged to have arisen, out of or in connection with Contractor's performance of, or failure to perform, the Work or any part thereof.

6. Firm Proposal

All prices and other terms stated in this Contract are firm and shall not be subject to withdrawal, escalation, or change.

7. Contractor's Representations and Warranties

In order to induce the Village to accept this Contract, Contractor hereby represents and warrants as follows:

A. The Work. The Work, and all of its components, shall strictly conform to the requirements of this Contract, including, without limitation, the performance standards set forth in Subsection 1B of this Contract; and shall be fit, sufficient, and suitable for the purposes expressed in, or reasonably inferred from, this Contract and the warranties expressed herein shall be in addition to any other warranties expressed or implied by law, which are hereby reserved unto the Village.

B. Compliance with Laws. The Work, and all of its components, shall be provided, performed, and completed in compliance with, and Contractor agrees to be bound by, all applicable federal, state, and local laws, orders, rules, and regulations, as they may be modified or amended from time to time, including without limitation, if applicable, the Prevailing Wage Act, 820 ILCS 130/0.01 et seq.; any other prevailing wage laws; any statutes requiring preference to laborers of specified classes; any statutes prohibiting discrimination because of, or requiring affirmative action based on, race, creed, color, national origin, age, sex, or other prohibited classification; and any statutes regarding safety or the performance of the Work. Further, Contractor shall have a written sexual harassment policy in compliance with Section 2-105 of the Illinois Human Rights Act during the course of the work.

C. Not Barred. Contractor is not barred by law from contracting with the Village or with any other unit of state or local government as a result of (i) a delinquency in the payment of any tax administered by the Illinois Department of Revenue unless Contractor is contesting, in accordance with the procedures established by the appropriate Revenue Act, its liability for the tax or the amount of tax, as set forth in 65 ILCS 5/11-42.1-1; or (ii) a violation of either Section 33E-3 or Section 33E-4 of Article 33 of the Criminal Code of 1961, 720 ILCS 5/33E-1 et seq.

D. Qualified. Contractor has the requisite experience, ability, capital, facilities, plant, organization, and staff to enable Contractor to perform the Work successfully and promptly and to commence and complete the Work within the Contract Price and Contract Time set forth above.

8. Acknowledgements

In submitting this Contract, Contractor acknowledges and agrees that:

A. Reliance. The Village is relying on all warranties, representations, and statements made by Contractor in this Contract.

B. Acceptance. If this Contract is accepted, Contractor shall be bound by each and every term, condition, or provision contained in this Contract.

C. Remedies. Each of the rights and remedies reserved to the Village in this Contract shall be cumulative and additional to any other or further remedies provided in law or equity or in this Contract.

D. Time. Time is of the essence in the performance of all terms and provisions of this Contract and, except where stated otherwise, references in this Contract to days shall be construed to refer to calendar days and time.

E. No Waiver. No examination, inspection, investigation, test, measurement, review, determination, decision, certificate, or approval by the Village, whether before or after the Village's acceptance of this Contract; nor any information or data supplied by the Village, whether before or after the Village's acceptance of this Contract; nor any order by the Village for the payment of money; nor any payment for, or use, possession, or acceptance of, the whole or any part of the Work by the Village; nor any extension of time granted by the Village; nor any delay by the Village in exercising any right under this Contract; nor any other act or omission of the Village shall constitute or be deemed to be an acceptance of any defective, damaged, or nonconforming Work, nor operate to waive or otherwise diminish the effect of any representation or warranty made by Contractor; or of any requirement or provision of this Contract; or of any remedy, power, or right of the Village.

F. Severability. It is hereby expressed to be the intent of the parties to this Contract that should any provision, covenant, agreement, or portion of this Contract or its application to any Person or property be held invalid by a court of competent jurisdiction, the remaining provisions of this Contract and the validity, enforceability, and application to any Person or property shall not be impaired thereby, but the remaining provisions shall be interpreted, applied, and enforced so as to achieve, as near as may be, the purpose and intent of this Contract to the greatest extent permitted by applicable law.

G. Amendments and Modifications. No amendment or modification to this Contract shall be effective until it is reduced to writing and approved and executed by the corporate authorities of the parties in accordance with all applicable statutory procedures.

H. Assignment. Neither this Contract, nor any interest herein, shall be assigned or subcontracted, in whole or in part, by Contractor except upon the prior written consent of the Village.

I. Governing Law; Venue. This Contract shall be governed by, construed, and enforced in accordance with the internal laws, but not the conflicts of laws rules, of the State of Illinois. Venue for any action arising out of or due to this Contract shall be in the Circuit Court for DuPage County, Illinois.

J. Certified Payrolls. Contractor shall, if applicable, in accordance with Section 5 of the Illinois Prevailing Wage Act, 820 ILCS 130/5, submit to the Department of Labor on a monthly basis, a certified payroll. The certified payroll shall consist of a complete copy of those records required to be made and kept by the Prevailing Wage Act. The certified payroll shall be accompanied by a statement signed by the Contractor or subcontractor which certifies that: (1) such records are true and accurate; (2) the hourly rate paid is not less than the general prevailing rate of hourly wages required by the Prevailing Wage Act; and (3) Contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class A misdemeanor. A general contractor may rely upon the certification of a lower tier subcontractor, provided that the general contractor does not knowingly rely upon a subcontractor's false certification. Upon seven business days' notice, Contractor and each subcontractor shall make available for inspection and copying at a location within this State during reasonable hours, the records required to be made and kept by the Act to: (i) the Village, its officers, and agents; (ii) the Director of Labor and his deputies and agents; and (iii) to federal, State, or local law enforcement agencies and prosecutors.

K. Prevailing Wage. Pursuant to Section 4 of the Illinois Prevailing Wage Act, 820 ILCS 130/4, Contractor agrees and acknowledges that not less than the applicable rate of prevailing of wages, as found or ascertained by the Department of Labor and made available on the Department's Official website, or determined by the court on review, shall be paid for each craft or type of worker needed to execute this contract or to perform such work, and it shall be mandatory upon the contractor to whom the contract is awarded and upon any subcontractor under him, to pay not less than the specified rates to all laborers, workers and mechanics employed by them in the execution of this contract.

L. Conflicts of Interest. Contractor represents and certifies that, to the best of its knowledge, (1) no elected or appointed Village official, employee or agent has a personal financial interest in the business of the Contractor or in this Agreement, or has personally received payment or other consideration for this Agreement; (2) as of the date of this Agreement, neither Contractor nor any person employed or associated with Contractor has any interest that would conflict in any manner or degree with the performance of the obligations under this Agreement; and (3) neither Contractor nor any person employed by or associated with Contractor shall at any time during the term of this Agreement obtain or acquire any interest that would conflict in any manner or degree with the performance of the obligations under this Agreement.

M. Exhibits and Other Agreements. If any conflict exists between this Agreement and any exhibit attached hereto or any other Agreement between the parties relating to this transaction, the terms of this Agreement shall prevail.

N. No Disclosure of Confidential Information by the Consultant. The Consultant acknowledges that it shall, in performing the Services for the Village under this Agreement, have access, or be directly or indirectly exposed, to Confidential Information. The Consultant shall hold confidential all Confidential Information and shall not disclose or use such Confidential Information without the express prior written consent of the Village. The Consultant shall use reasonable measures, at least as strict as those the Consultant uses to protect its own confidential information. Such measures shall include, without limitation, requiring employees and subcontractors of the Consultant to execute a non-disclosure agreement before obtaining access to Confidential Information.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed, effective on _____, 2025.

ATTEST:

By: _____
Village Clerk

ATTEST:

By: _____
Its: _____

VILLAGE OF OAK BROOK, an Illinois municipal corporation

By: _____
Village Manager

LEIBOLD IRRIGATION, INC.

By: _____
Its: _____

EXHIBIT A

(QUOTATION SUBMITTED BY LEIBOLD IRRIGATION, INC. DATED OCTOBER 7, 2025)



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com



Village of Oak Brook

Date: 10-15-2025

Prepared For:

Village of Oak Brook
1200 Oak Brook Road
Oak Brook, IL 60523

Project: **Sports Core Pump Station Replacement**

Scope of Work

- Disconnection and removal of main power source to existing pump station panel.
- Disassembly of existing pump station for removal through existing double doors.
- Removal of double doors and door frame to facilitate removal and installation.
- Purchase and installation of new MCI 1830 GPM Pump Station (specifications attached).
- Addition of wye strainer to the new pump station, includes coring through pump station wall, drop pipe and discharge piping installation in ground to pond.
- Acceptance of delivery of pump station upon arrival.
- Transport to installation site.
- Disposal of existing pump station.
- Installation of main electrical power source to new pump station.
- Certified start-up and testing of new pump station.
- Purchase and installation of new double doors, including new frame.
- Includes crane and equipment needed for installation.

Exclusions (Not Included in Price)

- Fees or permits
- Removal of access hatch for the removal and installation of vertical turbine pumps and motors.
- Haul road damage or restoration.



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

Pricing

Item	Description	Price
MCI	PPS-N-VT3-1830-120-SV-P-48-3-6	\$331,500

Price assumes the Village of Oak Brook is tax exempt

Freight included in price

Acceptance of Proposal

To accept this proposal, please sign and date below and return with **50% deposit** to:

Leibold Irrigation, Inc.
18950 County Hwy 5 W, East Dubuque, IL 61025

Client Name: _____

Signature: _____

Date: _____

Company Representative: _____

Best Regards,

Troy Tietjens

Leibold Irrigation, Inc.

Cell: 563-213-0011

Email: ttietjens@li-inc.com

Knowledge, Commitment To Excellence, Professionalism...This is the foundation of Leibold Irrigation



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

MCI Pump Station Specifications

Scope Details

Electrical Control Panel

Enclosure

- Qty (1) U.L. 508a Listed, Type 4, Watertight Enclosure, Rated for Outdoor Environment
- Custom Engineered & Manufactured in Same Facility as Pump Station
- Dimensions 72" X 60" X 18" (HxWxD), Final Dimensions Confirmed in Approval Drawings
- 12 Gauge Mild Steel Construction with Self-Healing Zinc Primer and Superior Outdoor Rated Powder Coated Textured Finish
- Heavy Duty Concealed Hinge and 3 Point Latch with Lockable Handle
- Lift Off Doors and Center Post for Servicing
- 316 Stainless Steel Doorstops
- Rigid Steel Backplate with Pure White Powder Coat Finish
- Motion-Sensing Interior LED Lighting for Improved Visibility During Servicing
- 12" Data Pocket Containing Pertinent Panel Documentation and As-Built Drawings

Cooling

- Qty (1) U.L. Listed Heat Exchanger for Enclosure Cooling

Main Power

- 400 Amp Main Fused Disconnect to Protect Valuable and Critical Components from Overloads and Abnormal Supply Power Conditions
- Short Circuit Current Rating (SCCR) of 100,000 Amps to Impede Catastrophic Failure
- Type 1 Surge Protection to Safeguard Electrical System from Transient Power Surges
- Active Incoming Line Phase Monitor with Primary Fusing for Detection of Voltage Imbalance, Phase Sequence, and Loss of Phase
- Regulated & Adjustable DC Power Supply for Safe User Operation and Stable Clean Power to Control Processing Components
- GFCI Outlet for Convenient Laptop Power
- Robust Industrial Control Power Transformer with Primary Fusing



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

Main Pump & Motor - Control/Power

- Control/Power for Qty (3) 60 HP Main Pumps/Motors with Shared VFD/XL Operation
- Green Illuminated Off/On Door Switches with Running and Blinking Fault Indication
- Pump/Motor Running Feedback

Electrical Control Panel Cont'd

Variable Frequency Drive Operation – Main Pumps

- Qty (1) Variable Frequency Drive
- Provides High Accuracy Speed Control
- Manual VFD Dial (Speed Pot) Mounted on Door
- VFD Bypass Switch to Provide Alternate Pressure Control Mode in the Event of VFD Failure
- Equipped with Input Impedance for Stable, Consistent Power Supply
- Dedicated Fast-Acting Fusing for VFD Protection

XL Operation – Main Pumps

- Advanced Fusing to Safeguard Against Power Surges and Overloads
- Solid State Overload Protection with Individual Motor Monitoring and Safety Shutdown Including Contactor Interlocks

Pressure Maintenance Pump & Motor - Control/Power

- Control/Power for Qty (1) 5 HP PM Pump with XL Operation
- Green Illuminated Off/On Door Switches with Running and Blinking Fault Indication
- Pump/Motor Running Feedback

XL Operation – PM Pump

- Advanced Fusing to Safeguard Against Power Surges and Overloads
- Solid State Overload Protection with Individual Motor Monitoring and Safety Shutdown Including Contactor Interlocks

Control Features & Hardware

- MCI MPC Remote Intelligence Platform
 - Fast Processing Robust PLC for Self-Sufficient Automatic Operation
 - 12" Industrial-Grade High-Resolution Touchscreen Designed for Demanding Environments and an Intuitive User Experience

Knowledge, Commitment To Excellence, Professionalism...This is the foundation of Leibold Irrigation



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

- HMI Screen Layout Users Can Customize to Their Individual Preferences
- System "Full Size" Type 4 Operator Control Devices
 - Manual/Off/Auto System Control
 - Red Illuminated Fault Push Button
 - Blue Illuminated Maintenance Light
- PLC Flow Adjustable Fertigation Run Relay with Dry Contacts
- System Safeties:
 - Main Inlet Safety
 - Low Level Shutdown w/Auto Reset
 - Low Discharge Pressure Shutdown/Hard Fault
 - High Discharge Pressure Shutdown w/Auto Restart
 - Phase Failure, Imbalance, and Low Voltage Protection

Electrical Control Panel Cont'd

- Operation Features
 - Remote Intelligence
 - One Click Secured Remote Login/Access to all your systems
 - Advanced Trending Screen with State-of-the-Art Interrogation Capabilities
 - Realtime Fault Monitoring Providing Users Immediate Email Alerts
 - Integrated Mechanical & Electrical Drawings with Accelerated On-Screen Access to Technical Schematics for Efficient Troubleshooting and Servicing
 - AI Ready
 - Door Device Lamp Test Function
 - Automatic Alternation of Pumps Based on Least Run Time
 - Intelligent Slow Ramp Feature for Automatic Line Fill
 - 3-Year Flow Total Logging Day/Week/Month/Year
 - Pump Run Times
 - Event Log
 - Flow and Station Trending
 - Assignable I/O
 - Multi-Parameter Adjustable Pump Station Lockout
 - Lockout Parameters: **Individualized Day/Time Settings**
 - Pressure Setpoint/Max
 - External Input

Knowledge, Commitment To Excellence, Professionalism...This is the foundation of Leibold Irrigation



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

- Max Number of Pumps Allowed
 - Power Consumption
 - Max VFD Speed
- Lake Level Control
 - Hand/Off/Auto Selector Switch
 - Sensor Included in System Instrumentation Section
- MCI Remote Cell Monitoring w/1 Year Activation (Cell Service Starts When Equipment Ships from MCI)
 - nSite, MCI's Cloud Based Solution NO SUBSCRIPTION FEE
 - Scheduled Monthly Email with Flow Report in Excel Format
 - Access To One Full Year of Pressure, Flow, Alarms and Event Data
 - Remote Pump Station Disable Feature from Any Smart Device Or PC
 - Factory Support Remote Access to PLC/HMI and VFD for Programming and Troubleshooting
 - nAlert
 - Manage Maintenance Due Dates for All Aspects of Maintenance on Your Pumping Station
 - Warning Light, Display Message and Email Alert When Due
 - Monitor and Report Irregular Operation of Irrigation System, Pump System and Filter System

Pump Assemblies (Pumps, Motors, Discharge Heads, Valves)

Main Pumps (Vertical Turbine)

- Qty (3) 60 HP Vertical Turbine Main Pumps
- Rated to Each Produce 610 GPM at 303' Total Dynamic Head (Including Friction Losses)
- Pumps Have Minimum 375 PSI Pressure-Rated Cast Iron Bowls with 316 Stainless Steel Investment Cast Impellers for Superior Corrosion Resistance, Improved Performance at Higher Pressure, and Extended Pump Lifespan
- Pump Shafts Rotationally Balanced from High Strength, Corrosion Resistant 316 Stainless Steel
- Head Shafts Produced from 316 Stainless Steel and Include Bronze Adjusting Nut and Gib Key
- Threaded Column Piping of Carbon Steel with Water-Lubricated Low Friction Line Shaft Bearings at Maximum 5' Spacing to Minimize Vibration



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

- Mesh Pump Strainers of Stainless Steel with Easily Attached Stainless Steel Clips
- Custom Pump Sealing System with Teflon Packing Combined with Custom Stainless-Steel Shielding Prevents Water Leaking onto Discharge Head and Structural Skid While Still Providing Necessary Shaft Cooling

Motors (Main Pumps)

- Qty (3) 60 HP, 1800 RPM, 460VAC / 3PH / 60HZ, Premium Efficient Vertical Hollow Shaft Motors Including Motor Space Heaters and Non-Reverse Ratchets

Discharge Heads (Main Pumps)

- Qty (3) Custom-Fabricated Carbon Steel Discharge Heads Engineered to Maximize Stable Efficient Power Transmission Between Motor and Pump
- Discharge Heads Finished Internally/Externally with Fusion Bonded Epoxy Coating
- Discharge Heads Designed with Custom Maintenance-Free Passive Air Relief System and Drain to Purge Harmful Airlocks and Prevent Corrosion with No Moving Parts or Components

Valves (Main Pumps)

- Qty (3) 6" Full 316 Stainless Steel Grooved Pump Discharge Isolation Valves with Lever Actuator to Provide Minimized Vibration and Efficient Installation and Service Access
- Qty (3) 6" Silent Wafer Check Valves with Stainless Steel Disc and Heavy-Duty Spring for Reduced Hydraulic Shock Housed in Bodies Finished with Fusion Bonded Epoxy Coating

Pressure Maintenance Pump (Submersible Turbine)

- Qty (1) 5 HP Submersible Turbine Pressure Maintenance Pump
- 304 Stainless Steel Interchangeable Pump Bowls Featuring Optimized Hydraulic Surfaces for Superior Performance and Efficiency
- Threaded Column Piping of High Strength 304 Stainless Steel

Motor (PM pump)

- Qty (1) 5 HP, 575VAC / 3PH / 60HZ, Premium Efficient Corrosion Resistant Submersible Motor with 304 Stainless Steel Casing

Knowledge, Commitment To Excellence, Professionalism...This is the foundation of Leibold Irrigation



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

Pump Assemblies (Pumps, Motors, Discharge Heads, Valves) Cont'd

Discharge Head (PM Pump)

- Qty (1) 2" Fusion Bonded Epoxy Coated (Internally/Externally) Sch40 Pump Head

Valves (PM pump)

- Qty (1) 2" Full 316 Stainless Steel Grooved Pump Discharge Isolation Valves with Gear Actuator Provides Minimized Vibration and Efficient Installation and Service Access
- Qty (1) 2" Silent Wafer Check Valves with Stainless Steel Disc and Heavy-Duty Spring for Reduced Hydraulic Shock Housed in Body Finished with Fusion Bonded Epoxy Coating

Instrumentation

- Qty (1) 316 SS Low Level Probe Set with PNR Relay
- Qty (1) Discharge Pressure Transducer of 316 Stainless Steel with Multiple Outputs, Local Display, Protective Display Cap, and Cord Set
- Qty (1) Submersible Level Transducer of 316 Stainless Steel with Range (0' – 34.6') Includes Filter, Extra Weight, and 60' Length Cable
- Qty (1) 8" Networkable Magnetic Flowmeter with Local Flow Display, Fertigation Frequency Output Prewired to Panel Terminals, Corrosion Resistant NSF-61 Approved Lining, Flanged Connections, and Precise 0.5% Flow Measurement Accuracy
- Qty (2) 4" 316 Stainless Steel Analog Pressure Gauges with Full Body 316 Stainless Steel Monolithic Block and Bleed Valves

Pump Station Valving

- Qty (1) 8" Station Discharge Isolation Butterfly Valve w/ Gear Operator, Corrosion-Inhibiting 316 Stainless Steel Disc and EPDM Elastomers, Abrasion Resistant Fusion Bonded Body and 250PSI Bubble Tight Shutoff Capacity
- Threaded Ball Valves Sized 1.5" and Below of 316 Stainless Steel
- Qty (1) Fusion Bond Epoxy-Coated Cla-Val 50-01 4" Pressure Relief Valve with 316 Stainless Steel Internal Componentry, Bronze Piloting, Discharges to Local Wet Well with Isolation Butterfly Valve w/ Lever Operator, Stainless Steel Disc, EPDM Elastomers, and Bonnet Quick Air Purge Ball Valve



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

Station Filtration and Controls

- Qty (1) 10", Low-Pressure Drop, Fusion Bonded Epoxy, Cast Iron Wye Strainer with Service Friendly SS Screen Access and Automatic Flush Assembly
 - **Control and Power**
 - Qty (1) Filter Inlet Pressure Transducer
 - 316 Stainless Steel Multi-output Programmable Pressure Transducer, with Local Display, Protective Display Cap, and Cord Set
 - Manual/Off/Auto Filter Flush Control Switch for Flush Operation Control
 - Filter Run Command (Auto & Manual)
 - Filter Fault
 - **Valving and Piping**
 - 2" Electrically Actuated, 24VDC, Non-Clog Butterfly Valve with Corrosion-Inhibiting 316SS Disc, EPDM Elastomers, Abrasion Resistant Fusion Bonded Body, and 250PSI Bubble Tight Shutoff Capacity
 - 2" x 4" 304 Stainless Steel Flush Line Assembly Piped to Skid's Edge

Fertigation Piping

- Qty (1) 316 Stainless Steel Fertigation Spool with Qty (7) ¾" 316 Stainless Steel Thread-O-Lets

Station Piping

- Piping Above 2" of Carbon Steel Finished Internally/Externally with Custom-Formulated Electrostatically Adhering Thermally Cross-Linking Fusion Bonded Epoxy Coating
- Coating Meets NSF 61 Certification for Potability
- Provides for Extreme Resistance Against Corrosive Properties of Water and Harsh Chemicals
- Piping 2" and Below of 304 Stainless Steel
- Hose Bibb Connection for Convenient Local Access to Pressurized Water
- Corrosion and Wear Resistant Zinc Hardware



LEIBOLD IRRIGATION, INC.
18950 County Hwy 5 W, East Dubuque, IL 61025
(815) 747-6024 | www.li-inc.com

Structural Skid Base

- Qty (1) Custom Engineered, Carbon Steel Skid
- Fabricated of Heavy-Duty High Strength Structural Channel, Tubing, and Plate
- Fully Seal-Welded Pump Skid Deck Plate
- Integral High-Thrust Structural Pipe Supports
- 1" Thick Vertical Turbine Pump Plate Positioned Over Wet Well to Provide Maximum Support and Vibration Dampening
- Removeable Wet Well Access Hatch Mounted with Stainless Steel Hinges
- Treated with Corrosion Mitigating Self-Healing Zinc Powder Coat Primer
- Finished with Multi-Step Thermally Cross-Linking Non-Slip Powder Coating for Structural Protection and Operator Safety

Warranty

- Warranty Includes Crane if Needed
 - 6-Year Warranty on Variable Frequency Drive (Includes Lightning Damage Coverage and Labour to Replace), Effective from Date of Issue of MCI Invoice to Oak Brook Golf Club.
 - 6-Year Warranty on All Components in Electrical Panel, Inclusive of Power-Related Damage Such as Lightning. Includes Parts Only.
 - 2-Year Warranty on Station, Parts Only (see item 15. sub 16 in Terms & Conditions).
-

EXHIBIT B
(INSURANCE REQUIREMENTS)

Certificates of Insurance shall be presented to the Village upon execution of this contract and vendor shall not commence work until it provides and receives acceptance of insurance certificates from the Village as required by this exhibit.

Each contractor performing any work pursuant to a contract with the Village of Oak Brook and each permittee working under a permit as required pursuant to the provisions of Title 1 of Chapter 8 of the Code of Ordinances of the Village of Oak Brook (hereinafter referred to as "Insured") shall be required to carry such insurance as specified herein. Such contractor and permittee shall procure and maintain for the duration of the contract or permit insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the work under the contract or permit, by either the contractor, permittee, or their agents, representatives, employees, or subcontractors.

A contractor or permittee shall maintain insurance with limits no less than:

- A. General Liability - \$2,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage;
- B. Automobile Liability (if applicable) - \$1,000,000 combined single limit per accident for bodily injury and property damage;
- C. Worker's Compensation and Employer's Liability - Worker's Compensation limits as required by the Labor Code of the State of Illinois and Employer's Liability limits of \$1,000,000 per accident.

Any deductibles or self-insured retention must be declared to and approved by the Village. At the option of the Village, either the insurer shall reduce or eliminate such deductible or self-insured retention as respects the Village, its officers, officials, employees, and volunteers; or the Insured shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses to the extent of such deductible or self-insured retention.

The policies shall contain, or be endorsed to contain, the following provisions:

D. General Liability and Automobile Liability Coverage -

- (1) The Village, its officers, officials, employees, and volunteers are to be covered as **additional insureds** as respects: liability arising out of activities performed by or on behalf of the Insured; premises owned, occupied, or used by the Insured. The coverage shall contain no special limitations on the scope of protection afforded to the Village, its officers, officials, employees, volunteers, or agents.
- (2) The Insured's insurance coverage shall be primary insurance as respects the Village, its officers, officials, employees, volunteers, and agents. Any insurance or self-insurance maintained by the Village, its officers, officials, employees, volunteers, or agents, shall be in excess of the Insured's insurance and shall not contribute with it.
- (3) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Village, its officers, officials, employees, volunteers, or agents.
- (4) The Insured's insurance shall apply separately to each covered party against whom claim is made or suit is brought except with respect to the limits of the insurer's liability.

E. Worker's Compensation and Employer's Liability Coverage

The policy shall waive all rights of subrogation against the Village, its officers, officials, employees, volunteers, and agents for losses arising from work performed by the insured for the Village.

Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail has been given to the Village. Each insurance policy shall name the Village, its officers, officials and employees, volunteers, and agents as additional Insureds. Insurance is to be placed with insurers with a Best's rating of no less than A: VII.

Each Insured shall furnish the Village with certificates of insurance and with original endorsements effecting coverage required by this provision. The certificate and endorsements for each insurance policy are to be signed by a person

authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on forms approved by the Village and shall be subject to approval by the Village Attorney before work commences. The Village reserves the right to require complete, certified copies of all required insurance policies, at any time.

Each insured shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.



ITEM 7.A.3.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Award of Contract - Water System Modernization Disinfection Project.

FROM: Tim O'Malley, Public Works Director

BUDGET SOURCE/BUDGET IMPACT: \$600,000 is included in the FY2025 Budget, in account #451-91100.

RECOMMENDED MOTION: I move that the Village Board approve Resolution R-2322, a resolution awarding a contract to the sole bidder, Dahme Mechanical Industries, Inc.(DMI) of Arlington Heights, Illinois, for the Water System Disinfection Modernization Project, in the amount of \$493,888.00.

Background/History:

Water chlorination infrastructure is essential for ensuring safe, clean, and reliable drinking water. The Village's chlorine delivery systems are deteriorating and no longer meet modern requirements of the U.S. Environmental Protection Agency. Regulatory agencies continue to tighten water quality standards, requiring more precise and efficient chlorination systems. Upgraded systems allow for real-time monitoring and automated dosing to improve safety. Modern infrastructure will ensure that staff are better equipped to handle emergencies, contamination events, and peak demand periods. The transition from a chlorine to sodium hypochlorite delivery system is a safer and more efficient alternative. However, it is a specialized skill and a process that includes demolition, installation, and calibration of new equipment.

The proposed system improvements consist primarily of the following:

Well Sites

- Remove existing chlorination equipment, associated piping, and electrical components.
- Install new simplex peristaltic metering pump skid, piping, injection assemblies, and chemical containment as shown on the plans. Install electrical components as shown on the plans.

DuPage Water Commission (DWC) Sites

- Remove existing chlorination equipment and associated piping and electrical components.
- Install new duplex peristaltic metering pump skid, piping, injection assemblies, and chemical containment as shown on the plans. Install electrical components and integrator control as shown on the plans and within the specifications.

Demolition:

- Remove the chlorinator assembly and injector.
- Remove chlorine solution lines and associated water piping.
- Remove chlorine booster pumps (2) and concrete pads (2)
- Patch floor penetrations
- Remove cylinder scales (2)

Chlorination System:

- Install duplex sodium hypochlorite feed pump skid, drum containment, suction piping to drum storage, and discharge piping with injection assemblies to chemical dosing locations as shown. Provide all electrical and controls as shown in the engineering plans to furnish a complete and operable system.

Staff posted the Water System Disinfection Modernization Project for bids on the Village's OpenGov eProcurement portal on Wednesday, September 17th, 2025. Thirty-four (34) vendors downloaded the bid package, but only one (1) sealed bid was received and opened on Wednesday, October 8, 2025, at 10:00 am.

Dahme Mechanical Industries, Inc. (DMI)
\$493,888.00

Despite having only a single bid, the bid is more than \$100,000 below the engineer's opinion of probable cost and lower than the budget previously allocated for this project. Chlorine gas is currently used at these facilities for production of a chlorine solution used for disinfection. Replacement of the existing chlorine gas system with a new sodium hypochlorite system not only meets U.S. Environmental Protection Agency standards, but also reduces the risk of potential fatal chlorine leaks to staff and the surrounding public.

Recommendation:

Staff recommends that the Village Board approve Resolution R-2322 approve Resolution R-2322, a resolution awarding a contract to the sole bidder, Dahme Mechanical Industries, Inc. (DMI) of Arlington Heights, Illinois, for the Water System Disinfection Modernization Project, in the amount of

\$493,888.00.

Attachments:

1. 2025-PW-CNTRCT-Water Mod Project 10-28-25 RS
2. WaterSysDisinfectionModernProject (002)
3. Water System Disinfection Modernization - Recommendation to Award

THE VILLAGE OF OAK BROOK
COOK AND DUPAGE COUNTIES, ILLINOIS

RESOLUTION
NUMBER 2025-PW-CNTRCT-R-2322

A RESOLUTION
AWARDING A CONTRACT TO THE SOLE BIDDER, DAHME
MECHANICAL INDUSTRIES, INC. (DMI) OF ARLINGTON
HEIGHTS, ILLINOIS, FOR THE WATER SYSTEM
DISINFECTION MODERNIZATION PROJECT.

LAURENCE E. HERMAN, Village President
NETASHA SCARPINITI, Village Clerk

NAVEEN JAIN
MICHAEL MANZO
MELISSA MARTIN
JAMES NAGLE
A. SURESH REDDY
EDWARD TIESENGA

Village Board

Published in pamphlet form by authority of the
President and the Board of Trustees of the Village of Oak Brook
on the 28th day of October 2025

RESOLUTION NO. 2025-PW-CNTRCT-R-2322

A RESOLUTION
APPROVING THE AWARD CONTRACT TO THE LOWEST RESPONSIBLE BIDDER, DAHME
MECHANICAL INDUSTRIES, INC., OF ARLINGTON HEIGHTS, IL FOR THE WATER
SYSTEM DISINFECTION MODERNIZATION PROJECT

WHEREAS, the Village of Oak Brook is a municipal corporation with authority provided for and granted pursuant to the Illinois Municipal Code to exercise certain powers and perform certain functions pertaining to its local government and affairs;

WHEREAS, the Village of Oak Brook (hereinafter referred to as "Village") upon approval of the Village President and Board of Trustees (collectively, the "Corporate Authorities") may enter into a Contract with another party pursuant to Illinois Statute;

WHEREAS, a solicitation for bids for the Water System Disinfection Modernization Project ("Project") was posted on the Village website on September 17, 2025, whereby Thirty-four (34) vendors elected to download the bid documents;

WHEREAS, Staff opened and reviewed one (1) sealed bid that was received on October 8, 2025, and recommends the Corporate Authorities award the contract to the sole bidder, Dahme Mechanical Industries, Inc. (DMI) of Arlington Heights, IL (the "Company") in the amount of \$ 493,888.00.

WHEREAS, Staff recommends the Corporate Authorities awards a Contract for the Project to Company, as further detailed in and subject to the terms and conditions of the Contract ("Contract"), attached hereto and incorporated herein as Exhibit A;

WHEREAS, the Village of Oak Brook Corporate Authorities are of the opinion that it is in the best interests of the Village of Oak Brook to authorize the foregoing actions.

NOW, THEREFORE, BE IT RESOLVED, in open meeting assembled, by the Village President and Board of Trustees of the Village of Oak Brook, DuPage and Cook Counties, Illinois as follows:

Section One – Recitals

The Corporate Authorities hereby find that all of the recitals hereinbefore stated as contained in the preamble to this Resolution are full, true, and correct and do hereby, by reference, incorporate and make them part of this Resolution as legislative findings.

Section Two – Approval and Award

The Corporate Authorities hereby does approve and award the contract for the Project to Company subject to the terms and conditions of the Contract, attached hereto and incorporated herein as Exhibit A.

Section Three – Authorization and Direction

The Village Manager is hereby authorized to execute, and if necessary the Village Clerk is hereby authorized to attest the Contract, substantially in the form attached hereto as Exhibit A,

with such changes therein as shall be approved by the Village attorney and the officials of the Village executing the same, their execution thereof to constitute exclusive evidence of their approval to any and all changes or revisions therein from and after the execution and delivery of such Contract.

Section Four - Other Actions Authorized

The officers, employees and/or agents of the Village shall take all actions necessary or reasonably required to carry out and give effect to the intent of this Resolution and otherwise to consummate the transactions contemplated herein and shall take all actions necessary in conformity therewith including, without limitation, the execution and delivery of all documents required to be delivered in connection with the transaction contemplated herein.

Section Five - Authorization of Expenditures

The Corporate Authorities hereby authorize and direct the expenditure of all costs related to the execution of the Contract, additionally, the Village is authorized and directed to allocate and spend all necessary funds to fulfill the requirements of the attached Contract.

Section Six - Acts of Village Officials

That all past, present and future acts and doings of the officials of the Village that are in conformity with the purpose and intent of this resolution are hereby, in all respects, ratified, approved, authorized and confirmed.

Section Seven – Effective Date

This resolution shall be in full force and effect from and after its passage, approval and publication as provided by law.

Section Eight - Publication

This resolution shall be published in book or pamphlet form as provided by the Illinois Municipal Code.

Section Nine – Conflict Clause

All resolutions, parts of resolutions or board actions in conflict herewith are hereby repealed to the extent of such conflict.

Section Ten – Saving Clause

If any section, paragraph, clause or provision of this resolution is declared by a court of law to be invalid or unconstitutional, the invalidity or unconstitutionality thereof shall not affect the validity of any other provisions of this resolution, which are hereby declared to be separable.

Section Eleven – Recording

This resolution shall be entered into the minutes and upon the journals of the Board of Trustees of the Village of Oak Brook.

PASSED THIS 28th day of October 2025.

Ayes: _____

Nays: _____

Absent: _____

APPROVED THIS 28th day of October 2025.

LAURENCE E. HERMAN,
Village President

ATTEST:

NETASHA SCARPINITI,
Village Clerk

EXHIBIT A

Contract



REVIEW OF CONTRACTS

Awarding Agency:

VOB

Type of Contract:

Construction Services

Department:

PW

Program/Account Number:

451

Awarded Contract Price:

\$468,888 + \$25,000 Contingency

Budgeted Amount:

CONTRACT AMOUNT

☐ Under \$20,000

☒ \$500,001 - \$1,000,000

☐ \$20,000 - \$500,000

☐ Over \$1,000,000

NOTES

Water System Disinfection
Modernization Project

DEPARTMENT DIRECTOR SIGNATURE

Name:

Timothy O'Malley

Date:

10/17/25

INITIAL REVIEWING ATTORNEY SIGNATURE

Name:

MD [Signature]

Date:

10/21/25

APPROVED BY VILLAGE MANAGER

Name:

Date:

FINAL REVIEW AS TO FORM ATTORNEY SIGNATURE

Name:

MD [Signature]

Date:

10/21/25

☐ Three (3) Originals signed by other party

Date/Initials _____

☐ Original provided to staff member for other party

Date/Initials _____

☐ Original provided to Official Files

Date/Initials _____

VILLAGE OF OAK BROOK, ILLINOIS WATER SYSTEM DISINFECTION MODERNIZATION

BID DATE: October 8, 2025

BID TIME: 10:00 AM

Table of Contents

Notice to Bidders (1)

Project Summary (1-3)

Instructions to Bidders (1-13)

Supplementary Instructions to Bidders (1-2)

Prevailing Wage Rate Information (1-9)

Bid/Agreement Form (1-9)

Non-Collusion Affidavit (1)

Contractor Certification (1)

Certification for Contract (1)

Certificate of Compliance (1)

General Conditions (1-76)

Supplemental Conditions (1-11)

Technical Specifications (1-321)

SECTION 00 00 30
NOTICE to BIDDERS

Separate sealed Bids are solicited for the following project:

Project Name: **Water System Disinfection Modernization**

Note: This project name is to be understood to include the entire scope of project as defined and detailed by these specifications and Contract Documents.

Separate sealed bids will be received by the Owner and then publicly opened and read aloud at:

Bids Sent To: **Rania Serences, Purchasing & Budgeting Coordinator, Village of Oak Brook, 12000 Oak Brook Road, Oak Brook, Illinois 60523**

Bid Opening Date: **October 8, 2025**

Bid Opening Time: **10:00 AM**

Bid Opening Site: <https://procurement.opengov.com/portal/oak-brook>

Pre-Bid Meeting: **September 24, 2025 at 10:00 AM starting at the Oak Brook Public Works Facility, 3003 Jorie Blvd, Oak Brook, IL 60523 (Optional)**

The Village of Oak Brook is seeking sealed bids for the WATER SYSTEM DISINFECTION MODERNIZATION. Responses are to be submitted via the Village's eProcurement Portal via <https://procurement.opengov.com/portal/oak-brook> at or before 10:00 am on Wednesday, October 8, 2025. Bids received after this time and date will not be accepted.

No bid shall be withdrawn after opening of bids without the consent of the Village of Oak Brook for a period of ninety (90) days after the scheduled time of opening bids.

The Village of Oak Brook reserves the right to reject any or all bids and to waive any informalities in bidding and to accept the bid deemed most advantageous to it.

For further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders, and if applicable Supplemental Instructions to Bidders, that are included in the Bidding Requirements.

Note 1: The Engineer assumes no responsibility to supply Builders Exchanges and similar plan review rooms with all addenda issued. An attempt will be made to do so; however, only registered plan holders will be notified by email of expected or late term addendum with short preparation times.

SECTION 00 00 40

PROJECT SUMMARY

PART 1 – GENERAL

This Project Summary is an overview of the entire Project and is intended, but is not guaranteed, to place all project specifics in one location to aid Bidders.

1.01 SCHEDULE and LIQUIDATED DAMAGES

The Contractor is to abide by the following schedule:
Commence work on or after issuance of Notice to Proceed.

Work hours are Monday through Saturday, 7:00 AM to 6:00 PM.

Substantial Completion within 240 days of Notice to Proceed.

Liquidated damages are applicable and begin after Substantial Completion date w. Liquidated damages at \$1,250/calendar day is to apply after this date. Ready for Final Payment Date is to be thirty (30) days after date Substantial Completion Date based on scheduled Substantial Completion, or as adjusted by Change Order. Liquidated damages after Ready for Final Payment Date of \$250/day is to apply. Liquidated damages are cumulative if damages from Substantial Completion and Ready for Final Payment overlap. In addition, Special Damages, fines, or Set-Off may also apply per Bid/Agreement Form.

1.02 SCOPE of WORK

Well House and DuPage Water Commission (DWC) Site Information:

DWC Site A (1915 York Road):

Demolition:

- 1) Remove chlorinator assembly and injector
- 2) Remove chlorine solution lines and associated water piping
- 3) Remove chlorine booster pumps (2) and concrete pads (2)
- 4) Patch floor penetrations
- 5) Remove cylinder scales (2)

Chlorination System: Install duplex sodium hypochlorite feed pump skid, drum containment, suction piping to drum storage, and discharge piping with injection assemblies to chemical dosing locations as shown. Provide all electrical and controls as shown in the engineering plans to furnish a complete and operable system.

DWC Site B (2S370 Meyer Road):

Demolition:

- 1) Remove chlorinator assembly and injector
- 2) Remove chlorine solution lines and associated water piping
- 3) Remove chlorine booster pumps (2) and concrete pads (2)
- 4) Patch floor penetrations
- 5) Remove cylinder scales (2)

Chlorination System: Install duplex sodium hypochlorite feed pump skid, drum containment, suction piping to drum storage, and discharge piping with injection assemblies to chemical dosing locations as shown. Provide all electrical and controls as shown in the engineering plans to furnish a complete and operable system.

WELL 5 (2011 Windsor Drive):

Demolition:

- 1) Remove chlorinator assembly and injector
- 2) Remove chlorine solution lines and associated water piping
- 3) Remove chlorine booster pump
- 4) Patch wall penetrations
- 5) Remove cylinder scale

Chlorination System: Install simplex sodium hypochlorite feed pump skid, drum containment, suction piping to drum storage, and discharge piping with injection assemblies to chemical dosing locations as shown. Provide all electrical as shown in the engineering plans to furnish a complete and operable system.

WELL 6 (2915 Oak Brook Road):

Demolition:

- 1) Remove chlorinator assembly and injector
- 2) Remove chlorine solution lines and associated water piping
- 3) Remove chlorine booster pump
- 4) Patch wall penetrations
- 5) Remove cylinder scale

Chlorination System: Install simplex sodium hypochlorite feed pump skid, drum containment, suction piping to drum storage, and discharge piping with injection assemblies to chemical dosing locations as shown. Provide all electrical as shown in the engineering plans to furnish a complete and operable system.

WELL 7 (2415 Midwest Road):

Demolition:

- 1) Remove chlorinator assembly and injector
- 2) Remove chlorine solution lines and associated water piping
- 3) Remove chlorine booster pump
- 4) Patch wall penetrations
- 5) Remove cylinder scale

Chlorination System: Install simplex sodium hypochlorite feed pump skid, drum containment, suction piping to drum storage, and discharge piping with injection assemblies to chemical dosing locations as shown. Provide all electrical as shown in the engineering plans to furnish a complete and operable system.

TABLE OF CONTENTS
INSTRUCTIONS TO BIDDERS

ARTICLE 1 – Defined Terms.....	1
ARTICLE 2 – Bidding Documents.....	1
ARTICLE 3 – Qualifications/Prequalifications of Bidders	2
ARTICLE 4 – Pre-Bid Conference	3
ARTICLE 5 – Site and Other Areas; Existing Site Conditions; Examination of Site; Owner’s Safety Program; Other Work at the Site	3
ARTICLE 6 – Bidder’s Representations and Certifications	4
ARTICLE 7 – Interpretations and Addenda	4
ARTICLE 8 – Bid Security	5
ARTICLE 9 – Contract Times	6
ARTICLE 10 – Substitute and “Or Equal” Times	6
ARTICLE 11 – Subcontractors, Suppliers, and Others	6
ARTICLE 12 – Preparation of Bid	7
ARTICLE 13 – Basis of Bid	8
ARTICLE 14 – Submittal of Bid	8
ARTICLE 15 – Modification and Withdrawal of Bid	9
ARTICLE 16 – Opening of Bids.....	9
ARTICLE 17 – Bids to Remain Subject to Acceptance	9
ARTICLE 18 – Evaluation of Bids and Award of Contract	9
ARTICLE 19 – Bonds and Insurance	10
ARTICLE 20 – Signing of Agreement	11
ARTICLE 21 – Non-Discrimination	12
ARTICLE 22 – Non-Collusion	12
ARTICLE 23 – Alternate Bids or Restrictions on Bids	13
ARTICLE 24 – Contractor’s Responsibilities.....	13

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. Issuing Office – The office from which the Bidding Documents are to be issued, and which registers plan holders.
 - B. Owner's Office – The office where the bidding procedures are to be administered.

ARTICLE 2 – BIDDING DOCUMENTS

- 2.01 The Bidder is to obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is the Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Notice to Bidders, from the Issuing Office. Registered plan holders will receive Addenda issued by the Owner.
- 2.04 The Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.05 Electronic Documents
- A. When the Notice to Bidders Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified. (Sealed master copy of Bid documents held by Owner.)
 - 1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 9.0 or later. It is the intent of Trotter and Associates and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Trotter and Associates cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Trotter and Associates cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every

manner to the paper copies.

- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.05A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.
 - 1. In no case will the Contractor be entitled to additional compensation or time for completion due to any differences between the actual Contract Documents and any related document in native file format.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- A. Trotter and Associates will review submitted data to determine if Bidder meets qualification requirements. Any information found to be false, incorrect, or embellished (determination of embellishment will be solely in opinion of Engineer) will be sufficient reason for disqualification.

New Bidders must be able to prove that they are bondable, provide a certified financial statement (most recent fiscal quarter), provide a complete equipment list; and a list of manpower, including work experience and the contractor(s) for whom they have worked. From this information, an evaluation and recommendation will be made by Trotter and Associates using economic ratios and comparisons regarding project size, equipment, manpower available, and foreman's experience. A determination will then be made by the Owner as to whether-or-not the Bidder is qualified to perform the Project.

- B. Any Contractor who has pending litigation against him for work not completed on a project or for failed work on a project may be subject to disqualification.
- C. In addition, the Owner may make further investigations into the Bidder's qualification, including compliance with human resource programs, as well as OSHA and environmental histories. The Owner also may review elements of the qualification and determine if experience is generic to and specific to the Project. Furnish the Owner information, data, or certifications requested.

3.02 Disqualification:

A Contractor may be ineligible for qualification if the Contractor has ever been Disqualified by any State or Federal Agency, qualification of that Contractor is revoked for Work in the Disqualifying State, or for Federal Work from Disqualifying Agency. In the case of a prior disqualification, upon the expiration of the prescribed disqualification period, the Contractor may apply for reinstatement of qualification by the Disqualifying State or with the Disqualifying Federal Agency. By submitting their bid, the Bidder certifies that they are not currently disqualified or rejected from submitting bids in the state or political subdivision of the state where the Project is located or with the Federal Agency for whom the Work is being bid.

ARTICLE 4 – PRE-BID CONFERENCE

SEE SUPPLEMENTAL INSTRUCTIONS to BIDDERS

ARTICLE 5 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER’S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 Site and Other Areas

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by the Contractor.

5.02 Existing Site Conditions

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 - 1. There are no reports or drawings that contain Technical Data.
 - 2. There are no reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
- B. Underground Facilities – The only known Underground Facilities may be piping pits unless noted in the Supplemental Conditions.
- C. No Site-related documents are available.

5.03 Site Visit and Testing by Bidders

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas sufficient to complete the bidding documents properly and adequately. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner’s authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

5.04 Owner’s Safety Program

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions or included as an attachment in these Bid Documents.

5.05 Other Work at the Site

- A. Reference is made to the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates

to the Work contemplated by these Bidding Documents.

- 5.06 Before submitting a BID, each BIDDER must (a) examine the CONTRACT DOCUMENTS thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress of performance of the WORK, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the WORK; (d) study and carefully correlate BIDDER'S observations with the CONTRACT DOCUMENTS and (e) notify the ENGINEER of all conflicts, errors, ambiguities or discrepancies which BIDDER has discovered in or between the CONTRACT DOCUMENTS and such other related documents
- 5.07 Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to his BID.
- 5.08 The OWNER shall provide BIDDERS prior to BIDDING, all information that is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.
- 5.09 The lands upon which the WORK is to be performed, rights-of-way for access thereto and other lands designated for use by CONTRACTOR in performing the WORK are identified in the Supplementary Conditions, General Requirements and/or Drawings.
- 5.10 The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him from fulfilling any of the conditions of the contract.
- 5.11 The submission of a BID will constitute an incontrovertible representation by the BIDDER that he has complied with every requirement of this Article 5 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the WORK.

ARTICLE 6 – BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

- 6.01 Express Representations and Certifications in Bid Form, Agreement
 - A. The Bid/Agreement Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
 - B. If the Bidder is awarded the Contract, Bidder (as Contractor) will automatically reaffirm representations and certifications when it executes the Bid/Agreement.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 The Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 The Bidder shall submit all questions about the meaning or intent of the Bidding

Documents to Trotter and Associates in writing. Contact information and submittal procedures for such questions are to be made to the Issuing Office.

- 7.03 Interpretations or clarifications considered necessary by Trotter and Associates and in Trotter and Associates' sole judgement, in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- A. Addenda may be electronically issued within five days of opening of Bids if Addenda is considered clarification only.
 - B. The only Addenda issued within three days of the bid will be a notice to reschedule opening of Bids, or to cancel opening of Bids. Bids already in transit will be returned unopened or held unopened if requested by the Bidder until a new date for opening of Bids.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of ten (10) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Article 6 of the General Conditions, or in the form of a Certified check made payable to Owner. A check is considered a stopgap measure only and is to be replaced by a Bid Bond as soon as practical. As an alternative to replacement Contractor must demonstrate that they can procure the required Construction Bonds.

The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other Conditions Precedent of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security (Conditions Precedent) within 10 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole as a Liquidated Damage.

- 8.02 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released
- 8.03 Bid Bonds will not be returned, but allowed to expire sixty-one days after Bid opening, unless notified by Owner
- 8.04 Bid security in the form of a certified check have in the past been overlooked when following Paragraphs 8.02 – 8.04 permit return, without intent, because the Certified checks were kept in a different location than the Bonds. It is the Bidder's responsibility to track the location and secure the return of their check

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Bid/Agreement and in Project Summary.
- 9.02 Provisions for Liquidated Damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement and in Project Summary.

ARTICLE 10 – SUBSTITUTE AND “OR EQUAL” ITEMS

- 10.01 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.
- 10.02 Parity of Bids - The Technical Specifications are intended to be primarily Performance based. There are instances where the Specifications appear to be Prescriptive.
- A. As an example, in some Specifications we require dehumidification on the interior projects to a specific humidity. That is Performance based but then Trotter and Associates specifies a minimum size dehumidification unit, say 7,500 cfm, which may appear to be Prescriptive. Specifying the minimum size dehumidification unit in this example is an attempt at BID PARITY. There is no guarantee that 7,500 cfm will maintain the required humidity level, only that all Bidders at least as a minimum include the cost of rental and operation of that size unit.
 - B. It is the Contractors responsibility to supply equipment and materials as needed to complete the project as specified.
- 10.03 The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or “or-equal” items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or “or-equal” item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the “effective date of the Agreement”. The procedure for submittal of any such application by CONTRACTOR and consideration by ENGINEER is set forth in article 6.05 of SECTION 00 72 00 – STANDARD GENERAL CONDITIONS (1996 edition) that may be supplemented in the General Requirements

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 11.01 The apparent Successful Bidder, and any other Bidder so requested, must submit to the Owner a list of the Subcontractors or Suppliers proposed and the item of Work they are proposed to do.
- 11.02 If requested by Owner, such list must be accompanied by an experience statement with

pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Trotter and Associates, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute.

- 11.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder.

ARTICLE 12 – PREPARATION OF BID

- 12.01 The Bid/Agreement Form is included with the Bidding Documents. Additional copies are available from the Issuing Office.
- A. Trotter and Associates has combined the Bid and Agreement Form. While preparing the Bid documents, use caution to remain in the Bid portion and not the Agreement.
 - B. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - C. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder is to prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder’s name and official address.

- 12.07 A Bid by a joint venture will not be accepted.
- 12.08 All names must be printed legibly below the signatures.
- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. The Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13 – BASIS OF BID

- 13.01 Lump Sum
 - A. Bidders must submit a Bid on a lump sum basis listed in the Bid Form.
 - B. Owner is exempt from and will not be responsible to pay, or reimburse Contractor for, any state or local sales, use, or excise taxes. The Bid Price will include all other applicable federal, state, and local taxes of every kind and nature applicable to the Work as well as all taxes, contributions, and premiums for unemployment insurance, old age or retirement benefits, pensions, annuities, or other similar benefits. Bidders will not be entitled to any claim or right to additional compensation by reason of the payment of any such tax, contribution, or premium.

ARTICLE 14 – SUBMITTAL OF BID

- 14.01 The Bidding Documents include one separate unbound copy of the Bid Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 4 of the Bid Form. If Bidding documents were issued electronically, it is the Bidder's responsibility to print the Bid Form and submit as directed above. The Bid Form is identified herein as Bid/Agreement Form but is only a Bid Form until signed by Owner as an Agreement.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the required Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement. Failure to meet the requirements of this paragraph is sufficient reason to disqualify the bidder.

- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and may be returned to the Bidder unopened.

ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Dependent upon the timing of receipt of such notice, the unopened Bid may be returned to the Bidder. If the Bid is opened, then the Bidder must comply with Paragraph 15.03 below. There is no guarantee that Notice is sufficient or timely if sent by text or email.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. If the Project is rebid, the Bidder who withdraws their bid may be disqualified from submitting a new Bid, at the sole discretion of the Owner.

ARTICLE 16 – OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the Notice to Bidders and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders upon written request to Trotter and Associates.

ARTICLE 17 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but the Owner may, in its sole discretion, release any Bid and allow the Bid security to expire prior to the end of this period.

ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 The Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. The Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 The Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsive.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Trotter and Associates, then Owner will reject the Bid as nonresponsive.

- 18.04 If the Owner awards the contract for the Work, such award will be to the responsive Bidder submitting the lowest responsive Bid as determined in the Owner's sole and absolute discretion.
- 18.05 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.
 - C. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, and any proposed Subcontractors or Suppliers. Qualification by Trotter and Associates does not guarantee that Owner after investigation will determine the same Contractor to be qualified. The Owner's sole determination will govern.

ARTICLE 19 – BONDS AND INSURANCE

- 19.01 Article 6.01 of the General Conditions, as may be modified by the Supplementary Conditions Article SC 6.01, sets forth Owner's requirements as to Performance, Payment, and Maintenance bonds, and other required bonds (if any). Article 6.02 and subsequent Articles concerning insurance and Article 7, the Indemnification requirements have been moved to Supplemental Conditions Paragraph 6.02 and subsequent respective insurance related Article numbers. When the Successful Bidder delivers the executed Notice of Award to Owner, the signed Award is to be accompanied by required bonds and insurance documentation.
- 19.02 Trotter and Associates has relocated the entire insurance and indemnification requirements to the Supplemental Conditions, in one location. The Contractor, to save Award time is recommended to forward the entire insurance section to their insurance agents each time.

ARTICLE 20 – SIGNING OF AGREEMENT

- 20.01 The Articles of these Instructions as prepared by EJCDC consider a formal “Closing” or contract signing meeting. All references to a Closing, contract signing event, are intended to be deleted. Notice of Award will be issued by Owner, all requirements of Conditions Precedent (bonds and insurance) will be completed by contractor within 10 days after issuance of Notice of Award and forwarded to Trotter and Associates who will then compile Contract Documents. Three sets of documents will be sent to Owner for signature and distribution. One executed copy will be retained, one executed copy will be sent to the Contractor and one to Trotter and Associates. There will be no meeting for signing unless required by the Supplemental Instructions.
- 20.02 This Bidding Document contains a combined Bid/Agreement form. The Bidder signs Article 1 as Bidder. The Owner will issue a Notice of Award and request Bonds and insurance and possibly other items (Conditions Precedent). When the Conditions Precedent are met, the Owner signs Article 2 of the Bid/Agreement making the document an Agreement Document.
- 20.03 The executed copy will be accompanied by three copies of the signed Notice to Proceed. Within five days of the date on the Notice to Proceed, the Bidder will sign the Notice to Proceed and return a copy to Trotter and Associates. If Trotter and Associates does not receive the accepted Notice to Proceed in five days, then the Notice to Proceed will be considered accepted by default. The Notice to Proceed will be dated on or around the contract date. The actual contract start date, completion date, etc. will be the same as the Effective Agreement Date, or as noted in the Project Summary.
- 20.04 Notice of Award; Effective Date of Award (Effective Date of Agreement): If the Contract is awarded by Owner, such award is to be effective when the Notice of Award has been delivered to the successful Bidder (“Effective Date of Award”). The Effective Date of Agreement is the date the BID/Agreement is signed by the Owner.
- 20.05 The acknowledgement of the Notice of Award, the submittal of additional requested materials, the Contractor’s Certifications, and acceptable certificate(s) of insurance and Performance, Payment, and Maintenance Bonds are to be considered Conditions Precedent to the Contract.
- 20.06 Failure to timely execute or submit any of the Conditions Precedent is to be grounds for the imposition of Liquidated Damages. The Liquidated Damages will be equal to the Bid Security. If the submitted documents or any of them fail to comply with these Instructions or Supplemental Instructions to Bidders, Owner may, in its sole discretion, annul the award or allow the successful Bidder an opportunity to correct the deficiencies.
- 20.07 In no event will the Owner execute the Agreement until any and all such deficiencies have been cured or the Owner has received adequate assurances, as determined by Owner, of complete and prompt performance.
- 20.08 Subsequent Awards: Upon annulment of an award, Owner may accept, and award a Contract based on, any other Bidder’s Proposal as Owner, in its sole judgment, deems to be the best or may invite new Proposals or may abandon the bidding process or the Work.

ARTICLE 21 – NON-DISCRIMINATION

21.01 All Bidders are to, in their completion of Bids and formulation of Bid Price, comply with all applicable statutes, ordinances, rules, and regulations, including without limitation the Prevailing Wage Act, 820 ILCS 130/0.01 et seq. (if the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid, the revised rate will apply to this Contract); any other prevailing wage laws; the Fair Labor Standards Act; any statutes regarding qualification to do business; any statutes prohibiting discrimination because of, or requiring affirmative action based on, race, creed, color, national origin, age, sex, or other prohibited classification, including, without limitation, the Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101 et seq., the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq., and the Public Works Discrimination Act, 775 ILCS 10/1 et seq.; and any statutes regarding safety or the performance of the Work, including the Illinois Underground Utility Facilities Damage Prevention Act, and the Occupational Safety and Health Act.

21.02 Bidders are to, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the Contract.

Successful Bidders are to, if requested, submit a list of all subcontractors who will perform work on the Project and written signed statements from authorized agents of the labor pools with which they will or may deal for employees on the work, together with supporting information to the effect that said labor pools' practices and policies are in conformity with Equal Employment Opportunity, including latest federal and local policies. Labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the Contract, or a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to award of the Project.

21.03 Successful Bidders are to comply in all respects with the Labor Standards Contract Provisions regarding non-discrimination on this Project.

21.04 Bidder agrees that in the hiring of employees for the performance of work under this Agreement or any sub-agreement, neither the Contractor, nor any Subcontractor, nor any person acting on behalf of either, is to by reason of race, creed, or color, discriminate against any citizen in the employment of labor or workers who are qualified and available to perform the work to which the employment relates; nor that the Contractor, or any Subcontractor, or any person acting on behalf of either, in any manner discriminate against or intimidate any employee hired for the performance of work under this Agreement on account of race, creed, or color.

ARTICLE 22 – NON-COLLUSION

22.01 Collusion between Bidders will be cause for rejection of affected bids and may be cause for rejection of all bids. Multiple bids submitted by one bidder under the same or different names, whether as individual, firm, partnership, corporation, profit or non- profit, affiliate, or association will be cause for rejection of bids. A subcontractor is not a Bidder, and they may submit prices to multiple Bidders.

ARTICLE 23 – ALTERNATE BIDS OR RESTRICTIONS ON BIDS

- 23.01 Items that affect the scope of the Project and are not addressed by addenda will not be accepted as an alternate bid.
- 23.02 Alternate bids will automatically be considered non-responsive.
- A. Such bids may be examined prior to Project award and may result in bid cancellation, followed by new bids, including the alternate.
 - B. Discounts to the Owner for payment within a stipulated time will not be considered conditional or qualified bids. Discounts will be accepted, but not considered in the bid price evaluation for the bid award.
 - C. Interest clauses will be considered a qualified bid.

ARTICLE 24 – CONTRACTOR'S RESPONSIBILITIES

- 24.01 Sales Tax
- A. The Owner is exempt from payment of sales and compensating use taxes in the state and of cities and counties thereof on all materials to be incorporated into the Work.
 - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 - 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SECTION 00 22 13

SUPPLEMENTAL INSTRUCTIONS to BIDDERS

ARTICLE 4 – PRE-BID CONFERENCE

- 4.01 A non-mandatory pre-bid conference will be held for this Project. Refer to Notice to Bidders for location and date.
- A. All access to the site must be coordinated through the Owner. Bidder must conduct the site visit during normal working hours.
 - B. Information presented during any site visit does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the visit. Information presented, and statements made during the visit will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.04 Prevailing wages are required.

ARTICLE 21 – NON-DISCRIMINATION

- 21.01 All Bidders are to, in their completion of Bids and formulation of Bid Price, comply with all applicable statutes, ordinances, rules, and regulations, including some, but not all without limitation:
- A. The Prevailing Wage Act, 820 ILCS 130/0.01 et seq. (if the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid, the revised rate will apply to this Contract), any other prevailing wage laws.
 - B. The fair Labor Standards Act; any statutes regarding qualification to do business; any statutes requiring preference to laborers of specified classes including, without limitation, the Employment of Illinois Workers on Public Works Act, 30 ILCS 570/0.01 et seq.
 - C. State Prompt Payment Act 030 ILCS 0540 74 IAC 0900.0010-0140
 - D. Drug Free Workplace Act 030 ILCS 0580
 - E. The Illinois Steel Products Procurement Act, 30 ILCS 565/1 et seq.
 - F. Any statutes prohibiting discrimination because of, or requiring affirmative action based on, race, creed, color, national origin, age, sex, or other prohibited classification, including, without limitation.
 - G. The Americans with Disabilities Act of 1990, 42 U.S.C §§12101 et seq.
 - H. The Illinois Human Rights Act, 775 ILCS 5/1-101 et seq.
 - I. The Public Works Discrimination Act, 775 ILCS 10/1 et seq.
 - J. Any statutes regarding safety or the performance of the Work, including:
 - 1. The Illinois Underground Utility Facilities Damage Prevention Act, and
 - 2. The Occupational Safety and Health Act, and
 - 3. Substance Abuse Prevention on Public Works Projects Act.
- 21.02 All Bidders are to review 01 11 00 Project Summary for further requirements concerning the inclusion of the following State Acts and laws:
- A. Employment of Illinois Workers on Public Works Act (Illinois Preference Act) 030 ILCS 0570.
 - B. Business Enterprise for Minorities, Females, and Persons with Disabilities Act 030 ILCS 0575 44 IAC 0010.0005-0100.

C. Illinois Works Job Program Act 30 ILCS 559/Art. 20 The Illinois Works
Apprenticeship Initiative.

21.05 Non-discrimination in Employment is required.

DuPage County Prevailing Wage Rates posted on 7/15/2025

Trade Title	Rg	Type	C	Base	Foreman	Overtime				H/W	Pension	Vac	Trng	Other Ins	Add OT 1.5x owed	Add OT 2.0x owed
						M-F	Sa	Su	Hol							
ASBESTOS ABT-GEN	All	ALL		51.40	52.40	1.5	1.5	2.0	2.0	18.32	17.71	0.00	0.91	0.00	0.00	0.00
ASBESTOS ABT-MEC	All	BLD		42.02	45.38	1.5	1.5	2.0	2.0	16.44	16.64	0.00	0.92		3.37	6.73
BOILERMAKER	All	BLD		58.91	64.21	2.0	2.0	2.0	2.0	7.07	27.02	0.00	3.69	2.31	0.00	39.30
BRICK MASON	All	BLD		53.06	58.37	1.5	1.5	2.0	2.0	12.95	26.26	0.00	1.57	0.00	4.23	8.45
CARPENTER	All	ALL		56.71	58.71	1.5	1.5	2.0	2.0	13.64	27.26	2.61	1.04		0.00	0.00
CEMENT MASON	All	ALL		53.10	55.10	2.0	1.5	2.0	2.0	18.43	24.00	0.00	1.25		2.50	5.00
CERAMIC TILE FINISHER	All	BLD		49.09	49.09	1.5	1.5	2.0	2.0	13.25	17.61	0.00	1.37	0.00	5.57	11.14
CERAMIC TILE LAYER	All	BLD		57.04	62.04	1.5	1.5	2.0	2.0	13.25	21.60	0.00	1.50	0.00	7.63	15.26
COMMUNICATION TECHNICIAN	All	BLD		39.35	42.15	1.5	1.5	2.0	2.0	14.65	24.59	3.20	0.83	0.00	14.32	28.62
ELECTRIC PWR EQMT OP	All	ALL		52.47	71.60	1.5	1.5	2.0	2.0	7.50	14.69	0.00	1.84	1.57	9.05	18.10
ELECTRIC PWR GRNDMAN	All	ALL		40.31	71.60	1.5	1.5	2.0	2.0	7.50	11.29	0.00	1.41	1.21	6.96	13.91
ELECTRIC PWR LINEMAN	All	ALL		63.08	71.60	1.5	1.5	2.0	2.0	7.50	17.66	0.00	2.21	1.89	10.88	21.76
ELECTRIC PWR TRK DRV	All	ALL		41.77	71.60	1.5	1.5	2.0	2.0	7.50	11.70	0.00	1.47	1.25	7.20	14.40
ELECTRICIAN	All	BLD		48.49	52.74	1.5	1.5	2.0	2.0	15.40	28.48	7.99	1.20	0.00	18.83	37.67
ELEVATOR CONSTRUCTOR	All	BLD		70.68	79.52	2.0	2.0	2.0	2.0	16.28	21.36	5.65	0.80		0.00	0.00
FENCE ERECTOR	NE	ALL		52.25	54.75	1.5	1.5	2.0	2.0	14.29	19.02	0.00	1.00	0.00	0.00	0.00
GLAZIER	All	BLD		53.55	55.05	1.5	2.0	2.0	2.0	16.04	26.64	0.00	2.30	0.00	0.00	0.00
HEAT/FROST INSULATOR	All	BLD		56.02	59.38	1.5	1.5	2.0	2.0	16.44	19.88	0.00	0.92		4.99	9.97
IRON WORKER	All	ALL		62.46	65.96	2.0	2.0	2.0	2.0	19.05	27.04	0.00	0.49	0.00	0.00	0.00
LABORER	All	ALL		51.40	52.15	1.5	1.5	2.0	2.0	18.32	17.71	0.00	0.91	0.00	0.00	0.00
LATHER	All	ALL		56.71	58.71	1.5	1.5	2.0	2.0	13.64	27.26	2.61	1.04		0.00	0.00
MACHINIST	All	BLD		60.39	64.39	1.5	1.5	2.0	2.0	11.43	9.95	1.85	1.47	0.00	0.00	0.00
MARBLE FINISHER	All	ALL		40.21	54.60	1.5	1.5	2.0	2.0	12.95	23.81	0.00	0.98	0.00	3.00	6.00
MARBLE SETTER	All	BLD		52.00	57.20	1.5	1.5	2.0	2.0	12.95	25.57	0.00	1.25	0.00	3.88	7.76
MATERIAL TESTER I	All	ALL		41.40		1.5	1.5	2.0	2.0	18.32	17.71	0.00	0.91	0.00	0.00	0.00
MATERIALS TESTER II	All	ALL		46.40		1.5	1.5	2.0	2.0	18.32	17.71	0.00	0.91	0.00	0.00	0.00

DuPage County Prevailing Wage Rates posted on 7/15/2025

MILLWRIGHT	All	ALL		56.71	58.71	1.5	1.5	2.0	2.0	13.64	27.26	2.61	1.04		0.00	0.00
OPERATING ENGINEER	All	BLD	1	64.80	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	BLD	2	63.50	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	3	60.95	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	BLD	4	59.20	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	BLD	5	68.55	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	BLD	6	65.80	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	BLD	7	67.80	68.80	2.0	2.0	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	FLT		53.25	53.25	1.5	1.5	2.0	2.0	25.20	22.75	2.00	3.00		0.00	0.00
OPERATING ENGINEER	All	HWY	1	63.00	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	HWY	2	62.45	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	HWY	3	60.40	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	HWY	4	59.00	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	HWY	5	57.80	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	HWY	6	66.00	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
OPERATING ENGINEER	All	HWY	7	64.00	67.00	1.5	1.5	2.0	2.0	24.70	21.55	2.00	2.75		0.00	0.00
ORNAMENTAL IRON WORKER	All	ALL		59.26	62.76	2.0	2.0	2.0	2.0	14.86	27.70	0.00	2.25	0.00	0.00	0.00
PAINTER	All	ALL		54.30	56.30	1.5	1.5	1.5	2.0	16.20	11.43	0.00	1.75	0.00	0.00	0.00
PAINTER - SIGNS	All	BLD		46.76	52.53	1.5	1.5	2.0	2.0	8.20	16.81	0.00	0.00	0.00	0.00	0.00
PILEDRIIVER	All	ALL		56.71	58.71	1.5	1.5	2.0	2.0	13.64	27.26	2.61	1.04		0.00	0.00
PIPEFITTER	All	BLD		58.50	61.50	1.5	1.5	2.0	2.0	15.15	22.85	0.00	3.12	0.00	0.00	0.00
PLASTERER	All	BLD		53.00	56.18	1.5	1.5	2.0	2.0	12.95	25.66	0.00	1.49	0.00	4.31	8.61
PLUMBER	All	BLD		60.50	64.15	1.5	1.5	2.0	2.0	19.10	17.94	0.00	1.98		0.00	0.00
ROOFER	All	BLD		52.00	57.00	1.5	1.5	2.0	2.0	12.20	17.59	0.00	1.14	0.00	0.00	0.00
SHEETMETAL WORKER	All	BLD		58.83	63.54	1.5	1.5	2.0	2.0	17.16	19.90	0.00	1.79	2.62	0.00	0.00
SPRINKLER FITTER	All	BLD		60.00	62.75	1.5	1.5	2.0	2.0	14.95	19.40	0.00	1.10	0.00	0.00	0.00
STEEL ERECTOR	All	ALL		62.46	65.96	2.0	2.0	2.0	2.0	19.05	27.04	0.00	0.49	0.00	0.00	0.00
STONE MASON	All	BLD		53.06	58.37	1.5	1.5	2.0	2.0	12.95	26.26	0.00	1.57	0.00	4.23	8.45
SURVEY WORKER	All	BLD		58.45	59.45	1.5	1.5	2.0	2.0	19.10	14.40	0.00	1.59		0.00	0.00

DuPage County Prevailing Wage Rates posted on 7/15/2025

SURVEY WORKER	All	HWY		58.45	59.45	1.5	1.5	2.0	2.0	19.10	14.40	0.00	1.59	0.00	0.00
TERRAZZO FINISHER	All	BLD		51.44	51.44	1.5	1.5	2.0	2.0	13.25	18.87	0.00	1.41	0.00	8.89
TERRAZZO MECHANIC	All	BLD		55.35	58.85	1.5	1.5	2.0	2.0	13.25	20.26	0.00	1.46	0.00	9.39
TRAFFIC SAFETY WORKER I	All	HWY		43.40	45.40	1.5	1.5	2.0	2.0	10.08	10.08	0.00	1.05	0.00	0.00
TRAFFIC SAFETY WORKER II	All	HWY		44.40	46.40	1.5	1.5	2.0	2.0	10.08	10.08	0.00	1.05	0.00	0.00
TRUCK DRIVER	All	ALL	1	45.31	45.80	1.5	1.5	2.0	2.0	12.15	16.00	0.00	0.30	0.00	0.00
TRUCK DRIVER	All	ALL	2	45.46	45.80	1.5	1.5	2.0	2.0	12.15	16.00	0.00	0.30	0.00	0.00
TRUCK DRIVER	All	ALL	3	45.66	45.80	1.5	1.5	2.0	2.0	12.15	16.00	0.00	0.30	0.00	0.00
TRUCK DRIVER	All	ALL	4	45.80	45.80	1.5	1.5	2.0	2.0	12.15	16.00	0.00	0.30	0.00	0.00
TUCKPOINTER	All	BLD		52.53	53.53	1.5	1.5	2.0	2.0	11.05	23.16	0.00	1.46	0.00	0.00

Legend

Rg Region

Type Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers

C Class

Base Base Wage Rate

OT M-F Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.

OT Sa Overtime pay required for every hour worked on Saturdays

OT Su Overtime pay required for every hour worked on Sundays

OT Hol Overtime pay required for every hour worked on Holidays

H/W Health/Welfare benefit

Vac Vacation

Trng Training

Other Ins Employer hourly cost for any other type(s) of insurance provided for benefit of worker. Explanations DUPAGE COUNTY

IRON WORKERS AND FENCE ERECTOR (WEST) - West of Route 53.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day and Veterans Day in some classifications/counties. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

DuPage County Prevailing Wage Rates posted on 7/15/2025

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

TRAFFIC SAFETY Worker I

Traffic Safety Worker I - work associated with the delivery, installation, pick-up and servicing of safety devices during periods of roadway construction, including such work as set-up and maintenance of barricades, barrier wall reflectors, drums, cones, delineators, signs, crash attenuators, glare screen and other such items, and the layout and application or removal of conflicting and/or temporary roadway markings utilized to control traffic in construction zones, as well as flagging for these operations.

TRAFFIC SAFETY WORKER II

Work associated with the installation and removal of permanent pavement markings and/or pavement markers including both installations performed by hand and installations performed by truck.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials.

All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Low voltage installation, maintenance and removal of telecommunication facilities (voice, sound, data and video) including telephone and data inside wire, interconnect, terminal equipment, central offices, PABX, fiber optic cable and equipment, micro waves, V-SAT, bypass, CATV, WAN (wide area networks), LAN (local area networks), and ISDN (integrated system digital network),

DuPage County Prevailing Wage Rates posted on 7/15/2025

pulling of wire in raceways, but not the installation of raceways.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Spider Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Heavy Duty Self-Propelled Transporter or Prime Mover; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Operation of Tie Back Machine; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

DuPage County Prevailing Wage Rates posted on 7/15/2025

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators (remodeling or renovation work); Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 4. Bobcats and/or other Skid Steer Loaders; Oilers; and Brick Forklift. Class

5. Assistant Craft Foreman.

Class 6. Gradall.

Class 7. Mechanics; Welders.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines; ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane; Spider Crane; Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dredges; Elevators, Outside type Rack & Pinion and Similar Machines; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Heavy Duty Self-Propelled Transporter or Prime Mover; Hydraulic Backhoes; Backhoes with shear attachments up to 40' of boom reach; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Snow Melters; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Operation of Tieback Machine; Tractor Drawn Belt Loader; Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Traffic Barrier Transfer Machine; Trenching; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; Hydro Excavating (excluding hose work); Laser Screed; All Locomotives, Dinky; Off-Road Hauling Units (including articulating) Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper - Single/Twin Engine/Push and Pull; Scraper - Prime Mover in Tandem (Regardless of Size); Tractors pulling attachments, Sheeps Foot, Disc,

DuPage County Prevailing Wage Rates posted on 7/15/2025

Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Vacuum Trucks (excluding hose work); Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. SkidSteer Loader (all); Brick Forklifts; Oilers. Class

6. Field Mechanics and Field Welders

Class 7. Dowell Machine with Air Compressor; Gradall and machines of like nature.

OPERATING ENGINEER - FLOATING

Diver. Diver Wet Tender, Diver Tender, ROV Pilot, ROV Tender TRUCK

DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled Dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turntrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turntrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master

DuPage County Prevailing Wage Rates posted on 7/15/2025

Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front. SURVEY

WORKER

Operates survey equipment (such as levels, transits, data collectors, GPS and robotic total stations) for the purpose of performing construction layout and/or grade checking.

SURVEY FOREMAN

Operates survey equipment (such as levels, transits, data collectors, GPS and robotic total stations) for the purpose of performing construction layout and/or grade checking; oversees survey crew operations; and/or coordinates work of survey crews.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

MATERIAL TESTER & MATERIAL TESTER/INSPECTOR I AND II

Notwithstanding the difference in the classification title, the classification entitled "Material Tester I" involves the same job duties as the classification entitled "Material Tester/Inspector I". Likewise, the classification entitled "Material Tester II" involves the same job duties as the classification entitled "Material Tester/Inspector II".

DuPage County Prevailing Wage Rates posted on 7/15/2025



Village of Oak Brook
Procurement
Rania Serences, Purchasing & Budgeting Coordinator
1200 Oak Brook Road, Oak Brook, IL 60523

[DAHME MECHANICAL INDUSTRIES, INC.] RESPONSE DOCUMENT REPORT

RFB No. TBD

WATER SYSTEM DISINFECTION MODERNIZATION

RESPONSE DEADLINE: October 8, 2025 at 10:00 am

Report Generated: Friday, October 17, 2025

Dahme Mechanical Industries, Inc. Response

CONTACT INFORMATION

Company:

Dahme Mechanical Industries, Inc.

Email:

kkomorn@dahmemechanical.com

Contact:

Kris Komorn

Address:

610 South Arthur Avenue
Arlington Heights, IL 60005

Phone:

N/A

Website:

N/A

Submission Date:

Oct 8, 2025 6:17 AM (Central Time)

ADDENDA CONFIRMATION

Addendum #1

Confirmed Oct 5, 2025 11:58 AM by Kris Komorn

Addendum #2

Confirmed Oct 6, 2025 9:47 AM by Kris Komorn

QUESTIONNAIRE

1. AUTHORIZED REPRESENTATIVE*

Please enter the name, title, phone and email of the authorized representative.

Kris Komorn

President

847-212-1147

kkomorn@dmi-inc.net

2. REFERENCES*

The contractor must submit with the bid proposal five (5) references including the name, address, phone and contact name for which the bidder has supplied a similar type of commodities, service, or construction.

1. Village of Roselle - **Karen R. Young, P.E., CFM**, Director of Public Works

474 Congress Circle North, Roselle, IL 60172

Office: (630) 671-2365

kayoung@roselle.il.us

2. City of Naperville - **Tony Conn**, Deputy Director - Utility Operations, Department of Public Utilities-Water
1200 W. Ogden Ave, Naperville, IL 60563
Office: (630) 305-5537

connt@naperville.il.us

3. City of Waukegan Water Utility - **Antonio Dominguez**, Superintendent
10 East Seahorse Dr., Waukegan, IL 60085
Office: (847) 599-2687

Antonio.Dominguez@waukeganIL.gov

4. City of Joliet - **Nick Gornick**, Plant Operations Superintendent
1021 McKinley Ave.
Joliet, IL 60436
815-405-3666

ngornick@joliet.gov

5. City of Crystal Lake - **Adam Behrns**, Water & Sewer Supervisor
100 W. Woodstock St., Crystal Lake, IL 60014
(815) 356-3614

abehrns@crystallake.org

3. STATEMENT OF BIDDER'S QUALIFICATIONS*

Please download the below documents, complete, and upload.

- [STATEMENT OF BIDDER'S QUALI...](#)

SoBQ.pdf

4. BID CERTIFICATION*

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [BID_CERTIFICATION.pdf](#)

BC.pdf

5. SEXUAL HARASSMENT CERTIFICATE*

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [SEXUAL HARASSMENT CERTIFICA...](#)

SHC.pdf

6. CONTRACTOR'S CERTIFICATIONS*

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [contractor_cert.pdf](#)

CC.pdf

7. Certification of Contract*

Please download the below documents, complete, and upload.

- [Certification of Contract.pdf](#)

CFC.pdf

8. BID BOND*

Bid_Bond.pdf

9. PREVAILING WAGE AFFIDAVIT*

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [PREVAILING WAGE AFFIDAVIT.pdf](#)

PWA.pdf

10. CERTIFICATION OF PAYROLL RECORDS*

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [CERTIFICATION OF PAYROLL RE...](#)

CoPR.pdf

11. Bid Form*

Please download the below documents, complete, and upload.

- [dis_bid_form.pdf](#)

Bid_Form.pdf

12. NON-COLLUSION AFFIDAVIT*

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [non_collusion_affidavit.pdf](#)

NCA.pdf

13. CERTIFICATE OF COMPLIANCE WITH SECTION 11-42-.1

Please download the below documents, complete and have notarized. An online notarization option will be provided for you when responding.

- [Cert of compliance.pdf](#)

CoC.pdf

PRICE TABLES

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
1	Lump Sum Total Project Cost	1	Lump Sum	\$468,888.00	\$468,888.00
TOTAL					\$468,888.00

CONTINGENCY

Unforeseen Utility Conflicts

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
2	Unforeseen Utility Conflicts	1	Lump Sum	\$25,000.00	\$25,000.00
TOTAL					\$25,000.00

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, THAT WE Dahme Mechanical Industries, Inc.

610 S Arthur Avenue Arlington Heights, IL 60005

as Principal, hereinafter called the Principal, and Swiss Re Corporate Solutions Premier Insurance Corporation

1200 Main Street, Suite 800, Kansas City, MO 64105

a corporation duly organized under the laws of the State of MO

as Surety, hereinafter called the Surety, are held and firmly bound unto Village of Oak Brook

1200 Oak Brook Road Oak Brook, IL 60523

as Oblige, hereinafter called the Oblige, in the sum of Ten Percent of Amount Bid

Dollars (\$ 10%),

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for Water System Disinfection Modernization

NOW, THEREFORE, if the Oblige shall accept the bid of the Principal and the Principal shall enter into a Contract with the Oblige in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and materials furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Oblige the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Oblige may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 8th day of October, 2025

Nick Figenbaum

(Witness)

Nick Figenbaum, Secretary



Dahme Mechanical Industries, Inc.

By: *[Signature]* (Principal) (Seal)

Kris Komorn, President (Title)

Eileen Velt

(Witness)

Surety Phone No. 847-273-1300



Swiss Re Corporate Solutions Premier Insurance Corporation

By: *[Signature]* (Surety) (Seal)

Attorney-in-Fact Carl Dohn, Jr.

(Title)

STATE OF Illinois
COUNTY OF McHenry

I, Eileen M. Walsh Notary Public of McHenry County,
in the State of Illinois, do hereby certify that Carl Dohn, Jr.
Attorney-in-Fact, of the Swiss Re Corporate Solutions Premier Insurance Corporation
who is personally known to me to be the same person whose name is
subscribed to the foregoing instrument, appeared before me this day in person, and
acknowledged that he signed, sealed and delivered said instrument, for and on behalf of the
Swiss Re Corporate Solutions Premier Insurance Corporation
for the uses and purposes therein set forth.

Given under my hand and notarial seal at my office in the City of Palatine
in said County, this 8th day of October A.D., 2025



Eileen M Walsh
Notary Public Eileen M. Walsh
My Commission expires: October 26, 2027

SWISS RE CORPORATE SOLUTIONS

SWISS RE CORPORATE SOLUTIONS AMERICA INSURANCE CORPORATION ("SRCSAIC")
SWISS RE CORPORATE SOLUTIONS PREMIER INSURANCE CORPORATION ("SRCSPIC")

GENERAL POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT SRCSAIC, a corporation duly organized and existing under laws of the State of Missouri, and having its principal office in the City of Kansas City, Missouri, and SRCSPIC, a corporation organized and existing under the laws of the State of Missouri and having its principal office in the City of Kansas City, Missouri, each does hereby make, constitute, and appoint: **Carl Dohn, Jr.**

Principal: Dahme Mechanical Industries, Inc.
Obligee: Village of Oak Brook
Bond Description: Water System Disinfection Modernization
Bond Number: Bid Bond
Bond Amount: See Bond Form

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:

FIFTY MILLION (\$50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both SRCSAIC and SRCSPIC at meetings duly called and held on the 9th of May 2012:

"RESOLVED, that any two of the President, any Managing Director, any Senior Vice President, any Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is, authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Corporation bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Corporation: and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Corporation may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Corporation when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached."



By Erik Janssens
Erik Janssens, Senior Vice President of SRCSAIC & Senior Vice President of SRCSPIC

By Gerald Jagrowski
Gerald Jagrowski, Vice President of SRCSAIC & Vice President of SRCSPIC

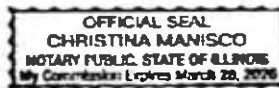
IN WITNESS WHEREOF, SRCSAIC and SRCSPIC have caused their official seals to be hereto affixed, and these presents to be signed by their authorized officers this 10TH day of NOVEMBER, 20 22

State of Illinois
County of Cook



Swiss Re Corporate Solutions America Insurance Corporation
Swiss Re Corporate Solutions Premier Insurance Corporation

On this 10TH day of NOVEMBER, 20 22, before me, a Notary Public personally appeared Erik Janssens, Senior Vice President of SRCSAIC and Senior Vice President of SRCSPIC and Gerald Jagrowski, Vice President of SRCSAIC and Vice President of SRCSPIC, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.



Christina Manisco
Notary Public, State of Illinois

I, Jeffrey Goldberg, the duly elected Senior Vice President and Assistant Secretary of SRCSAIC and SRCSPIC, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said SRCSAIC and SRCSPIC, which is still in full force and effect.
IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 8th day of October, 20 25.

Jeffrey Goldberg
Jeffrey Goldberg, Senior Vice President &
Assistant Secretary of SRCSAIC and
SRCSPIC

Statement of Bidder's Qualifications

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he or she desires.

1. Name of Bidder: Dahme Mechanical Industries, Inc.
2. Permanent main office address: 610 S. Arthur Ave., Arlington Heights, IL 60005
3. When organized: November 1994
4. If a corporation, where incorporated: Illinois
5. How many years have you been engaged in the contracting business under your present firm or trade name: 30+
6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion) available upon request; we have over 200 active water/wastewater treatment contracts/POs open currently
7. General character of work performed by your company: water/wastewater treatment construction and service contractor
8. Have you ever defaulted on a contract: no
9. List, on an attached sheet, the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed. Include a contact person and phone # for each. detailed, project specific list available upon request post-bid
10. List your major equipment **available for this contract:** all necessary equipment is available
11. Experience in work similar in importance to this project: we have completed hundreds of water/wastewater chemical feed projects since our inception
12. Background and experience of the principal members of your organization, including the officers. detailed organizational chart with experience to be furnished post-bid upon request

13. Credit available: \$1M untapped line of credit
14. Bank reference: Matt Hammer, Wintrust Bank - 847-590-7042
15. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Village of Oak Brook: yes
16. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Village of Oak Brook in verification of the recitals comprising this Statement of Bidder's Qualifications.

DATED at Arlington Heights, Illinois this 8th day of October, 2025.

[Signature]
By: Kris Komorn, President
Title

STATE OF ILLINOIS)
) SS.
COUNTY OF Oak)

Kris Komorn being duly sworn deposes and says that he is the President of Dahne Mechanical Industries and that the answers to the foregoing questions and all statements therein contained are true and correct.

SUBSCRIBED and sworn to before me this 8th day of October 2025, 2025.

[Signature]
Notary Public
Official Seal
LORRAINE P KULL
Notary Public, State of Illinois
Commission No. 1013850
My Commission Expires July 18, 2029

Section H Bid Certification

The undersigned, being first duly sworn an oath, deposes and states that he has the authority to make this certification on behalf of the bidder for the construction, product, commodity, or service briefly described as follows:

“Water Disinfection Modernization”

- (A) The undersigned certifies that, pursuant to Chapter 720, Section 5/33E of the Illinois Compiled Statutes, 1993, the bidder is not barred from bidding on this contract as a result of a conviction for the violation of State of Illinois laws prohibiting bid-rigging or bid-rotating.
- (B) The undersigned states under oath that, pursuant to Chapter 65, Section 5/11-42.1-1 of the Illinois Compiled Statutes, 1993, the bidder is not delinquent in the payment of any tax administered by the Illinois Department of Revenue.
- (C) The undersigned certifies that, pursuant to Chapter 775, Section 5/2-105. of the Illinois Compiled Statutes, 1993, the bidder has a written sexual harassment policy in place including the following information:
 - 1. An acknowledgment of the illegality of sexual harassment.
 - 2. The definition of sexual harassment under State law.
 - 3. A description of sexual harassment, utilizing examples.
 - 4. The contractor's internal complaint process including penalties.
 - 5. The legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Human Rights Commission.
 - 6. Directions on how to contact the Department or the Commission.

This business firm is: (check one)

 X Corporation Partnership Individual

Firm Name: Dahme Mechanical Industries, Inc.

Address: 610 S. Arthur Ave.

City, State, ZIP: Arlington Heights, IL 60005

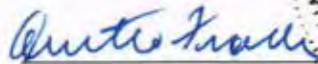
Signature: 

Name Printed: Kris Komorn

Title: President

Telephone: 847-212-1147 Date: 10-8-25

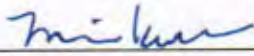
ATTEST:



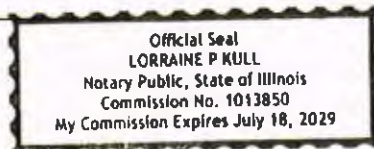
-SEAL-



SUBSCRIBED AND SWORN TO
before me this 8th day
of October, 2025.



Notary Public



SEXUAL HARASSMENT CERTIFICATE

Dahme Mechanical Industries, Inc. hereinafter referred to as "Contractor" having submitted a bid/proposal for Water System Disinfection Modernization to the Village of Oak Brook, DuPage/Cook Counties, Illinois, hereby certifies that said Contractor has a written sexual harassment policy in place in full compliance with 775 ILCS 5/2-105(A)(4) including the following information:

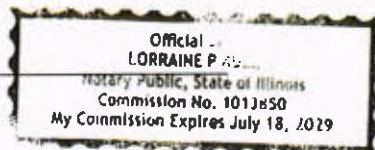
1. An acknowledgment of the illegality of sexual harassment.
2. The definition of sexual harassment under State law.
3. A description of sexual harassment, utilizing examples.
4. The contractor's internal complaint process including penalties.
5. The legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Human Rights Commission.
6. Directions on how to contact the Department or the Commission.
7. An acknowledgment of protection of a complaint against retaliation as provided in Section 6-101 of the Human Rights Act.

Each contractor must provide a copy of such written policy to the Illinois Department of Human Rights upon request.

By:  Kris Komorn, President
Authorized Agent of Contractor

Subscribed and sworn to
before me this 8th day
of October, 2025

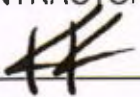

Notary Public



PREVAILING WAGE AFFIDAVIT

I, Kris Komorn (name of signatory), on oath hereby state and certify that Dahme Mechanical Industries, Inc. (name of Contractor), pursuant to a Contract dated October 8th, 2025, with the Village of Oak Brook for the Water System Disinfection Modernization Project, has complied and will comply with all laws, including those relating to the employment of labor, the payment of the current general prevailing rate of hourly wages for each craft or type of worker or mechanic needed to execute the Contract or perform such work, and also the current general prevailing rate for legal holiday and overtime work, as ascertained by the Illinois Department of Labor for DuPage County, Illinois, and those prevailing rates are paid and shall be paid for each craft or type of worker or mechanic needed to execute the aforesaid Contract or to perform such work. Dahme Mechanical Industries, Inc. (name of Contractor) has also complied and will comply with all record keeping requirements established in the Prevailing Wage Act (820 ILCS 130/0.01, *et seq.*

CONTRACTOR:

By: 

Title: Kris Komorn, President

SUBSCRIBED AND SWORN TO BEFORE
ME THIS 8th DAY OF October, 2025


NOTARY PUBLIC



CERTIFICATION OF PAYROLL RECORDS

I, Kris Komorn (name of person executing this certificate), do hereby certify that I am the duly qualified and acting President (title) for Dahme Mechanical Industries, Inc. (name of contractor) and, as such, am authorized to certify payroll records as true and accurate for such company in accordance with the requirements of Section 5 of the Prevailing Wage Act (820 ILCS 130/5) (the "Act").

I do hereby further certify that the following document is a true and accurate copy of the records of all laborers, mechanics, and other workers employed by Dahme Mechanical Industries, Inc. (name of contractor) on the Water System Disinfection Modernization Project (the "Project") for the Village of Oak Brook (the "Village"), including each such worker's name, address, telephone number, social security number, classification or classifications; and the hourly wages paid in each pay period, hours worked each day, and the starting and ending times of work each day for each such worker on such Project.

I do hereby further certify that the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by the Act, and that Dahme Mechanical Industries, Inc. (name of contractor), and I on behalf of such contractor, are fully aware that filing a certified payroll that we know to be false is a Class B misdemeanor. I further certify that upon two (2) business days' notice, if requested, we and any subcontractor hired by us shall make available for inspection the records required in the Act to the District, its officers, and agents, and to the Director of Labor, his deputies, and agents, at reasonable hours at a location within the State of Illinois.

Date: October 8th, 2025

Dahme Mechanical Industries, Inc.
(Name of Contractor)

[Signature]
(Signature)

Kris Komorn
(Printed Name)

President
(Title)

Subscribed and sworn to before me.

this 8th day of October, 2025.

Notary Public Lorraine P. Kull



SECTION 00 50 00

BID/AGREEMENT FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid/Agreement Form with initial capital letters have the meanings stated in the Instructions to Bidders, Supplemental Instructions to Bidders (if applicable), the General Conditions, and the Supplementary Conditions.

ARTICLE 1 – BID/AGREEMENT SIGNATURES AND BID

1.01 By signing this Bid Proposal, Contractor acknowledges that this Bid Form becomes an Agreement upon acceptance and signature of Owner below in Article 2.

1.02 Receipt of Addenda – Bidder hereby acknowledges receipt of the following Addenda: **Attach sheet if more rows are needed.**

Addendum Number	Addendum Date	SIGNATURE -Addendum Received
1	9-24-25	
2	10-6-25	

1.03 The following cash allowances shall be included in the Lump Sum Base Bid.

Item	Description	Quantity	Unit	Unit Price	Amount Included in the Lump Sum Base Bid
1.	Unforeseen Utility Conflicts	1	Lump Sum	\$25,000	\$25,000

1.04 Base Bid – Bidder will complete the Work in accordance with the Contract Documents, including all labor and material, for the following Lump Sum Total price:

four sixty eight thousand, eight hundred eighty eight and 00/100 dollar (in words)

\$468,888.00 (in figures)

1.05 This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

1.06 Bidder agrees that no less than the prevailing rate of wages as found by Owner or the Department of Labor or determined by the court on review, is to be paid to all laborers, workmen, and mechanics performing work under this Contract.

1.07 BIDDER hereby submits this Bid to:

Owner: Village of Oak Brook

Owner Address: 1200 Oak Brook Road, Oak Brook, Illinois 60523

Bidder: Dahme Mechanical Industries, Inc.
(typed or printed name of organization)

By: 
(individual's signature)

Name: Kris Komorn

Title: President

Date: 10-8-25

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: 
(individual's signature)

Name: Nick Figenbaum

Title: Secretary

Date: 10-8-25

Address for giving notices:
610 S. Arthur Ave., Arlington Heights, IL 60005

Bidder's Contact and Agent for Service or Process:

Name: Kris Komorn

Title: President

Phone: 847-212-1147

Email: kkomorn@dmi-inc.net

(Email will be used for Electronic Document Transfer Protocol.)

All Business Entities

Date of Qualification to do business in Illinois [State Where Project is Located] is
11 / 16 / 94.

ARTICLE 2 – AGREEMENT SIGNATURES

2.01 Owner's signature as Party to Agreement, Changes Bidder's Status to Second Party to Agreement, Contractor.

AGREEMENT: IN WITNESS WHEREOF, Contractor has signed this Agreement as Bidder. Owner has signed Agreement in duplicate and one counterpart each has been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf. (a third copy or original has been delivered to Trotter and Associates)

This Agreement will be effective on, _____, _____ (which is the Effective Date of the Agreement)

OWNER: _____

By: _____

Title: _____

ARTICLE 3 – BIDDER TO CONTRACTOR

3.01 The above signed Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner by Owner signing above and transforming this Document into a combined Bid/Agreement Form and Bidder:

- A. Agrees to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.
 - 1. Bidding Documents include:
 - a. Bid/Agreement Form
 - b. Notice to Bidders
 - c. Instructions to Bidders
 - d. Supplemental Instructions to Bidders
 - e. All Contract Document Sections as defined in Article 13.01A.1
- B. Agrees to accept all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.
- C. Accepts all the terms and conditions of the combined Bid/Agreement form. (The Bid/Agreement form is an attempt to shorten the time period between submittal and award.) Bidder's signature is an acceptance of all terms of the Bid and Agreement sections.

ARTICLE 4 – ATTACHMENTS TO THIS BID

4.01 The following documents are submitted with and made a condition of this bid:

- A. Required bid security, including evidence of authority to do business in the state of the project; or a written covenant to obtain such authority within the time for acceptance of bids.
- B. Contractor's license number as evidence of bidder's state contractor's license or a covenant by bidder to obtain said license within the time for acceptance of bids.
- C. Submit your firm's written Substance Abuse Prevention Program as detailed and required by Illinois Public Act 095-0635 Section 15.
- D. **Certification for SSPC's Coating Application Specialist Certification Program (CAS) as required by Illinois Administrative Code Title 35 Section 652.220**

Corrosion Prevention at Community Water Supplies. Minimum of one (1) employee is required.

ARTICLE 5 – TIME OF COMPLETION

- 5.01 Bidder agrees that the Work will be substantially complete and will be completed and Ready for Final Payment in accordance with the General Conditions on or before the dates or within the number of calendar days indicated in this Bid Agreement, or in the Project Summary.
- 5.02 Bidder accepts the provisions of the Agreement as to Liquidated Damages, Special Damages, and Set-offs in the event of failure to complete the Work within the Contract Times, or within Milestone dates or in compliance with the specifications and General Conditions.

ARTICLE 6 – BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 Bidder's Representations

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings, if any.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
 7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
 9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or

discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work in the State required by the Bidding Documents (Project).

6.02 Bidder's Certifications

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

6.03 Affirmations of Bidder Transferred to Contractor

- ##### A. All references to Bidder in Paragraph 6.01 and 6.02 in these affirmations, representations, and certifications will change to the term Contractor if this Bid becomes an Agreement.

ARTICLE 7 – TIME REQUIRED TO EXECUTE AGREEMENT

- 7.01 Time Framework for Award Execution – The Owner will open bids on the bid date. After opening, no bid may be withdrawn or altered for sixty days, unless specifically stated elsewhere. The Owner may negotiate with the low Bidder and mutually both parties may alter bid (i.e., partial award of project).

The Bidder will be notified of award within sixty days of bid date, unless stated elsewhere or mutually extended. Notice of Award form will be sent by fax, mail, or email. Within ten business days of Notice of Award, supply the Engineer with three original sets of separate Payment, Performance, and Maintenance Bonds. Supply three original sets of Certificates of Insurance meeting requirements of Supplementary Conditions 6.02 – 6.07. Insurance companies and insurance forms must be standard to the industry and acceptable to the Owner. Failure to submit bonds and/or insurance within the time frame will be considered a default, a failure to perform as required by the Bid Bond. The Owner, at his option, may waive default, delay default, or proceed with capture of the Bid Bond as Liquidated Damages which will become the Owner's property.

Bonds and insurances are to be submitted to the Engineer for review. The Owner will within twenty days of receipt of approved bonds and insurances from the Engineer execute the Agreement and send a signed copy to the Contractor.

The executed copy will be accompanied by three copies of the Notice to Proceed. Within five days of the date on the Notice to Proceed, the Bidder is to sign the Notice to Proceed and return a copy to the Engineer. If the Engineer does not receive the accepted Notice to Proceed in five days, then the Notice to Proceed will be considered accepted by default.

The Notice to Proceed will be dated on or around the Effective Date of Agreement.

ARTICLE 8 – BID ACCEPTANCE

- 8.01 Bid Acceptance:

- A. The above Bid is accepted by the Owner and is to become a Contract Agreement binding on all parties after signing by an authorized representative of the Owner in Article 2 of this Bid/Agreement Form.
- B. All references in the second portion of this form are Agreement terminology. Bidder is now referred to as Contractor. Where appropriate, the term Bidder in the Bid/Agreement form is changed to Contractor.

ARTICLE 9 – ENGINEER

- 9.01 The Owner has retained Trotter and Associates, Inc. (TAI) to act as Owner's representative, assume all duties and responsibilities of Engineer, and RPR, and have the rights, limitations of responsibility, and authority assigned to Engineer in the Contract.

ARTICLE 10 – CONTRACT TIMES

- 10.01 Time is of the essence:

- A. All time limits for Milestones, if any, Substantial Completion, and completion and Readiness for Final Payment as stated in the Project Summary and these Contract Documents are of the essence of the Contract.
- B. The Work is to be Substantially Completed and completed and ready for Final Payment on or before the dates or time period as required by the Project Summary.

10.02 Liquidated Damages

- A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in the Project Summary 00 00 40, plus any extensions thereof allowed in accordance with the General Conditions and approved Change Order. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that Liquidated Damages are for delay (but not as a penalty) and agree to the Liquidated Damages listed in the Project Summary 00 00 40.
- B. If Milestones are identified in the Project Summary 00 00 40 as essential to the proper sequencing/or coordination of work with others, or to the successful compliance with the project Substantial Completion date, Liquidated Damages are identified in the Project Summary.
- C. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are additive, and will be imposed concurrently.

10.03 Special Damages

- A. Contractor is to reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in the Project Summary for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor is to neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor is to reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), and if necessary to hire other Contractors to complete portions of the Work, until the Work is completed and ready for final payment.
- C. The Special Damages imposed in this paragraph are supplemental, in addition to, any Liquidated Damages for delayed completion established in this Agreement.

ARTICLE 11 – CONTRACT PRICE

- 11.01 Owner is to pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to this Bid/Agreement.

ARTICLE 12 – PAYMENT PROCEDURES

12.01 Submittal and Processing of Payments

- A. Contractor is to submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be processed by Trotter and Associates as provided in the General Conditions.

12.02 Progress Payments; Retainage

- A. Owner is to make progress payments based on Contractor's Applications for Payment once each month during performance of the Work as provided in Paragraphs

12.02.A.1 through 12.02.A.5 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established and by protocol as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided in the General Conditions. The following is a protocol used for partial completion of an individually listed lump sum item.

1. The wet interior, surface preparation by abrasive blast cleaning will be considered equal to 40 percent of the Line Item and each coat of paint 20 percent.
 2. Exterior painting and repairs will not be broken down. 100 percent completion is required before they will be considered for payment.
 3. Mobilization is included in the surface preparation allotment for the items above.
- B. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated above but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to Liquidated Damages, in accordance with the Contract. Retainage to be held as follows: 10% of the dollar value through 50% completion; 5% of the dollar value through 100% completion.
- C. Upon Substantial Completion, Owner is to pay an amount sufficient to increase total payments to Contractor to 90 percent of the Work completed, less such amounts set off by Owner pursuant to the General Conditions, and less 150 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

12.03 Final Payment, Consent of Surety

- A. Upon final completion and acceptance of the Work in accordance with the General Conditions, Owner is to pay the remainder of the Contract Price as recommended by Engineer.
- B. Owner reserves the right to not make final payment or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release. Determination to require Consent will be based on the Engineer's sole decision as to the level of confidence in Contractor's Work practices, their payment of employees, certified payrolls (when required), or the potential of future claims against the Owner or Contractor.
- C. Nothing in this Article 12 imposes a requirement on the Contractor to submit once monthly invoices or statements. This article establishes the protocol to follow if requesting Partial Payments. The Contractor, at their option may submit one final pay request per Article 15 of the General Conditions Section 00 72 00.

ARTICLE 13 - CONTRACT DOCUMENTS

13.01 Contents

- A. The Contract Documents consist of the following:
 1. Contractor's Completed Bid/Agreement Form including all certifications and required forms, and:
 - a) Project Summary.
 - b) Addenda as listed on page 1 of this Contractor's Completed Bid Agreement Form. Prebid meeting (if any) is not part of the Contract Documents. Any changes necessitated because of the Prebid Meeting would result in the issuance of an Addendum.
 - c) General Conditions and Supplementary Conditions.

- d) Technical Specifications and Drawings (if any) as listed in the table of contents for Technical Specifications.
- 2. Documents submitted by Contractor as a Condition precedent to award:
 - a) Performance bond.
 - b) Payment bond.
 - c) Maintenance (Warranty) bond.
 - d) Certificate of Insurance.
- 3. Exhibits to this Agreement which were part of the Bid Documents:
Non-Collusion Affidavit, Contractor Certification, Certification for Contract, Certificate of Compliance with Section 11-42-.1 of the Illinois Municipal Code.
- 4. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a) Notice to Proceed.
 - b) Preconstruction Meeting Minutes
 - c) Work Change Directive(s).
 - d) Change Order(s).
 - e) Field Order(s).
- B. There are no Contract Documents other than those listed above in this Article 13.
- C. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 14 – MISCELLANEOUS

14.01 Assignment of Contract

- A. No assignment by a party hereto of any payment rights under or interests in the Contract will be binding on the Owner hereto without the written consent of the Owner; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

14.02 Successors

- A. Owner and Contractor each binds itself, its partners, successors, and legal representatives to the other party hereto, its partners, successors, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

14.03 Severability

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation is to be deemed stricken, and all remaining provisions is to continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents are to be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

NON-COLLUSION AFFIDAVIT

The Bidder is required to execute and submit with his Bid, the Non-Collusion Affidavit:

State of: Illinois

County of: Cook

Bid Identification: Water System Disinfection Modernization

CONTRACTOR Dahme Mechanical Industries, Inc., being first duly sworn, deposes and says that he is (sole owner, a partner, president, secretary, etc.) of the party making the foregoing BID; that such BID is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such BID is genuine and not collusive or sham; that said BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a false or sham BID, and has not directly or indirectly colluded, conspired, connived, or agreed with any BIDDER or anyone else to put in a sham BID, or that anyone shall refrain from bidding; that said BIDDER has not in any manner, directly or indirectly, sought by agreement, communication or conference with anyone to fix the BID price of said BIDDER or of any other BIDDER, or to fix any overhead, profit, or cost element of such BID price, or that of any other BIDDER, or to secure any advantage against the OWNER awarding the CONTRACT or anyone interested in the proposed CONTRACT; that all statements contained in such BID are true; and, further, that said BIDDER has not, directly or indirectly, submitted his BID price or any breakdown thereof, or the contents thereof, of divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, BID depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said BIDDER in his general business.

Signed:

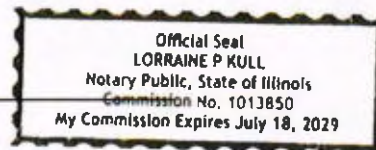


Kris Kcmorn, President

Subscribed and sworn to before me this the day of:

8th day of October 2025

Seal of Notary:



CONTRACTOR CERTIFICATION

Kris Komorn being first duly sworn on oath, deposes and states that all statements herein made are made on behalf of Contractor, that this deponent is authorized to make them, and that the statements contained herein are true and correct.

Contractor deposes, states, and certifies that Contractor is not barred from bidding and/or contracting with a unit of state or local government as a result of (i) a delinquency in the payment of any tax administered by the Illinois Department of Revenue unless Contractor is contesting in accordance with the procedures established by the appropriate Revenue Act, its liability for the tax or the amount of tax, as set forth in 65 ILCS 5/11-42.1-1; or (ii) a violation of 720 ILCS 5/33E-1 et seq.

Dated this 8th day of October, 2025.

Attest/Witness:

By: [Signature]

By: Nickolas Figenbaum

Title: Joe Lamantia, Safety Officer

Title: Nick Figenbaum, Secretary

Subscribed and sworn to before me this the 8th day of October, 2025.

My Commission Expires: 7-18-2029

[Signature]

Notary Public



Seal

CERTIFICATION FOR CONTRACT

The undersigned, as a duly authorized representative of the Contractor, hereby certified to the (Client)
Village of Oak Brook Illinois, that the Contractor is fully aware of and able to comply with all Local, State,
and Federal Safety Laws and Regulations applicable for the construction of the Project known as (Project):

Water System Disinfection Modernization



Kris Komorn, President

Name

Dahme Mechanical Industries, Inc.

Company

10-8-25

Date

CERTIFICATE OF COMPLIANCE WITH SECTION 11-42-.1

OF THE ILLINOIS MUNICIPAL CODE

The undersigned, upon being first duly sworn, hereby certifies to the (Client) Village of Oak Brook,
that Dahme Mechanical Industries, Inc. (Contractor) is not currently delinquent in the payment of any tax
administered by or owed to the Illinois Department of Revenue, or otherwise in default upon any such tax as defined
under Chapter 24, Section 11-42-.1 Illinois Revised Statutes.

Dahme Mechanical Industries, Inc.

Name of Contractor

[Signature]

By

Kris Komorn, President

Title

Subscribed and sworn to before me this 8th day of October, 2025.

[Signature]

Notary Public



SECTION 00 72 00
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT
2018 These documents have been modified by Trotter and Associates,
Inc. and should no longer be considered an EJCDC document.

Prepared by



Issued and Published Jointly by



This document will be known as General Conditions, 2018 edition.

The original document and formatting is the 2013 version of the EJCDC C-700 version of the General Conditions. The document has been modified from its original version, all modifications can be found in blue.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
ARTICLE 1 – Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology	7
1.03 Intent of Certain Terms of Adjectives	7
1.04 Indemnification Terms.....	8
ARTICLE 2 – Preliminary Matters.....	8
2.01 Delivery of Bonds and Evidence of Insurance	8
2.02 Copies of Documents	9
2.03 Before Starting Construction	9
2.04 Preconstruction Conference; Designation of Authorized Representatives	9
2.05 Initial Acceptance of Schedules	10
2.06 Electronic Transmittals.....	11
ARTICLE 3 – Contract Documents: Intent, Requirements, Reuse.....	15
3.01 Intent	15
3.02 Reference Standards	16
3.03 Reporting and Resolving Discrepancies	16
3.04 Requirements of the Contract Documents	17
3.05 Reuse of Documents.....	17
ARTICLE 4 – Commencement and Progress of the Work.....	18
4.01 Commencement of Contract Times	18
4.02 Starting the Work	18
4.03 Reference Points N/A.....	18
4.04 Progress Schedule.....	19
4.05 Delays in Contractor’s Progress	19
ARTICLE 5 – Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions	21
5.01 Availability of Lands.....	21
5.02 Use of Site and Other Areas	21
5.03 Subsurface and Physical Conditions.....	23
5.04 Differing Subsurface or Physical Conditions	23
5.05 Underground Facilities	25
5.06 Hazardous Environmental Conditions at Site.....	26

ARTICLE 6 – Bonds and Insurance	28
6.01 Performance, Payment, and Maintenance Bonds (Not Bid Bonds)	28
6.02 Insurance – General Provisions	30
6.03 Contractor’s Insurance	30
6.04 Builder’s Risk and other Property Insurance	30
6.05 Property Losses; Subrogation	30
6.06 Receipt and Application of Property Insurance Proceeds	30
ARTICLE 7 – Contractor’s Responsibilities	30
7.01 Contractor’s Means and Methods of Construction	30
7.02 Supervision and Superintendence	30
7.03 Labor; Working Hours	31
7.04 Services, Materials, and Equipment	31
7.05 “Or Equals”	31
7.06 Substitutes	33
7.07 Concerning Subcontractors, Suppliers, and Others	34
7.08 Patent Fees and Royalties	35
7.09 Permits	36
7.10 Taxes	36
7.11 Laws and Regulations	36
7.12 Record Documents	37
7.13 Safety and Protection	38
7.14 Hazard Communication Programs	39
7.15 Emergencies	39
7.16 Submittals	40
7.17 Contractor’s General Warranty and Guarantee	43
7.18 Indemnification	44
7.19 Delegation of Professional Design Services	44
ARTICLE 8 – Other Work at the Site	45
8.01 Other Work	45
8.02 Coordination	45
8.03 Legal Relationships	46
ARTICLE 9 – Owner’s Responsibilities	47
9.01 Communications to Contractor	47
9.02 Replacement of Resident Project Representative	47
9.03 Furnish Data	47
9.04 Pay When Due	48

9.05	Lands and Easements; Reports, Tests, and Drawings.....	48
9.06	Change Orders.....	48
9.07	Inspections, Tests, and Approvals	48
9.08	Limitations on Owner's Responsibilities.....	48
9.09	Undisclosed Hazardous Environmental Condition.....	48
9.10	Safety Programs	48
ARTICLE 10 – Engineer's Status During Construction.....		48
10.01	Owner's Representative.....	48
10.02	Visits to Site	48
10.03	Resident Project Representative	49
10.04	Engineer's Authority	50
10.05	Determinations for Unit Price Work.....	51
10.06	Decisions on Requirements of Contract Documents and Acceptability of Work.....	51
10.07	Limitations on Engineer's Authority and Responsibilities	51
10.08	Compliance with Safety Program.....	52
ARTICLE 11 – Changes to the Contract		52
11.01	Amending and Supplementing Contract Documents.....	52
11.02	Change Orders.....	52
11.03	Work Change Directives	53
11.04	Field Orders.....	53
11.05	Owner-Authorized Changes in the Work	54
11.06	Unauthorized Changes in the Work.....	54
11.07	Change of Contract Price.....	54
11.08	Change of Contract Times.....	55
11.09	Change Proposal.....	56
11.10	No Notification of Obligation to Surety by Owner	57
ARTICLE 12 – Claims.....		57
12.01	Claims	57
ARTICLE 13 – Cost of the Work; Allowances; Unit Price Work.....		59
13.01	Cost of the Work	59
13.02	Allowances	62
13.03	Unit Price Work.....	63
ARTICLE 14 – Test, Observations, and Inspections, Removal or Acceptance of Defective.....		63
Work, Stop Work		
14.01	Access to Work.....	63
14.02	Test, Observations, Inspections, and Approvals	64

14.03	Defective Work	65
14.04	Acceptance of Defective Work	66
14.05	Uncovering Work	66
14.06	Owner, Engineer/RPR May Stop the Work	67
14.07	Owner May Correct Defective Work	67
ARTICLE 15 – Payments to Contractor; Set-offs; Completion; Correction Period		68
15.01	Progress Payments	68
15.02	Contractor's Warranty of Title	71
15.03	Substantial Completion	72
15.04	Partial Use or Occupancy	73
15.05	Final Inspection	73
15.06	Final Payment	73
15.07	Waiver of Claims	75
15.08	Correction Period	75
ARTICLE 16 – Suspension of Work and Termination		76
16.01	Owner May Suspend Work	76
16.02	Owner May Terminate for Cause	76
16.03	Owner May Terminate for Convenience	77
16.04	Contractor May Stop Work or Terminate	78
ARTICLE 17 – Final Resolution of Disputes		78
17.01	Methods and Procedures	78
ARTICLE 18 – Miscellaneous		79
18.01	Giving Notice	79
18.02	Computation of Times	79
18.03	Cumulative Remedies	79
18.04	Limitation of Damages	79
18.05	No Waiver	80
18.06	Survival of Obligations	80
18.07	Controlling Law	80
18.08	Assignment of Contract	80
18.09	Successors and Assigns	80
18.10	Headings	80

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Definitions of General Conditions

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda* – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
2. *Agreement* – The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
3. *Application for Payment* – The document prepared by Contractor in a form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
4. *Bid* – The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
5. *Bidder* – An individual or entity that submits a Bid to Owner.
6. *Bidding Documents* – The Bidding Requirements, the proposed Contract Documents, and all Addenda.
7. *Bidding Requirements* – The Advertisement, Notice, or Invitation to Bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
8. *Change Order* – A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
9. *Change Proposal* – A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a Set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim* – (a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern* – Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material.
12. *Contract* – The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents* – Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price* – The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
15. *Contract Times* – The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor* – The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work* – See Paragraph 13.01 for definition.
18. *Drawings* – The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract* – The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Electronic Document* – Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
21. *Electronic Means* – Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use

by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer* – The individual or entity named as such in the Agreement. The terms Engineer, Project Manager, and Trotter and Associates are used interchangeable in these Contract Documents.
23. *Field Order* – A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition* – The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
25. *Hold Point* – A point in the construction sequence when the Contractor is required to stop work on that portion of the project until an inspection has been completed.
26. *Inspection* – is a term which originally applied to both Quality Control (Contractor's Responsibility) and Quality Assurance (Engineer's service). There will remain some reference to Inspection but all references to Inspection when it is obviously the Engineer's service shall be understood to mean Observation, whether the word is capitalized or not.
27. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, statutes, rules, regulations, ordinances, codes, binding decrees and resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
28. *Liens* – Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
29. *Milestone* – A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
30. *Non-Conformance Report (NCR)* – A report written by the Engineer or Resident Project Representative to document the Contractor's Work that does not meet requirements of the specifications or contract, including lack of progress.
31. *Notice of Award (NOA)* – The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
32. *Notice to Proceed (NTP)* – A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
33. *Observation* – Service performed by Engineer as part of their RPR services.

34. *Owner* – The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
35. *Performance Specifications* – Specifications that require the manufacturer or supplier of equipment, materials, or systems to design, manufacture, deliver, and install products to achieve specific results under stipulated conditions of operation and in environments described in applicable Specification Sections.
36. *Preconstruction Conference or Meeting* – are interchangeable terms.
37. *Progress Schedule* – A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
38. *Project* – The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
39. *Project Manual* – This term is deleted in the 2018 edition.
40. *Ready for Final Payment* – This term is used to define a time when Liquidated Damages begin, separate from and in addition to Liquidated damages for failure to meet Substantial Completion Date. All punchlist items are to be completed, Site cleaned and restored, and equipment removed within 21 days. Finalize and submit all paperwork for Final Pay Request within 30 days of Substantial Completion. Failure to meet 21 day and/or 30-day requirements may individually trigger the charge of Liquidated Damages. Some Bonding Companies refer to a Final Completion Date, and for the purpose of this Agreement we will define Final Completion Date and Ready for Final Payment as synonymous, both terms referring to 20 days past Substantial Completion.
41. *Resident Project Representative (RPR)* – The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
42. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
43. *Set-off* – A contracted remedy for the Owner for minor Contract breaches by the Contractor which results in additional and/or unnecessary costs or fees to the Owner.
44. *Schedule of Submittals* – A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
45. *Schedule of Values* – A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

46. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
47. *Site* – Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
48. *Specifications (also Technicals or Technical Specifications)* – The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
49. *Subcontractor* – An individual or entity having a direct contract with Contractor for the performance of a part of the Work.
50. *Subsubcontractor* – An individual or entity having a direct contract with a Subcontractor for the performance of a part of the work.
51. *Submittal* – A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
52. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
53. *Successful Bidder* – The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
54. *Supplementary Conditions* – The part of the Contract that amends or supplements these General Conditions. These EJCDC Documents have been rewritten to merge or relocate Supplemental and General Conditions and are now a product of Trotter and Associates Engineering Inc. and not an EJCDC product. The terms Supplemental Conditions used in these General Conditions and Project Specific Supplemental Conditions are to be used interchangeable. Since items such as Insurance change with every Project, all items associated

with insurance are moved. It is the intent but not a requirement that these General Conditions remain the same and are only altered in the Supplemental Conditions.

55. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

56. *Technical Data* – Revised

- a. Those items, if any, expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
- b. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

57. *Underground Facilities* – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

58. *Unit Price Work* – Work to be paid for on the basis of unit prices.

59. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

60. *Work Change Directive* – A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

1.03 *Intent of Certain Terms or Adjectives:*

- A. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer.
- B. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,”

“satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. Day:

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective:

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
 - d. All work completed that is rejected by an unresolved non-conformance report.

E. Furnish, Install, Perform, Provide:

The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

1. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
2. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
3. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Contract Price or Contract Times: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such

change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

1.04 Indemnification Terms – Many Articles throughout these General and Supplemental Conditions include indemnification clauses. In an attempt to shorten these clauses, the following terms replace their definitions but the full definition or meaning remains in effect. Paragraph SC 6.07 is the general Indemnification requirement. This paragraph was not shortened because it may be sent whole to the Contractor's Insurance agent.

- A. Owner/Engineer et al – shall replace all or the appropriate portion of the following:

1. Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them.

- B. Indemnify, Hold Harmless, and/or Defend:

1. To the fullest extent permitted by Laws and Regulations, indemnify and hold harmless from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. Within ten (10) business days of Notice of Award, supply the Engineer with three (3) original sets of separate Payment, Performance, and Maintenance Bonds. Supply three (3) original sets of Certificates of Insurance meeting requirements found herein and with the limits of insurance to be found in the Supplemental General Conditions. Failure to submit bonds and/or insurance within time frame will be considered a default, a failure to perform as required by the Bid Bond. The Owner, at his option, may waive default, delay default, or proceed with capture of the Bid Bond which will become the Owner's property.
- B. Bonds and insurances are to be submitted to the Engineer for review. The Owner will within twenty (20) days of receipt of approved bonds and insurances from the Engineer execute the agreement and send a signed copy to the Contractor.
- C. *Evidence of Contractor's Insurance* See Insurance Information for required limits in the Supplemental Conditions.
- D. *Evidence of Owner's Insurance* Owner will not provide Certificate of Insurance to the Contractor. The Owner will not name Contractor additional insured.
- E. *Correction Requirements of Bonds and Insurance:* Bonds and Certificate of Insurances that fail the initial review and first subsequent review by a Trotter and Associates contract administrator will be returned to Contractor. All subsequent returns for insufficient material will be cause for Owner to Set-off Trotter and Associates recurring handling fees. Also, failure of Bonds and Certificate of Insurance to meet Contract requirements during review by Owner's insurance consultant will be cause for Set-off.

2.02 *Copies of Documents*

- A. Owner will furnish the Contractor one signed copy of the Contract Documents. Additional printed copies will be furnished upon request at the cost of reproduction, or an electronic version will be supplied upon request and at cost.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer. This is a copy of the signed document only. The copy to be used for all construction and legal disputes will have been sent after final design and include all Bid requirements. The Owner will retain this copy in a sealed, marked envelope in a safe secure location.

2.03 *Before Starting Construction*

- A. Preliminary Schedules: Within 10 days after the Effective Date of the Agreement (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract.
 - 2. a preliminary Schedule of Submittals; and
 - 3. A final Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. The Engineer may schedule a Preconstruction Conference to be attended by Owner, Engineer, and Contractor(s). When no organizational meeting is scheduled, the Contractor, prior to beginning any work, shall meet with the Engineer and review Project Schedule for the work. Submit Progress Schedule before scheduling Preconstruction Meeting. Once the Work has started, the Contractor shall carry the Progress Schedule to completion without delay, making adjustments to Schedule as Work progresses.
- B. Attend a Preconstruction Meeting that may be scheduled by the Owner at a mutually agreeable time after all contract preconditions and other requirements have been met.
- C. A corporate officer or someone with legal authority to obligate the company/corporation, project manager (if different from officer), and the intended foreman shall attend. If project foreman does not attend the meeting, it shall be the Contractor's responsibility to supply the information discussed at the meeting to the field foreman.
- D. The Owner will be represented by the project contact person, and the Engineer by the Project Manager or a senior Contract Administrator.
- E. Submit all required materials prior to the preconstruction meeting.
- F. The Preconstruction Conference will discuss all containment, personal hygiene, and

lead control issues required in this contract and review. Be prepared to commit designated "competent person(s)" to responsibilities of confined space, scaffold rigging, lead, etc.

- G. At the Preconstruction Conference Owner and Contractor, each party shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.
- H. The Engineer may prepare Preconstruction Conference minutes and send to all attendees. All parties to the Preconstruction Conference will have five days from the postmarked, or email dated delivery of the minutes to protest any item of the minutes in writing. After five days the minutes will be considered not protested and will become part of the Contract Documents per established Electronic Transmittal Protocol (See SC Paragraph 2.06).
- I. Preconstruction Conference minutes may serve to meet some of the "writing" requirements of this Article.

2.05 *Initial Acceptance of Schedules*

- A. All schedules are to be submitted prior to the preconstruction meeting. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

Failure to meet Milestone or significant Progress Schedule dates may be cause for rejection of prior accepted Progress Schedule and require an additional Progress meeting and new Progress Schedule to put Project back on an acceptable schedule, or to revise existing Schedule. Cost of meeting, Owner's and Engineer's time will be considered the responsibility of the Contractor, subject to Set-off. Exceeding Schedule Milestones would not normally be cause for rejection of original Schedule.

- 1. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals. All Submittals shall be included with the first submittal package and shall only be submitted by the Contractor and not by Suppliers or Subcontractors. If certain items cannot be submitted with the package, an acceptable Schedule of Submittals must be supplied to the Engineer.
- 2. Contractor's Schedule of Values *will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.* If the Engineer determines the Schedule of Values is not acceptable, the Engineer will use the Contractor's Schedule to reallocate values. The Engineer's reallocation will be to maintain sufficient funds for work completed toward the end of the project to avoid frontloading values. The Engineer will assign values high enough to bring in another Contractor to finish work in case of default. The Contractor has five (5) days

to appeal this reallocated Schedule of Values. Pay Requests shall be made based on the prices in the Schedule of Values as submitted unless adjusted by the Engineer and in that case the adjusted Schedule of Values. The Schedule of Values will not be reallocated if the Contractor files only a Final Application of Payment.

2.06 Electronic Transmittals – See Paragraph SC 2.06

- A. The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol (“EDP” or “Protocol”) for exchange of electronic transmittals. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. Electronic Documents Protocol

Delete paragraphs 2.06.B through 2.06.D from the General Conditions

1. Basic Requirements - Include Project Engineer in this Protocol.
 - a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
 - b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
 - c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
 - d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
 - e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
 - f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

- a. Each party will provide hardware, operating system(s) software, program software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is ten (10) MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.
- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware, malware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.
- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party

remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.

- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

C. Software Requirements for Electronic Document Exchange; Limitations

- 1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
 - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
- 2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
- 3. Software and data formats for exchange of Electronic Documents will conform to the following requirements, including software versions, if listed:

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contractors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOCX	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	XLSX	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (SMTP). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, Cloud Services, storage media)			
PDF	Portable Document Format readable by Adobe® Acrobat Reader Current Version			
DWG	Autodesk® AutoCAD .dwg format Version 2013 or later			
DOC	Microsoft® Word .docx format Version 2013 or later			
EXC	Microsoft® Excel .xlsx format Version 2013 or later			
DB	Microsoft® Access .mdb format Version 2013 or later			

ARTICLE 3 – CONTRACT DOCUMENTS INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- B. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed version of record shall govern. *If there is a conflict between written copies, see Paragraph 2.02 B above.*
- C. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- D. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein. *The Documents shall be given the following preference in order:*
 - 1. Addenda.
 - 2. Agreement.
 - 3. *Special Conditions, if any.*
 - 4. Technical Specifications.
 - 5. *Drawings. Figure dimensions shall govern over scaled drawings.*
 - 6. Supplemental Conditions.
 - 7. General Conditions.
- E. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- F. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.01 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may

be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies:

1. Contractor's Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
2. Contractor's Review of Contract Documents: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. The provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

- b. The provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs) or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. Have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. Have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times*

- A. The contract times are defined in the Project Summary in Section 00 00 40. A Notice to Proceed will be issued thirty (30) days prior to the start date if time permits. An email or verbal notice may be used to give thirty (30) days notice until all parties can sign the Notice to Proceed.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date except as recommended immediately following. Contract time is governed by out-of-service time.

4.03 *Reference Points N/A*

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.
- C. See Technical Specifications for Scheduling RPR Services Section 00 91 19.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference

described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. Acts or failures to act of utility owners or other third-party entities (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
3. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment.
2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work.
3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work.
4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, and Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the

provisions of Paragraphs 4.05.D and 4.05.E.

- G. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5 – SITE, SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
2. If a damage; or injury reparation demand is made by the Owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13.F, or otherwise;
(b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner/Engineer et al, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws

and Regulations.

- C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.
- E. The Contractor shall provide adequate signs, barricades, red lights, and watchmen and take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be protected at night by signal from sunset-to-sunrise. Barricades shall be of suitable construction and shall be painted to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades, or detours exist.
- F. The Contractor shall at all times so conduct his work to ensure the least obstruction to traffic and inconvenience to the general public and the residences in the vicinity of the work, and to insure the protection of persons and property in a manner satisfactory to the Engineer. No road or street shall be closed to the public except with the permission of the Engineer and proper governmental authorities. The Contractor shall confer with and keep police and fire departments of the municipality fully informed as to streets or alleys which are to be closed to traffic for construction purposes. Live fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by the Contractor to insure the usability of sidewalks and the proper functioning of all street gutters, sewer inlets and drainage ditches.
- G. The Contractor shall have full charge of the premises and work under construction until completion and final acceptance of the Work under the Contract except as noted in the Special Conditions.
- H. The Engineer and Owner shall have full access to the Site and Contractor's personnel and equipment shall be available to the Owner and Engineer/RPR to expedite inspections. The Contractor shall be responsible for all injury to work in process of construction, and for all property or materials stored at the premises that may be damaged or stolen while the work is in his care and shall make good all such damage or loss without expense to the Owner.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
 - 1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
 - 2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.
- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.
- D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site or Underground Facility, either is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then Contractor shall, promptly after becoming aware thereof and before further disturbing the physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.
- B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of

Engineer's findings, conclusions, and recommendations.

- C. Owner's Statement to Contractor Regarding Site Condition: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. Early Resumption of Work: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments:*

- 1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
- 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
- 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities:*

- 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
- 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

- a. reviewing and checking all information and data regarding existing Underground Facilities at the Site.
- b. complying with applicable state and local utility damage prevention Laws and Regulations.
- c. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction.
- d. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
- e. the safety and protection of all existing Underground Facilities at the Site and repairing any damage thereto resulting from the Work.

B. Notice by Contractor:

1. If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

5.06 Hazardous Environmental Conditions at Site

A. Reports and Drawings: The Supplementary Conditions identify:

1. those reports or drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
2. Technical Data contained in such reports and drawings, and the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto.

B. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

C. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Article 14); *Engineer or RPR has full authority to STOP Work until the Owner/or Engineer are contacted*, and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a

qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.G. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition and impose a Set-off against payments to account for the associated costs. Authority to STOP Work in this instance is expanded to include potential environmental contamination.

- D. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- E. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a Set-off.
- F. If after receipt of such written notice Contractor does not agree to resume such Work, then Owner may Terminate or Suspend Work per Article 14. If Work is Suspended, Owner will give Notice as to what further action they may take while the suspension is in place. Owner may have such plywood barrier installation by Owner's own forces or others in accordance with Article 8.
- G. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner/Engineer et al, arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. The provisions of Paragraphs 5.06.H do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Maintenance Bonds (Not Bid Bonds)*

- A. Contractor shall furnish a Performance Bond and a Payment Bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect from Effective Date of Agreement until fifteen months after date of Substantial Completion, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by these General Conditions or Supplementary Conditions or other specific provisions of the Contract.

- B. The Owner retains the right to require a time extension to both the original Performance Bond and Maintenance Bond if the extent of the Correction Period Repairs exceed the value of the Maintenance Bond.
- C. Supply a Maintenance (Warranty) Bond for two (2) years at 50% of the contract price. The purpose of the Maintenance Bond shall include all of the same obligations required of the original Performance Bond and Payment Bond; completion of any Correction Period, per original specifications, repair work required after the one (1) year Post Construction observation.
 - 1. The start date of the two (2) year Maintenance Bond shall be the Date of Ready for Final Payment. The Termination Date is 2 years after the Date of Ready for Final Payment, unless extended mutually or for a new Correction Period (see Items 3 and 4 below).
 - 2. The Post Construction Evaluation will be completed within 13 months, unless stated otherwise in the Contract Documents.
 - 3. If repair scheduling is delayed for months (more than 15 months but less than 24 months from Ready for Final Payment Date) for Contractor's schedule with mutual agreement of the Owner, then the Maintenance Bond shall be continued and be effective until all required post construction repairs are completed.
 - 4. If repair scheduling is delayed several months (Correction Period Repairs to be completed more than 24 months (after Ready for Final Payment) for Contractor's schedule with mutual agreement of the Owner then the Maintenance Bond shall be extended until all required Correction Period repairs are completed.
 - 5. If repairs exceed 10% of any specific line item or line item area, then the Correction Period and Maintenance Bond shall be extended an additional year until inspection and repair work if any of the original one year Correction Period repairs are completed. (See Article 15.08E Correction Period)
 - 6. The maintenance (warranty) bond shall issued by the same surety that issues the Performance Bond required under Paragraph 6.01.A of the General Conditions.
- D. Submittal of Performance, Payment, and Maintenance bonds shall all be Condition Precedent to Contract award. The Contract will not be signed until all three bonds are submitted, reviewed and included in the Contract Documents. If for some reason the Maintenance or any bond is not included, the Contractor is still fully responsible financially for all assurances a bond would provide. Contractor shall provide Bond at whatever stage of the Work; the discrepancy of a missing Bond is noted. Owner retains the right to terminate or suspend the Project per Article 14, until the Bond is delivered.
- E. Use Bond forms acceptable to AIA Industry Standards, or use forms specifically required by the Owner. Supply three (3) original signed and properly executed bonds for each type of bond and documented Power of Attorney for those parties executing Bonds. All bonds shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S.

Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- F. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts. Surety Companies must, in addition to State license, be incorporated and originating from within the United States. Offshore companies or internet companies are not acceptable. Supply bonds and insurance from companies with a Class A- VII rating or better (rating listed in latest edition and by A.M. Best Co.).
- G. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above. No Pay Requests will be accepted until new Bonding is approved as acceptable per Bond Requirements and Owner's satisfaction.
- H. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- I. Upon written request, Owner will provide a copy of the Payment Bond to any Subcontractor, Supplier, or other person or entity claiming with documentation to have furnished labor or materials used in the performance of the Work.
- J. Owner is under no obligation to furnish Surety Co with copies of Bids, Change Orders, or Project Status updates.
- K. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means and Methods of Construction

- A. Contractor shall direct all communication intended for the Owner directly to the Engineer who is the representative of the Owner. Communication in any format and for most purposes could result in miscommunication back from Owner to Engineer and additional expense to Owner. Any expense from a miscommunication, or communication directly with the Owner will assume a miscommunication and shall be back charged to the Contractor at a lump sum of \$500 as a Set-off, and per incident rather than documenting time and expenses.
- B. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- C. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at

Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.
- C. Resident Superintendent shall be fluent in English to the level of competency to complete requirements of 7.01.A and 7.02.A. Superintendent shall also be fluent or have access to a translator for the primary language of a majority of the workers. Degree of fluency to be sufficient so that Superintendent can adequately complete his duties under 7.01.A.
- D. No employee of Contractor, Subcontractor, or Supplier may be on the Project Site who cannot be directed by a Superintendent, or translator in regard to work assignments, safety issues, or who cannot understand safety signage.

7.03 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.
- D. The Owner may revoke any written or verbal consent if the Contractor's performance of the Work completed on days or work hours outside the designated work times, results in complaints by neighbors.

7.04 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor,

transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified.
- B. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if in the exercise of reasonable judgement Engineer determines that:
 - 1. it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics.
 - 2. it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole.
 - 3. it has a proven record of performance and availability of responsive service; and
 - 4. it is not objectionable to Owner.
 - 5. Contractor certifies that, if approved and incorporated into the Work:
 - a. there will be no increase in cost to the Owner or increase in Contract Times; and
 - b. it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- C. Contractor's Expense: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- D. Engineer's Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge

of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- E. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding and may not be reversed through an appeal under any provision of the Contract Documents.
- F. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review will be set forth by the Engineer as they decide appropriate for the specific substitution request.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use.
 - a. will identify all variations of the proposed substitute item from that specified, and
 - b. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner (Set-off) for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner (Set-off) for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
1. Engineer's minimum cost for reviewing a substitute will be \$500 (2 hrs. equivalent).
 2. Engineer exceeds two hours for review their rate will be \$250 per hour.
- E. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal but is liable for fee regardless of Engineer's determination.

7.07 Concerning Subcontractors, Suppliers, and Others

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement

for the rejected Subcontractor, Supplier, or other individual or entity.

- F. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- G. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- H. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- I. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- J. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- K. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- L. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others.
- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner/Engineer et al, arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner will assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work

which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

- B. Display all wage requirements and other permits on a temporary board, if required by governmental Agency.
- C. Attach to the Resident Superintendent's copy of the specifications, copies of other permits which do not require display. See paragraph 7.12 Record Documents.

7.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner/Engineer et al, arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Liability for Noncompliance. Contractor will be solely liable for any fines or civil penalties that are imposed by any governmental or quasi-governmental agency or body that may arise, or be alleged to have arisen, out of or in connection with Contractor's, or its subcontractors' or suppliers', performance of, or failure to perform, the Work or any subordinate part.
- D. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.
- E. Required Provisions. Every provision of law required by law to be inserted into this Contract will be deemed to be included in this Contract.
- F. Claims or Change Proposals made for extra costs resulting from laws and regulations that become effective after the opening of Bids or (EDA), will be reviewed based on the exposure and publication of the law or regulation in advance. There will be no adjustment in Contract Price or Contract Time for environmental or safety regulations, or other laws and regulations with similar public notice and public hearing/review procedures. It is the Contractor's responsibility to be aware of

industry specific changes in OSHA or environmental issues.

- G. Regulations dealing with labor rates have a known expiration date. Everyone can safely assume there will be a cost increase with each new issue. If these rates are scheduled to expire during Contract Time, then increase labor costs in Bid for the expected manhours by local cost-of-living factor. If rates increase more than cost-of-living, a Change Order will be reviewed for difference between cost-of-living and actual inflation adjusted wage of new rate above the adjusted old rate. Copy of payroll will be used to determine increase in wage only, not associated taxes, insurance, and benefits. The Contractor is responsible for requesting extra Change Proposal and supplying documentation establishing extra. All consideration for an increase end on Substantial Completion, either original or Change Order extended date.
- H. There will be no considerations given to Change Proposals increase expenses resulting from changed laws, regulations, or wage rates for Projects extended or delayed until the next coating season because of Contractor's failure to adhere to the Progress Schedule. If delay is at request of Owner, Contractor may submit a Change Proposal for Contract Price and Contract Time.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, approved Shop Drawings, and Non-Conformance Reports. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer, only after written request. Superintendent's copy including permits may be digital but shall be available for review.
- B. Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plans, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operations. Submit a copy of all OSHA reportable or recordable injuries or illness, and all OSHA citations relative to this project at project completion.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work; all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal,

relocation, or replacement in the course of construction.

- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- C. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- D. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions may identify any Owner's safety programs that are applicable to the Work. Failure to identify specific program does not relieve the Contractor from safety program adherence requirement. If safety requirement is for a program not identified in the Supplemental Condition and is more restrictive than OSHA and it interferes with Contractor's Methods of Operation, then Contractor may submit a Change Proposal for Contract Time and/or Contract Price.
- E. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- F. All damage, injury, or loss to any property referred to in Paragraph 7.13.A.1 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- G. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed.
- H. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.
- I. Monitor and be responsible for all safety on job site. The Engineer and Owner will not monitor safety practices and will not assume any responsibility for safety.
- J. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs. Contractor's Safety Representative shall have the authority to supersede Contractor's foreman

and shall stop work if the Work being completed is in violation of Contractor's or Owner's safety program, or OSHA.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of Safety Data Sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto.
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific

notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples:*

- a. Contractor shall submit the number of Samples required in the Specifications.
- b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval

of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance nor approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, and/or number of new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than two submittals. Engineer will record Engineer's time for reviewing a third or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a Set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a Set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted.
 - c. Engineer's review will be only to determine if the Submittal is

acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance and resubmit an acceptable document.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 1. observations by Engineer.
 2. recommendation by Engineer or payment by Owner of any progress or final payment.
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner.
 4. use or occupancy of the Work or any part thereof by Owner.
 5. any review and approval of a Shop Drawing or Sample submittal.
 6. the issuance of a notice of acceptability by Engineer.

7. the end of the correction period established in Paragraph 15.08.
8. any inspection, test, or approval by others; or
9. any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification Both Paragraphs A and B moved to SC-6.07 under the Insurance Requirements*

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.
- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 1. Checking for conformance with the requirements of this Paragraph 7.19.
 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8 - OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be provided at the Preconstruction Meeting or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in this Contract, the Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a Set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a Set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the

claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner/Engineer et al arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 - OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Resident Project Representative*

- A. Owner may at its discretion have the Resident Project Representative (RPR) replaced with another RPR. The replacement RPR status under the Contract Documents shall be that of the former RPR.
- B. Contractor may request replacement of RPR for failure to perform safely, timely and /or professionally by submitting a complaint to Trotter and Associates that clearly delineates how the RPR failed to perform. Removal is the discretion of the Engineer or the Owner. If requested removal is because of disputes with Contractor, Owner may remove RPR and/or Contractor's Resident Superintendent. If an RPR is removed, they will be replaced with another RPR from Trotter and Associates.
- C. Project Manager may request removal of Resident Superintendent or any crew member for unprofessional performance and/or confrontational and /or aggressive attitude.
- D. The Contractor's Safety Representative can be removed but is not relieved of his responsibilities until a new Safety Representative is on Site. In no situation, even if only temporary shall the Safety Representative and the Company Superintendent or Foreman be the same person (paragraph 7.13.L).

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner will make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Article 5.

9.06 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.07 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.08 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures

of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.09 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.10 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Engineer/Owner Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work, and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as directed by Engineer, and limitations on the responsibilities thereof will be as provided in Paragraph 10.07.
- B. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.
- C. Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer

and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:

1. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
2. Safety Compliance: Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site. If Contractor requires safety training exceeds Industry Standard, as determined solely by Engineer, then all training cost including RPR fees for their time, are the responsibility of the Contractor, and are subject to Set-off protocol.
3. Liaison
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
4. Review of Work; Defective Work
 - a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
5. Payment Requests: Review Applications for Payment with Contractor.
6. Completion
 - a. Participate in Engineer's visits regarding Substantial Completion.
 - b. Assist in the preparation of a punch list of items to be completed or corrected.
 - c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work and prepare a final punch list of items to be completed or corrected by Contractor.
 - d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
2. Exceed limitations of Engineer's authority as set forth in the Contract

Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Authorize Owner to occupy the Project in whole or in part.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.
- E. Engineer's authority as to Applications for Payment is set forth in Article 15.
- F. Engineer/RPR shall have the authority to stop Work in the event continuation of Work is under a noncompliance situation, such as incomplete containment, which may result in the violation of environmental laws, or which may result in the covering of defective or unaccepted work product, or for flagrant safety violations such as the use of harnesses and safety lines for both RPR and Contractor's employees. Authority to continue Work Stoppage transfers back to the Owner after the Owner has been notified and returns to the Site.

10.05 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Determinations on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create,

impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for, or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents. Any plan or method of accomplishing the work suggested to the Contractor by the Engineer or other representative of the Owner, but not specified or required, may be used but shall be used at the Contractor's own risk and responsibility. The Owner and Engineer assume no responsibility.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 shall also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive.
 2. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 3. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.
- C. If Owner and Contractor are unable to agree on a price for Change Order work, do not proceed with Work unless ordered in writing by the Engineer or Owner as a Work Change Directive.
- D. If work involved is not essential to the scope of the project and/or there is sufficient time, a Bulletin will be issued and recommended by the Engineer. The Bulletin will request a price for proposed work, and/or any adjustment in Contract Times. If the price as offered or as later negotiated is acceptable, the Bulletin will become the basis of the Change Order. By Owner acceptance and signing, the Bulletin offered by the Contractor may become a combined document: Bulletin # _____/Change Order #____, or a new separate Change Order may be prepared.
- E. Changes in Contract Price resulting from an Owner Set-off, unless Contractor has duly contested such Set-off; will not require a Change Order but will be reflected in review of final Pay Request.

11.03 *Work Change Directives:*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price (actual time and material plus profit).
- B. If Owner has issued a Work Change Directive and:
1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than

30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Time or Contract Price is necessary, then Owner shall submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders:*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.
- C. A Field Order is written by the Engineer and issued to the Contractor, copied to Owner. If the Contractor, or Owner does not object to the Field Order within three days of issuance and delivery, the Field Order will be deemed in full force and effect.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents.
- C. Nothing in paragraph 11.05 shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.7) or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 10 percent.
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent.
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C.
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the

actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

- f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.05. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05

11.09 *Change Proposal*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a Set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

- 1. **Submittal:** Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. **Supporting Data:** The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. **Engineer's Initial Review:** Engineer will advise Owner regarding the Change Proposal and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. **Engineer's Full Review and Action on the Change Proposal:** Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor.

If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. **Binding Decision:** Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. **Resolution of Certain Change Proposals:** If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. **Post-Completion:** Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *No Notification of Obligation to Surety by Owner*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.
- B. Acceptance of Bonds tendered by Contractor to Owner neither creates nor does Owner accept any and all obligations that the Bonding Company may attempt to transfer to Owner even if specified by Bonding Company as a Condition of the Bond. The Contractor is advised he will be assuming any responsibility that the Contractor's Surety tries to impose on the Owner.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals.
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full and fair amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. When needed to determine the value of a Change Order, Change Proposal, Claim, Set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned

on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.
 - c. Construction Equipment Rental
 - 1) Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental

of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - e. With respect to Work that is the result of a Change Order, Change Proposal, Claim, Set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
 - f. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - g. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - h. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - i. The cost of utilities, fuel, and sanitary facilities at the Site.
 - j. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - k. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. Costs Excluded: The term Cost of the Work shall not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's

principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.
3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
6. Expenses incurred in preparing and advancing Claims.
7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, Set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - c. When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - d. When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, Set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. Documentation and Audit:** Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted

accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

ARTICLE 14 – TESTS, OBSERVATIONS, AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK, STOP WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide the Owner and Engineer and Resident Project Representative, proper and safe conditions and equipment for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable. Reasonable times means at times that would not burden the Contractor with an entire workforce, waiting to go back to work. Between job functions, at scheduled times, or Contractor breaks are reasonable times.

14.02 *Tests, Observations, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required observations, required inspections, and tests by others and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector (RPR), testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner.
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work.
 - 3. by manufacturers of equipment furnished under the Contract Documents.
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. **Correction of Failed Inspections, Non-Conformance Reports**

1. Non-Conformance Reports (NCR): The Engineer/RPR will issue a Non-Conformance Report for every performance item, material, or equipment supplied, and/or environmental situation that fails to meet requirements of the specifications.
2. Correct all work in Non-conformance before proceeding.
3. Immediately correct all environmental non-conformance to prevent accidents or environmental incidents. If an incident has already occurred, contact the proper governmental environmental agency and conduct an immediate clean-up per their direction. Notify Engineer/RPR of environmental release and of the environmental agency's requirements for cleanup.
4. If issued non-conformance reports are not corrected, the failure will be considered a breach of contract by the Contractor entitling the Owner to damages as follows, items listed in Paragraph 14.02.E.4.b will be treated as a Set-off:
 - a. Work in non-conformance: If the Contractor refuses to correct, the bonding company will be notified to finish the project. At that point, payment to the Contractor for all completed work will stop until the bonding company authorizes payment, or payment may be made to the bonding company after they have proven assumption of the contract. This clause does not give either party rights to a greater payment than detailed elsewhere in these documents.
 - b. Equipment specified but never supplied, or broken equipment not repaired or replaced: 125% of the rental value of equipment in non-conformance (i.e. non-working decontamination trailer, hand wash facilities, air filtration units, etc.). Environmental issues: 125% of the estimate of compliance. *The cost of items 4.a. above is calculated by damage estimates. The cost of equipment will be the rental charge from a reputable local dealer with 35% extra, being for operation cost. Cost of environmental compliance is the estimated cost of compliance. In no situation will the Owner assume liability.
- F. Costs of failed observations as defined in the Technical Specifications, are the responsibility of the Contractor. Owner will pay Engineer and recover costs by Set-off to the Contractor.
- G. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- H. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense. (See Hold Points in Specifications.)

14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is

defective, and to reject defective Work.

- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the observation and/or inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable Set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept defective Work, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable Set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the coating, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide

all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable Set-off against payments due under Article 15.
2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner, Engineer/RPR May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.
- B. Engineer/RPR may stop work if continued Work would result in the Contractor covering defective Work, or if continued operations will result in an environmental incident. Engineer/RPR's authority to stop Work ceases after notification of Owner and sufficient time for Owner to issue directives or to appear on site. (See 14.06 A)

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as Set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all Engineer's fees and Owner's

expenses, costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:* Contractor is not required to apply for monthly payments. If they choose, they may submit a final pay request only. If they want interim payment then the protocol of paragraph 15.01 shall be followed.
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
 - 4.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. If Contractor fails to submit required documentation material with application for payment, Engineer will notify Contractor of missing documents. If after second submittal material is still missing, Engineer may submit pay application to Owner withholding all moneys relative to missing data, or to contact Contractor again. Contractor is responsible for all increased engineering costs to the Owner as a Set-off after second submittal.
 3. Engineer's recommendation of any payment requested in an Application for

Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated.
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
4. By recommending any such payment Engineer will represent that:
 - a. observations made to check the quality or the quantity of the Work as it has been performed have been completed per conditions and limitations of Article 10 and Engineer Owner contract.
 - b. there may be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
5. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
6. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.3.
7. Engineer will recommend reductions in payment (Set-Off) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement.
 - b. the Contract Price has been reduced by Change Orders.
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph

14.04.

- d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
- f. Reasonable evidence that the work cannot be completed for the unpaid balance of the contract sum.
- g. Reasonable evidence that the work cannot be completed within the contract time, or;
- h. Damage to Owner or another Contractor.
- i. Persistent failure to carry out the work in accordance with the Contract Documents.
- j. Amount withheld to complete work calculated at cost of hiring another Contractor to complete work in case of default.
- k. Legal claims have been made, or Engineer has reasonable knowledge of anticipated claims.

D. *Payment Becomes Due:*

- 1. Thirty days, or Owner's normal check processing schedule, after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner Set-Off) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (Set-Off) recommended by Engineer, Owner is entitled to impose a Set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement.
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site.
 - c. Contractor has failed to provide and maintain required bonds or insurance.
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible.
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to complete field observations that were

determined to be a failed observation.

- f. the Work is defective, requiring correction or replacement including additional inspection costs.
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04.
 - h. the Contract Price has been reduced by Change Orders.
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause.
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work.
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens.
 - l. other items entitling Owner to a Set-off against the amount recommended.
2. If Owner imposes any Set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable Set-off against payments due under this Article 15.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
 - D. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
 - E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through F for that part of the Work.
 2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

15.05 Final Inspection

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 Final Payment

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents.
 - b. consent of the surety, if any, to final payment.
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects or will so pass upon final payment.
 - d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
 - f. A complete Submittal of Application for Final Payment fulfills all requirements and terminates the Liquidated Damages that may be assessed against Ready for Final Payment date.

B. Engineer's Review of Application and Acceptance:

If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for

Payment to Owner for payment. Such recommendation shall account for any Set-Off against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give notice to Owner and Contractor that the Work is completed, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

- C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment. Contractor is responsible for security, safety, etc. on the site until all his equipment is removed and all keys are returned.
- D. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall Set-off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to Set-Off for liquidated damages and Set-offs allowed under the provisions of this Contract with respect to payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, Set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 Correction Period

- A. If within thirteen months after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas.
 - 2. correct such defective Work.
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such

Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B. Notice by email is sufficient if made to designated contact person in Bid/Agreement Form. Notice may be from Engineer if requested by Owner.

- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay. Notice of Claim may also be made to the bonding company and will include requirement that the Maintenance Bond remain in effect.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, correction period with respect to such Work *only* will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal

seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule).
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents.
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
 - 5. When, in the opinion of the Engineer, the Non-Conformance Reports and daily reports indicate the Contractor is unable or unwilling to complete the contract within the terms of the contract.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable Performance Bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change

Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any Payment Bond or Performance Bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a Performance Bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work.
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to

Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.
 4. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18 - MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

**SECTION 00 73 00
SUPPLEMENTARY CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared By



Modified by



**Trotter and Associates C-800 (2018),
SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION
CONTRACT**

This document was prepared using the guidelines for Supplemental Conditions prepared by the EJCDC (Document Committee). They have been edited to supplement General Conditions prepared by Trotter and Associates and are referred to as Trotter and Associates General Conditions 2018.

TABLE OF CONTENTS
SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION
CONTRACT

ARTICLE 1 – Definitions and Terminology.....	1
ARTICLE 2 – Preliminary Matters	1
ARTICLE 3 – Contract Documents : Intent, Requirements, Reuse.....	1
ARTICLE 4 – Commencement and Progress of the Work	1
ARTICLE 5 – Site, Subsurface and Physical Conditions, Hazardous Environmental Conditions	1
ARTICLE 6 – Bonds and Insurance.....	1
ARTICLE 7 – Contractor’s Responsibilities	6
ARTICLE 8 – Other Work at the Site	7
ARTICLE 9 – Owner’s Responsibilities	7
ARTICLE 10 – Engineer’s Status During Construction	7
ARTICLE 11 – Changes to the Contract.....	7
ARTICLE 12 – Claims.....	8
ARTICLE 13 – Cost of Work; Allowances, Unit Price Work	8
ARTICLE 14 – Tests and Inspections; Correction, Removal, or Acceptance of Defective Work.	8
ARTICLE 15 – Payments to Contractor, Set-Offs; Completions; Correction Period.....	8
ARTICLE 16 – Suspension of Work and Termination	8
ARTICLE 17 – Final Resolutions of Disputes.....	8
ARTICLE 18 – Miscellaneous	8

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement Standard General Conditions of the Construction Contract. The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

No suggested Supplementary Conditions in this Article.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. *Requests by Contractor for Electronic Documents in Other Formats*

1. Release of any Electronic Document versions of the Project will be at the sole discretion of the Owner.
2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project will be subject to the provisions of the Owner's response to the Request.

ARTICLE 3 – CONTRACT DOCUMENTS INTENT, REQUIREMENTS, REUSE

No suggested Supplementary Conditions in this Article.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

No suggested Supplementary Conditions in this Article.

ARTICLE 5 – SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 *Subsurface and Physical Conditions*

- A. There are no known technical data or drawings available for this site.

SC-5.06 *Hazardous Environmental Conditions*

- A. There are no known reports or site conditions which would or could indicate that the site is a hazardous environmental site.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 *Insurance—General Provisions*

- A. Contractor shall obtain and maintain insurance as required in this Article of the Supplementary Conditions.

- B. All insurance required by the Contract to be purchased and maintained by Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. All companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better. Insurance Companies must, in addition to State license, be incorporated and originating from within the United States. Offshore companies or internet companies are not acceptable. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract.
- D. Contractor shall deliver to Owner, with copies to each named insured and additional insured, minimum three (3) copies (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner to demand such certificates or other evidence of the Contractor's full compliance with these insurance requirements, or failure of Owner to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the Contractor's obligation to obtain and maintain such insurance.
- F. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- G. If Contractor does not purchase or maintain all of the insurance at the specified level by the Contract, Contractor shall notify Owner in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- H. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate Set-off against payment for any associated costs, and exercise Owner's termination rights under Article 16 of the General Conditions.
- I. Without prejudice to any other right or remedy, if Contractor has failed to obtain or maintain required insurance, Owner may elect to obtain equivalent insurance to protect Owner's interests at the expense of the Contractor who was required to provide such coverage, and the Contract Price shall be adjusted accordingly with a Set-off.
- J. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Trotter and Associates (and any other individuals or entities identified in these Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- K. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- L. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability, or that of its subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract.
- M. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the Contractor. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.
- N. All policies apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable

SC-6.03 Contractor's Insurance

Contractor waives all rights against Owner and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

Insurance requirements are given in the attachment "Indemnification and Insurance Information".

- A. Additional Insureds: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, and unmanned aerial vehicle liability policies, if required by this Contract, must:
1. Include and list as additional insureds Owner and Trotter and Associates, and any individuals or entities identified as additional insureds in the Supplementary Conditions.

2. Include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds.
3. Afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
4. Not seek contribution from insurance maintained by the additional insured; and
5. As to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

SC-6.04 *Builder's Risk and Other Property Insurance*

- A. **Builder's Risk:** Unless otherwise provided in these Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. **Property Insurance for Facilities of Owner Where Work Will Occur:** Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined.
- C. The builder's risk insurance must be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work. Material in storage or transit is at risk and protected as Contractor determines. The Owner does not take responsibility for storage, transit or while on site until installed. The policy may or the Contractor may self-insure for vandalism and malicious mischief; debris removal; and water damage (other than that caused by flood).
 1. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
 2. Policy shall allow
 - a. for the waiver of the insurer's subrogation rights, as set forth in this Contract.
 - b. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
 - c. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first
 - d. either insure or self-insure for all "soft cost" losses, the Owner is not responsible for Soft Losses which result from an insurable event.
- D. Contractor's failure to submit an "All Risk" policy form of the Builder's Risk Policy will be taken as an affirmation that the Contractor is self-insuring all risks and responsibilities listed in Article SC 6.04 Builders Risk and Other Property Insurance.

1. The Owner reserves the right to require verification that Contractor has the financial ability to self-insure Builder's Risk, including review of corporate financial statements.

SC-6.05 Property Losses; Subrogation

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04, will contain provisions to the effect that in the event of payment of any loss or damage the insurer or self-insured will have no rights of recovery against any insureds thereunder, or against Trotter and Associates or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.
 1. Contractor waives all rights against Owner and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.
- E. Failure of Contractor, if self-insured, to make appropriate payments for reparations will result in equitable Set-off by Owner.

SC-6.06 Receipt and Application of Property Insurance Proceeds

- A. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

SC-6.07 Indemnification moved from GC-7.18. Contractor is advised that the Owner may have made changes.

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or

other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph SC 6.07.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC - 7.11 Laws and Regulations

- A. Compliance with Laws. Contractor must give all notices, pay all fees, and take all other action that may be necessary to ensure that the Work is provided, performed, and completed in accordance with all required governmental permits, licenses or other approvals and authorizations that may be required in connection with providing, performing, and completing the Work, and with all applicable statutes, ordinances, rules, and regulations, including without limitation the Prevailing Wage Act, 820 ILCS 130/0.01 et seq. (if the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid, the revised rate will apply to this Contract); any other prevailing wage laws; the Fair Labor Standards Act; any statutes regarding qualification to do business; the Illinois Steel Products Procurement Act, 30 ILCS 565/1 et seq.; any statutes prohibiting discrimination because of, or requiring affirmative action based on, race, creed, color, national origin, age, sex, or other prohibited classification, including, without limitation, the Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101 et seq., the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq., and the Public Works Discrimination Act, 775 ILCS 10/1 et seq.; and any statutes regarding safety or the performance of the Work, including the Illinois Underground Utility Facilities Damage Prevention Act, and the Occupational Safety and Health Act. Contractor must also comply with all conditions of any federal, state, or local grant received by Owner or Contractor with respect to this Contract or the Work. Further, Contractor must have a written sexual harassment policy in compliance with Section 2-105 of the Illinois Human Rights Act.
- I. Not Barred. Contractor is not barred by law from contracting with the Owner or with any other unit of state or local government as a result of (i) a delinquency in the payment of any tax administered by the Illinois Department of Revenue unless Contractor is contesting, in accordance with the procedures established by the appropriate Revenue Act, its liability for the tax or the amount of tax, as set forth in 65 ILCS 5/11-42.1-1; (ii) a

violation of either Section 33E-3 or Section 33E-4 of Article 33 of the Criminal Code of 1961, 720 ILCS 5/33E-1 et seq.; or (iii) a violation of the USA Patriot Act of 2001, 107 Public Law 56 (October 26, 2001) (the "Patriot Act") or other statutes, orders, rules, and regulations of the United States government and its various executive departments, agencies and offices related to the subject matter of the Patriot Act, including, but not limited to, Executive Order 13224 effective September 24, 2001. Contractor is not acting, directly or indirectly, for or on behalf of any person, group, entity or nation named by the United States Treasury Department as a Specially Designated National and Blocked Person, or for or on behalf of any person, group, entity or nation designated in Presidential Executive Order 13224 as a person who commits, threatens to commit, or supports terrorism; and Contractor is not engaged in this transaction directly or indirectly on behalf of, or facilitating this transaction directly or indirectly on behalf of, any such person, group, entity or nation.

SC-7.13 Safety and Protection

- M. An Owner supplied Safety Program may be included in as a Contract Requirement. If such a Program is required, the intent is that the requirements of the Owner meet every Federal, State, and local safety laws. The Owner's Safety Program is intended to supplement the Contractor's Safety Program. All requirements of the Owner's Safety Program shall be followed.

SC-7.16 Submittals

- A. 4. A sample of the Owner's/Engineer's Submittal Checklist is included as an attachment. The checklist is intended for Engineers use, but is included as a reference for the Contractor. Contractor submittals are to include all items requested in the Technical Specifications whether listed in the Submittal Checklist or not.

ARTICLE 8 – OTHER WORK AT THE SITE

SC - 8.02 Coordination

If there is other Work to be completed it will be discussed in Section 00 00 40 Project Explanation of the Specifications.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

No suggested Supplementary Conditions in this Article.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

No suggested Supplementary Conditions in this Article.

ARTICLE 11 – CHANGES TO THE CONTRACT

SC - 11.02 Change Orders

- E. All Change Orders will be issued in accordance with the Illinois Public Works Change Order Act, 50 ILCS 525/1 et seq. ("Change Order Act"). To the extent that a Change Order necessitates rebidding in accordance with the Change Order Act, Contractor will have no entitlement to, and Owner will have no obligation to issue, additional work to the Contractor under the Change Order.

ARTICLE 12 – CLAIMS

No suggested Supplementary Conditions in this Article.

ARTICLE 13 – COST OF WORK; ALLOWANCES, UNIT PRICE WORK

No suggested Supplementary Conditions in this Article.

**ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR
ACCEPTANCE OF DEFECTIVE WORK**

No suggested Supplementary Conditions in this Article.

**ARTICLE 15 – PAYMENTS TO CONTRACTOR, SET-OFFS; COMPLETIONS;
CORRECTION PERIOD**

Payments shall be made pursuant to the terms of the Local Government Prompt Payment Act, 50 ILCS 505/3 et.seq.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 17 – FINAL RESOLUTIONS OF DISPUTES

No suggested Supplementary Conditions in this Article.

ARTICLE 18 – MISCELLANEOUS

No suggested Supplementary Conditions in this Article.

INDEMNIFICATION AND INSURANCE INFORMATION

INDEMNIFICATION:

The Contractor shall protect, indemnify, save, defend and hold forever harmless the Village and/or its officers, officials, employees, volunteers and agents from and against all liabilities, obligations, claims, damages, penalties, causes of action, costs and expenses, including without limitation court costs, insurance deductibles and attorney's fees and expenses, which the Village and/or its officers, officials, employees, volunteers and agents may incur, suffer or sustain, or for which the Village and/or its officers, employees and agents may become obligated by reason for any accident, injury to or death of persons or loss of or damage to property, or civil and/or constitutional infringement of rights (specifically including violations of the Federal Civil Right Statutes), arising indirectly or directly in connection with or under, or as a result of, this or any Agreement by virtue of any act or omission of any of the Contractor's officers, employees, subcontractors, and/or agents, provided that the Contractor shall not be liable for claims, obligations, damages, penalties, causes of action, costs and expenses arising solely by any act or omission of the Village's officers, officials, employees, volunteers and/or agents.

The contractor shall hold the Village harmless for any and all claims for labor, material, apparatus, equipment, fixtures or machinery furnished to the contractor for the purpose of performing the work under the contract; and the payment of all direct and indirect damages to any person, firm, company or corporation suffered or sustained on account of the performance of such work during the time the contract is in force.

INSURANCE:

Certificates of Insurance and Additional Insured Endorsement shall be presented to the Village within fifteen (15) days after the receipt by the Contractor of the Notice of Award and the unexecuted contract, it being understood and agreed that the Village will not approve and execute the contract nor will the bid guarantee be returned until acceptable insurance certificates are received and approved by the Village.

Each Contractor performing any work pursuant to a contract with the Village of Oak Brook and each permittee working under a permit as required pursuant to the provisions of Title 1, Chapter 8 of the Code of Ordinances of the Village of Oak Brook (hereinafter referred to as "Insured") shall be required to carry such insurance as specified herein. Such Contractor and permittee shall procure and maintain for the duration of the contract or permit insurance against claims for injuries to persons or damages to property which

may arise from or in connection with the performance of the work under the contract or permit, either by the Contractor, permittee, or their agents, representatives, employees or sub Contractors.

A Contractor or permittee shall maintain insurance with limits no less than:

- A. General Liability - \$2,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage, provided that when the estimated cost of the work in question does not exceed \$25,000, the required limit shall be \$1,000,000;
- B. Automobile Liability (if applicable) - \$1,000,000 combined single limit per accident for bodily injury and property damage;
- C. Worker's Compensation and Employer's Liability - Worker's Compensation limits as required by the Labor Code of the State of Illinois and Employer's Liability limits of \$1,000,000 per accident.

Any deductibles or self-insured retention must be declared to and approved by the Village. At the option of the Village, either the insurer shall reduce or eliminate such deductible or self-insured retention as respects the Village, its officers, officials, employees and volunteers; or the Insured shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses to the extent of such deductible or self-insured retention.

The policies shall contain, or be endorsed to contain, the following provisions:

- D. General Liability and Automobile Liability Coverage -
 - (1) The Village, its officers, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of activities performed by or on behalf of the Insured; premises owned, occupied or used by the Insured. The coverage shall contain no special limitations on the scope of protection afforded to the Village, its officers, officials, employees, volunteers or agents.
 - (2) The Insured's insurance coverage shall be primary insurance as respects the Village, its officers, officials, employees, volunteers and agents. Any insurance or self-insurance maintained by the Village, its officers, officials, employees, volunteers or agents shall be in excess of the Insured's insurance and shall not contribute with it.

- (3) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Village, its officers, officials, employees, volunteers or agents.
- (4) The Insured's insurance shall apply separately to each covered party against whom claim is made or suit is brought except with respect to the limits of the insurer's liability.

E. Worker's Compensation and Employer's Liability Coverage

The policy shall waive all rights of subrogation against the Village, its officers, officials, employees, volunteers and agents for losses arising from work performed by the insured for the Village.

Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail has been given to the Village. Each insurance policy shall name the Village, its officers, officials and employees, volunteers and agents as additional Insureds. Insurance is to be placed with insurers with a Best's rating of no less than A: VII.

Each Insured shall furnish the Village with certificates of insurance and with original endorsements effecting coverage required by this provision. The certificate and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on forms approved by the Village, see Section C of this Bid Package, and shall be subject to approval by the Village Attorney before work commences. The Village reserves the right to require complete, certified copies of all required insurance policies, at any time.

Each insured shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

**TECHNICAL SPECIFICATIONS
VILLAGE OF OAK BROOK PUBLIC WORKS
WATER SYSTEM DISINFECTION MODERNIZATION**

Table of Contents

SIGNATURES AND SEALS		CJM
DIVISION 01 – GENERAL REQUIREMENTS		
01 10 00	SUMMARY	CJM
01 20 00	PRICE AND PAYMENT PROCEDURES	CJM
01 25 00	SUBSTITUTION PROCEDURES	CJM
01 30 00	ADMINISTRATIVE REQUIREMENTS	CJM
01 32 16	CONSTRUCTION PROGRESS SCHEDULE	CJM
01 33 00	SUBMITTAL PROCEDURES	CJM
01 40 00	QUALITY REQUIREMENTS	CJM
01 42 19	REFERENCE STANDARDS	CJM
01 50 00	TEMPORARY FACILITIES AND CONTROLS	CJM
01 60 00	PRODUCT REQUIREMENTS	CJM
01 70 00	EXECUTION AND CLOSEOUT REQUIREMENTS	CJM
01 73 20	OPENINGS AND PENETRATIONS IN CONSTRUCTION	CJM
DIVISION 02 – EXISTING CONDITIONS		
02 41 19	SELECTIVE BUILDING DEMOLITION	CJM
DIVISION 07 – THERMAL AND MOISTURE PROTECTIONS		
07 92 00	JOINT PROTECTION	CJM
DIVISION 09 - FINISHES		
09 96 00	HIGH PERFORMANCE INDUSTRIAL COATINGS	CJM
DIVISION 10 - SPECIALTIES		
10 14 00	IDENTIFICATION DEVICES	CJM
DIVISION 26 – ELECTRICAL		
26 05 00	ELECTRICAL BASIC REQUIREMENTS	CJM
26 05 05	SELECTIVE DEMOLITION FOR ELECTRICAL	CJM
26 05 19	LOW VOLTAGE ELECTRICAL POWER CONDUCTOR AND CABLES	CJM
26 05 33	RACEWAY AND BOXES	CJM
26 27 26	WIRING DEVICES	CJM

DIVISION 40 – PROCESS INTERCONNECTIONS

40 05 00	COMMON WORK RESULTS FOR PROCESS INTERCONNECTIONS	CJM
40 05 06	COUPLINGS, ADAPTERS, AND SPECIALS FOR PROCESS PIPING	CJM
40 05 07	HANGERS AND SUPPORTS FOR PROCESS PIPING	CJM
40 05 31	THERMOPLASTIC PROCESS PIPE	CJM
40 05 51	COMMON REQUIREMENTS FOR PROCESS VALVES	CJM
40 05 53	IDENTIFICATION FOR PROCESS PIPING	CJM
40 05 93	COMMON MOTOR REQUIREMENTS FOR PROCESS EQUIPMENT	CJM
40 63 00	INSTRUMENTATION FOR PROCESS CONTROL - BASIC REQUIREMENTS	CJM
40 63 10	PROCESS INSTRUMENTATION AND CONTROL EQUIPMENT	CJM
40 63 43	PROGRAMMABLE LOGIC CONTROLLERS	CJM

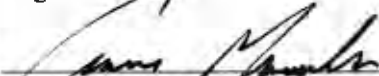
DIVISION 43 – PROCESS GAS AND LIQUID HANDLING

43 05 20	COMMON WORK RESULTS FOR LIQUID HANDLING EQUIPMENT	CJM
43 32 69	CHEMICAL FEED SYSTEMS	CJM

SEALS AND SIGNATURES



I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of Illinois.


A handwritten signature in black ink, appearing to read "Chris Marschinke", written over a horizontal line.

Christopher J. Marschinke, 062-066166

08/22/2025

My license renewal date is November 30, 2025

Sections and Sheets covered by this seal are those with CJM noted on the Table of Contents and Sheet Index.

DIVISION 01
GENERAL REQUIREMENTS

SECTION 26 05 05 - SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Removal of existing electrical equipment, wiring, and conduit in areas to be remodeled; removal of designated construction; dismantling, cutting and alterations for completion of the Work.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. Section 02 41 19 - Selective Building Demolition
 - 4. Section 26 05 33 - Raceways and Boxes

1.2 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of capped conduits and equipment abandoned in place.

1.4 QUALITY ASSURANCE

- A. Obtain required permits from authorities having jurisdiction.
- B. Perform Work in accordance with all applicable governing agencies.
- C. Conform to applicable codes for demolition work, dust control, products requiring electrical disconnection.
- D. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.

1.5 SCHEDULING AND COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for scheduling and coordination.
- B. Coordinate and sequence demolition so as not to cause shutdown of operation of surrounding areas.
- C. Shut-down Periods:
 - 1. All power and process outages are at the convenience of the Owner. Requests shall be made 48 hours in advance at a minimum.

This Page Left Blank Intentionally

3.2 FIELD QUALITY CONTROL

- A. Verify exact rough-in location and dimensions for connection to electrified equipment, provided by others.
 - 1. See Specification Section 01 73 20 for openings and penetrations in structures.
- B. Replace equipment and systems found inoperative or defective and re-test.
- C. The protective coating integrity of support structures and equipment enclosures shall be maintained.
 - 1. Repair galvanized components utilizing a zinc rich paint.
 - 2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
 - 3. Repair PVC coated components utilizing a patching compound, of the same material as the coating, provided by the manufacturer of the component.
 - 4. Repair surfaces which will be inaccessible after installation prior to installation.
 - 5. See Specification Section 26 05 33 for requirements for conduits and associated accessories.
- D. Replace nameplates damaged during installation.

END OF SECTION 26 05 00

- b. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.
 - 3. Corrosive areas:
 - a. Aluminum system consisting of aluminum channels and fittings with stainless steel nuts and hardware.
 - b. Ferric Chlorine and Polymer Rooms: Non-Metallic.
- L. Provide all necessary anchoring devices and supports rated for the equipment load based on dimensions and weights verified from approved submittals, or as recommended by the manufacturer.
 - 1. See Specification Section 03 15 19.
 - 2. Do not cut, or weld to, building structural members.
 - 3. Do not mount safety switches or other equipment to equipment enclosures, unless enclosure mounting surface is properly braced to accept mounting of external equipment.
- M. Provide corrosion resistant spacers to maintain 1/4 IN separation between metallic equipment and/or metallic equipment supports and mounting surface in wet areas, on below grade walls and on walls of liquid containment or processing areas such as Basins, Clarifiers, Digesters, Reservoirs, etc.
- N. Do not place equipment fabricated from aluminum in direct contact with earth or concrete.
- O. Screen or seal all openings into equipment mounted outdoors to prevent the entrance of rodents and insects.
- P. Do not use materials that may cause the walls or roof of a building to discolor or rust.
- Q. Identify electrical equipment and components in accordance with Specification Section 10 14 00.
- R. Provide field markings and/or documentation of available short-circuit current (available fault current) and related information for equipment as required by the NFPA 70 and other applicable codes.
- S. Provide equipment or control panels with Short Circuit Current Rating (SCCR) labeling as required by NFPA 70 and other applicable codes.
 - 1. Determine the SCCR rating by one of the following methods:
 - a. Method 1: SCCR rating meets or exceeds the available fault current of the source equipment when indicated on the Drawings.
 - b. Method 2: SCCR rating meets or exceeds the source equipment's Amp Interrupting Current (AIC) rating as indicated on the Drawings.
 - c. Method 3: SCCR rating meets or exceeds the calculated available short circuit current at the control panel.
 - 2. The source equipment is the switchboard, panelboard, motor control center or similar equipment where the equipment or control panel circuit originates.
 - 3. For Method 3, provide calculations justifying the SCCR rating. Utilize source equipment available fault current or AIC rating as indicated on the Drawings.

2. The Contractor is to furnish and install all conduit and conductors required for proper operation of the circuit.
 3. The indicated home run conduit and conductor size shall be used for the entire branch circuit.
 4. See Specification Section 26 05 19 for combining multiple branch circuits in a common conduit.
- E. Do not use equipment that exceed dimensions or reduce clearances indicated on the Drawings or as required by the NFPA 70.
- F. Install equipment plumb, square and true with construction features and securely fastened.
- G. Install electrical equipment, including pull and junction boxes, minimum of 6 IN from process, gas, air and water piping and equipment.
- H. Install equipment so it is readily accessible for operation and maintenance, is not blocked or concealed and does not interfere with normal operation and maintenance requirements of other equipment.
- I. Device Mounting Schedule:
1. Unless indicated otherwise on the Drawings, mounting heights are as indicated below:
 - a. Light switch (to center): 46 IN.
 - b. Receptacle on exterior wall of building (to center): 18 IN.
 - c. Receptacle in non-architecturally finished areas (to center): 46 IN.
 - d. Safety switch (to center of operating handle): 54 IN.
 - e. Separately mounted motor starter (to center of operating handle): 54 IN.
 - f. Pushbutton or selector switch control station (to center): 46 IN.
 - g. Panelboard (to top): 72 IN.
- J. Avoid interference of electrical equipment operation and maintenance with structural members, building features and equipment of other trades.
1. When it is necessary to adjust the intended location of electrical equipment, unless specifically dimensioned or detailed, the Contractor may make adjustments in equipment locations in accordance with the following without obtaining the Engineer's approval:
 - a. 6 IN at grade, floor and roof level in any direction in the horizontal plane.
 - b. 6 IN for equipment other than lighting at ceiling level in any direction in the horizontal plane.
 - c. 6 IN for lighting fixtures at ceiling level in any direction in the horizontal plane.
 - d. 6 IN on walls in a horizontal direction within the vertical plane.
 - e. Changes in equipment location exceeding those defined above require the Engineer's approval.
- K. Provide electrical equipment support system per the following area designations:
1. Dry areas:
 - a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.
 - b. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.
 2. Wet areas:
 - a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.

- 2) B-Line by Eaton.
- 3) Globe Strut.
- 4) Superstrut by Thomas & Betts.
- 2. Material requirements:
 - a. Modular strut:
 - 1) Galvanized steel: ASTM A123/123M or ASTM A153/A153M.
 - 2) Stainless steel: AISI Type 316.
 - 3) PVC coated galvanized steel: ASTM A123/A123M or ASTM A153/A153M and 20 MIL PVC coating.
 - 4) Aluminum: AA Type 6063-T6.
 - b. Structural members (e.g., I beams, L and C channels):
 - 1) Galvanized steel: ASTM A36/A36M steel with galvanizing per ASTM A123/A123M.
 - 2) Aluminum: AA Type 6061-T6 or 6063-T6.
 - c. Mounting plates:
 - 1) Galvanized steel: ASTM A36/A36M steel with galvanizing per ASTM A123/A123M.
 - 2) Aluminum: AA Type 6063-T6.
 - d. Mounting hardware:
 - 1) Galvanized steel.
 - 2) Stainless steel.
 - e. Anchorage per Specification Section 03 15 19.
- B. Field touch-up of galvanized surfaces.
 - 1. Zinc-rich primer.
 - a. One coat, 3.0 MILS, ZRC by ZRC Products.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install and wire all equipment, including pre-purchased equipment, and perform all tests necessary to assure conformance to the Drawings and Specification Sections and ensure that equipment is ready and safe for energization.
- B. Install equipment in accordance with the requirements of:
 - 1. NFPA 70.
 - 2. IEEE C2.
 - 3. The manufacturer's instructions.
- C. In general, conduit routing is not shown on the Drawings.
 - 1. The Contractor is responsible for routing all conduits including those shown on one-line and control block diagrams and home runs shown on floor plans.
 - 2. Conduit routings and stub-up locations that are shown are approximate; exact routing to be as required for equipment furnished and field conditions.
- D. When complete branch circuiting is not shown on the Drawings:
 - 1. A homerun indicating panelboard name and circuit number will be shown and the circuit number will be shown adjacent to the additional devices (e.g., light fixture and receptacles) on the same circuit.

- c. Acknowledgement that products are NRTL listed or are constructed utilizing NRTL recognized components.
 - d. Manufacturer's delivery, storage, handling and installation instructions.
 - e. Product installation details.
 - f. Short Circuit Current Rating (SCCR) nameplate marking per NFPA 70, include any required calculations.
 - g. See individual specification sections for any additional requirements.
- B. Operation and Maintenance Manuals:
- 1. See Specification Section 01 70 00 for requirements for:
 - a. The mechanics and administration of the submittal process.
 - b. The content process of Operation and Maintenance Manuals.
- C. When a Specification Section includes products specified in another Specification Section, each Specification Section shall have the required Shop Drawing transmittal form per Specification Section 01 33 00 and all Specification Sections shall be submitted simultaneously.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect nameplates on electrical equipment to prevent defacing.

1.7 AREA DESIGNATIONS

- A. Designation of an area will determine the NEMA rating of the electrical equipment enclosures, types of conduits and installation methods to be used in that area.
 - 1. Outdoor areas:
 - a. Wet.
 - b. Also, corrosive and/or hazardous when specifically designated on the Drawings or in the Specifications.
 - 2. Indoor areas:
 - a. Dry.
 - b. Also, wet, corrosive and/or hazardous when specifically designated on the Drawings or in the Specifications.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, refer to specific Electrical Specification Sections and specific material paragraphs below for acceptable manufacturers.
- B. Submit request for substitution in accordance with Specification Section 01 25 00.
- C. Provide all components of a similar type by one (1) manufacturer.

2.2 MATERIALS

- A. Electrical Equipment Support Pedestals and/or Racks:
 - 1. Manufacturers:
 - a. Modular strut:
 - 1) Unistrut Building Systems.

1.3 DEFINITIONS

- A. For the purposes of providing materials and installing electrical work the following definitions shall be used.
 - 1. Outdoor area: Exterior locations where the equipment is normally exposed to the weather and including below grade structures, such as vaults, manholes, handholes and in-ground pump stations.
 - 2. Architecturally finished interior area: Offices, laboratories, conference rooms, restrooms, corridors and other similar occupied spaces.
 - 3. Non-architecturally finished interior area: Pump, chemical, mechanical, electrical rooms and other similar process type rooms.
 - 4. Highly corrosive and corrosive area: Areas identified on the Drawings where there is a varying degree of spillage or splashing of corrosive materials such as water, wastewater or chemical solutions; or chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes or chemical mixtures.
 - 5. Hazardous areas: Class I, II or III areas as defined in NFPA 70.
 - 6. Shop fabricated: Manufactured or assembled equipment for which a UL test procedure has not been established.
- B. Execution of this Contract will involve replacement of existing equipment.
 - 1. The Contractor is responsible for coordinating with the Engineer and the Owner equipment which shall remain in service, or which shall have a limited downtime, and to schedule his work accordingly.
 - 2. Temporary equipment and wiring, installed in accordance with the NFPA70, may be used if necessary to maintain operation or to limit downtime.
 - 3. Under no circumstances shall equipment be taken out of service without the Owner's permission.
 - 4. Comply with requirements of Specification Section 01 30 00.

1.4 SYSTEM DESCRIPTION

- A. Coordinate installation of the service transformer and metering with the serving utility.
 - 1. The serving utility for this Project is St. Charles Municipal Electric Utility.
 - 2. Contractor shall comply with utility standards.
 - 3. Location of transformer and meter at Well No. 7 shall be coordinated with utility prior to installation.
 - 4. Submit Switchboard, Utility Meter Section and Automatic Transfer Switch Shop Drawings to the serving utility company and obtain approval prior to ordering equipment.
 - 5. Refer to Specification 26 21 00 - Low-Voltage Electrical Service Entrance for additional requirements.

1.5 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of submittal process.
 - 2. General requirements:
 - a. Provide manufacturer's technical information on products to be used, including product descriptive bulletin.
 - b. Include data sheets that include manufacturer's name and product model number.
 - 1) Clearly identify all optional accessories.

SECTION 26 05 00 - ELECTRICAL - BASIC REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Basic requirements for electrical systems.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. Section 10 14 00 - Identification Devices.
 - 4. Section 26 05 19 - Wire and Cable - 600 Volt and Below.
 - 5. Section 26 05 33 - Raceways and Boxes.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. Aluminum Association (AA):
 - a. ADM, Aluminum Design Manual.
 - 2. American Institute of Steel Construction (AISC):
 - a. Steel Construction Manual.
 - 3. American National Standards Institute (ANSI).
 - 4. ASTM International (ASTM):
 - a. A36/A36M, Standard Specification for Carbon Structural Steel.
 - b. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - c. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 5. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - a. C2, National Electrical Safety Code (NESC).
 - 6. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 7. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC); Most recent edition adopted by Owner, including all applicable amendments and supplements..
 - 8. Underwriters Laboratories, Inc. (UL).
- B. Products to be listed by a Nationally Recognized Testing Laboratory (NRTL) in accordance with applicable product standards.
 - 1. Applicable product standards including, but not limited to, ANSI, FM, IEEE, NEMA and UL.
 - 2. NRTL includes, but is not limited to, CSA Group Testing and Certification (CS), FM Approvals LLC (FM), Intertek Testing Services NA, Inc. (ETL), and Underwriters Laboratories, Inc. (UL).

DIVISION 26
ELECTRICAL

This Page Left Blank Intentionally

- d. Location: Each door to room.
 - e. Legend:
 - 1) OSHA Danger Sign.
 - 2) Description of Danger: "HIGH VOLTAGE, AUTHORIZED PERSONNEL ONLY".
14. Equipment where more than one (1) voltage source is present:
- a. Tag type:
 - 1) Type B2 - Nonmetallic Signs.
 - 2) Type D - Self-Adhesive Tape Signs.
 - b. Fastener:
 - 1) Screw or adhesive.
 - 2) Self.
 - c. Size: 1-3/4 IN x 2-1/2 IN.
 - d. Location: Exterior face of enclosure or cubical.
 - e. Legend:
 - 1) OSHA Danger Sign.
 - 2) Description of Danger: "MULTIPLE VOLTAGE SOURCES".

3.3 HAZARD AND SAFETY SIGNS

- A. Provide 25 Hazard and Safety Signs:
 - 1. Type B2.
 - 2. Inscription as directed by Owner.

END OF SECTION 10 14 00

- b. Fastener: Screws.
- c. Legend:
 - 1) Letter height: 1/2 IN minimum.
 - 2) Equipment name (e.g., "LIGHTING CONTROL PANEL LCPxxx").
- 7. Components inside equipment enclosures (e.g., circuit breakers, fuses, control power transformers, control relays, contactors, timers, etc.):
 - a. Tag type: Type D - Self-Adhesive Tape Tags and Signs.
 - b. Fastener: Self.
 - c. Legend:
 - 1) Letter height: 3/16 IN minimum.
 - 2) Description or function of component (e.g., "M-xxx", "CR-xxx" or "TR-xxx").
- 8. Through enclosure door mounted equipment (e.g., selector switches, controller digital displays, etc.):
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Component tag number as indicated on the Drawings or as defined by contractor (e.g., "HS-xxx").
- 9. Conductors in control panels and in pull or junction boxes where multiple circuits exist.
 - a. Tag type: Type D - Self-Adhesive Tape Tags.
 - b. Fastener: Self.
 - c. Tag conductor at both ends.
 - d. Legend:
 - 1) Letter height: 1/8 IN minimum.
 - 2) Circuit number or wire number as scheduled on the Drawings or as furnished with the equipment.
- 10. Conductors in handholes and manholes.
 - a. Tag type: Type A3 - Metal Tape Tags.
 - b. Fastener: Nylon strap.
 - c. Tag conductor at both ends.
 - d. Legend:
 - 1) Letter height: 1/8 IN minimum.
 - 2) Circuit number or wire number as scheduled on the Drawings.
- 11. Grounding conductors associated with grounding electrode system in accordance with the following:
 - a. Tag type: Type D - Self-Adhesive Tape Tags.
 - b. Fastener: Self.
 - c. Legend:
 - 1) Letter height: 1/8 IN minimum.
 - 2) Function of conductor (e.g., "MAIN BONDING JUMPER", "TO GROUND RING", "TO MAIN WATER PIPE").
- 12. Flash protection for switchboards, panelboards, industrial control panels and motor control centers:
 - a. Tag type: Type D - Self-Adhesive Tape Signs.
 - b. Fastener: Self.
 - c. Legend: Per NFPA 70.
- 13. Entrances to electrical rooms:
 - a. Tag type: Type B2 - Nonmetallic Signs.
 - b. Fastener: Screw or adhesive.
 - c. Size: 5 IN x 7 IN.

- 1) Color: Orange with black letters.
- 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION".
 - b) Second line: "BURIED COMMUNICATION LINE BELOW".
2. Switchgear, switchboards and motor control centers:
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Main equipment legend:
 - 1) Letter height:
 - a) First line: 1 IN minimum.
 - b) Subsequent lines: 3/8 IN minimum.
 - 2) First line: Equipment name (e.g., "MAIN SWITCHBOARD MSBxxx").
 - 3) Second line:
 - a) Source of power (e.g., "FED FROM MCCxxx LOCATED IN ROOM xxx").
 - b) Include the building name or number if the source is in another building.
 - 4) Third line: System voltage and phase (e.g., "480/277 V, 3PH").
 - d. Main and feeder device legend:
 - 1) Letter height: 3/8 IN minimum.
 - 2) Description of load (e.g., "MAIN DISCONNECT", "PUMP Pxxx" or "PANELBOARD HPxxx").
3. Panelboards and transformers:
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Legend:
 - 1) Letter height:
 - a) First line: 3/8 IN minimum.
 - b) Subsequent lines: 3/16 IN minimum.
 - 2) First line: Equipment name (e.g., "PANELBOARD LPxxx" or "TRANSFORMER Txxx").
 - 3) Second line (panelboards only): System voltage and phase (e.g., "208/120V, 3PH").
 - 4) Third line:
 - a) Source of power (e.g., "FED FROM MCCxxx LOCATED IN ROOM xxx").
 - b) Include the building name or number if the source is in another building.
4. Transfer switches:
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Legend:
 - 1) Letter height:
 - a) First line: 3/8 IN minimum.
 - b) Subsequent lines: 3/16 IN minimum.
 - 2) First line: Equipment name (e.g., "AUTOMATIC TRANSFER SWITCH ATSxxx").
5. Safety switches, separately mounted circuit breakers and motor starters, VFD's, etc.:
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) First line: Description of load equipment is connected to (e.g., "PUMP Pxxx").
6. Enclosure for instrumentation and control equipment, (e.g., lighting control panels, etc.):
 - a. Tag type: Type C - Phenolic Name Plates.

1. Instrumentation Equipment (e.g., flow control valves, primary elements, etc.):
 - a. Tag type:
 - 1) Outdoor locations: Type B1 - Square Nonmetallic Tags.
 - 2) Indoor noncorrosive:
 - a) Type A1 - Round Metal Tags.
 - b) Type B1 - Square Nonmetallic Tags.
 - 3) Indoor corrosive:
 - a) Stainless steel Type A1 - Round Metal Tags.
 - b) Type B1 - Square Nonmetallic Tags.
 - b. Fastener:
 - 1) Type A1: Chain of the same material.
 - 2) Type B1: Stainless steel chain.
 - c. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Equipment ISA designation as indicated on the Drawings (e.g., "FIT-xxx").
 2. Enclosure for instrumentation and control equipment, (e.g., PLC control panels, etc.):
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Legend:
 - 1) Letter height: 1/2 IN minimum.
 - 2) Equipment name (e.g., "PLC CONTROL PANEL PCP-xxx").
 3. Components inside equipment enclosure, (e.g., PLC's, control relays, contactors, and timers):
 - a. Tag type: Type D - Self-Adhesive Tape Tags.
 - b. Fastener: Self.
 - c. Legend:
 - 1) Letter height: 3/16 IN minimum.
 - 2) Description or function of component (e.g., "PLC-xxx" or "CR-xxx").
 4. Through enclosure door mounted components (e.g., selector switches, controller digital displays, etc.):
 - a. Tag type: Type C - Phenolic Name Plates.
 - b. Fastener: Screws.
 - c. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Component ISA tag number as indicated on the Drawings (e.g., "HS-xxx").
- C. Electrical Systems:
1. Trenches with ductbanks, direct-buried conduit, or direct-buried wire and cable.
 - a. Tag type: Type F - Underground Warning Tape.
 - b. Letter height: 1-1/4 IN minimum.
 - c. Location:
 - 1) Where trench is 12 IN or more below finished grade: In trench 6 IN below finished grade.
 - 2) Where trench is less than 12 IN below finished grade: In trench 3 IN below finished grade.
 - d. Electrical power (e.g., low and medium voltage):
 - 1) Color: Red with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION".
 - b) Second line: "BURIED ELECTRIC LINE BELOW".
 - e. Communications (e.g., telephone, instrumentation, LAN, SCADA):

- 3) Adhesive.
- c. Legend:
 - 1) Letter height: 1/2 IN minimum.
 - 2) Equipment designation as indicated on the Drawings (e.g., "Primary Sludge Pump P-xxx").
- 6. Piping systems:
 - a. Tag type:
 - 1) Outdoor locations: Type H – Non-Adhesive strap-on type pipe marker.
 - 2) Indoor locations: Type H – Non-Adhesive strap-on type pipe marker..
 - b. Color: Per ASME A13.1.
 - c. Legend:
 - 1) Letter height: Manufacturers standard for the pipe diameter.
 - 2) Mark piping in accordance with ASME A13.1.
 - 3) Use piping designation as indicated on the Drawings.
 - 4) Arrow: Single arrow.
- 7. Process tanks (over 1000 GAL) and basins, (e.g., chemical storage, clarifiers, trickling filters, digesters, etc):
 - a. Tag type:
 - 1) Type B2 - Nonmetallic Signs.
 - 2) Type G - Stenciling System.
 - b. Fastener:
 - 1) Screw.
 - 2) Self.
 - c. Location as directed by Owner.
 - d. Legend:
 - 1) Letter height: 4 IN minimum.
 - 2) Equipment designation as indicated on the Drawings (e.g., "Clarifier CL-xxx").
- 8. Tanks (less than 1000 GAL) (e.g., break tanks, chemical tanks, hydro-pneumatic tanks, air receivers, etc.):
 - a. Tag type:
 - 1) Type D - Self-Adhesive Tape Tags and Signs.
 - 2) Type G - Stenciling System.
 - b. Fastener: Self.
 - c. Legend:
 - 1) Letter height: 2 IN minimum.
 - 2) Equipment designation as indicated on the Drawings (e.g., "Polymer Storage Tank Txxx").
- 9. Equipment that starts automatically:
 - a. Tag type:
 - 1) Type B2 - Nonmetallic Signs.
 - 2) Type D - Self-Adhesive Tape Tags and Signs.
 - b. Fastener:
 - 1) Type B2 - Screw or adhesive.
 - 2) Type D - Self.
 - c. Size: 5 IN x 7 IN
 - d. Location: Equipment name.
 - e. Legend:
 - 1) OSHA Warning Sign.
 - 2) Description of Warning: "THIS MACHINE STARTS AUTOMATICALLY".

B. Instrumentation Systems:

- 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED SEWER LINE BELOW"
- g. (Nonpotable) water piping, except 3 IN and smaller irrigation pipe:
 - 1) Color: Green with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED NONPOTABLE WATER LINE BELOW"
- h. Chemical feed piping (e.g., chlorine solution, polymer solution, caustic solution, etc.):
 - 1) Color: Yellow with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED CHEMICAL LINE BELOW"
- i. Other piping (e.g., compressed air, irrigation, refrigerant, heating water, etc.):
 - 1) Color: Yellow with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED PIPE LINE BELOW"
3. Yard valves, buried, with valve box and concrete pad:
 - a. Tag type: Type A2 - Rectangle Metal Tags.
 - b. Fastener: 3/16 IN x 7/8 IN plastic screw anchor with 1 IN #6 stainless steel pan head screw.
 - c. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Valve designation as indicated on the Drawings (e.g., "V-xxx").
4. Valves and slide gates:
 - a. Tag type:
 - 1) Outdoor locations: Type B1 - Square Nonmetallic Tags.
 - 2) Indoor noncorrosive:
 - a) Type A1 - Round Metal Tags.
 - b) Type B1 - Square Nonmetallic Tags.
 - 3) Indoor corrosive:
 - a) Stainless steel Type A1 - Round Metal Tags.
 - b) Type B1 - Square Nonmetallic Tags.
 - b. Fastener:
 - 1) Type A1: Chain of the same material.
 - 2) Type B1: Stainless steel chain.
 - c. Color: Per ASME A13.1 corresponding to the piping system.
 - d. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Valve designation as indicated on the Drawings (e.g., "V-xxx").
5. Process equipment (e.g., pumps, pump motors, blowers, air compressors, bar screens, clarifier drive mechanism, etc.):
 - a. Tag type:
 - 1) Type B2 - Nonmetallic Signs.
 - 2) Type D - Self-Adhesive Tape Tags and Signs.
 - 3) Type G - Stenciling System.
 - b. Fastener:
 - 1) Self.
 - 2) Screws.

8. Tracer wire systems must be installed as a single continuous wire, except where using approved connectors. No looping or coiling of wire is allowed.
9. Lay mainline tracer wire continuously, by-passing around the outside of manholes/structures on the North or East side.
10. All service lateral trace wires shall be a single wire, connected to the mainline trace wire using a mainline to lateral lug connector, installed without cutting/splicing the mainline trace wire.
11. Any damage occurring during installation of the trace wire must be immediately repaired by removing the damaged wire, and installing a new section of wire with approved connectors. Taping and/or spray coating shall not be allowed.
12. In occurrences where an existing trace wire is encountered on an existing utility that is being extended or tied into, the new trace wire and existing trace wire shall be connected using approved splice connectors, and shall be properly grounded at the splice location as specified.
13. Testing:
 - a. All new tracer wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, engineer and facility owner as applicable, prior to acceptance of ownership.
 - b. This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project.
 - c. Continuity testing in lieu of actual line tracing shall not be accepted

3.2 SCHEDULES

A. Process Systems:

1. General:
 - a. Provide arrows and markers on piping.
 - 1) At 20 FT maximum centers along continuous lines.
 - 2) At changes in direction (route) or obstructions.
 - 3) At valves, risers, "T" joints, machinery or equipment.
 - 4) Where pipes pass through floors, walls, ceilings, cladding assemblies and like obstructions provide markers on both sides.
 - b. Position markers on both sides of pipe with arrow markers pointing in flow direction.
 - 1) If flow is in both directions use double headed arrow markers.
 - c. Apply tapes and stenciling in uniform manner parallel to piping.
2. Trenches with piping:
 - a. Tag type: Type F - Underground Warning Tape
 - b. Location: Halfway between top of piping and finished grade.
 - c. Letter height: 1-1/4 IN minimum.
 - d. Natural gas or digester gas:
 - 1) Color: Yellow with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED GAS LINE BELOW"
 - e. Potable water:
 - 1) Color: Blue with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED WATER LINE BELOW"
 - f. Storm and sanitary sewer lines:
 - 1) Color: Green with black letters.

2. All mainline trace wires must be interconnected in intersections, at mainline tees and mainline crosses. At tees, the three wires shall be joined using a single 3-way lockable connector. At Crosses, the four wires shall be joined using a 4-way connector. Use of two 3-way connectors with a short jumper wire between them is an acceptable alternative.
3. Direct bury wire connectors shall include 3-way lockable connectors and mainline to lateral lug connectors specifically manufactured for use in underground trace wire installation. Connectors shall be dielectric silicon filled to seal out moisture and corrosion, and shall be installed in a manner so as to prevent any uninsulated wire exposure.
4. Non locking friction fit, twist on or taped connectors are prohibited.

2.4 MAINTENANCE MATERIALS

- A. Where stenciled markers are provided, clean and retain stencils after completion and include in extra stock, along with required stock of paints and applicators.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

- A. Install identification devices at specified locations.
- B. All identification devices to be printed by mechanical process, hand printing is not acceptable.
- C. Attach tags to equipment with sufficient surface or body area with solvent activated adhesive applied to back of each tag.
- D. Attach tags with 1/8 IN round or flat head screws to equipment without sufficient surface or body area, or porous surfaces.
 1. Where attachment with screws should not or cannot penetrate substrate, attach with plastic strap.
- E. Single items of equipment enclosed in a housing or compartment to be tagged on outside of housing.
 1. Several items of equipment mounted in housing to be individually tagged inside the compartment.
- F. Tracer Wire:
 1. Install for all non-metallic underground pipe, only.
 2. Attach to pipe at a maximum of 5 FT intervals with tape or tie-wraps.
 3. Continuous pass from each access box and above grade at each structure.
 4. A minimum of 2 FT of excess/slack wire is required in all tracer wire access boxes after meeting final grade.
 5. 1,000 FT maximum spacing between access boxes.
 6. Use continuous strand of wire between access boxes where possible.
 - a. Continuous length shall be no shorter than 100 FT.
 7. Tracer wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, proper locating of wire without loss or deterioration of low frequency (512Hz) signal for distances in excess of 1,000 linear feet, and without distortion of signal caused by multiple wires being installed in close proximity to one another.

A. Fasteners for Tags:

1. Bead chain: #6 brass, aluminum or stainless steel.
2. Plastic strap: Nylon, urethane or polypropylene.
3. Screws: Self-tapping, stainless steel.
4. Adhesive, solvent activated.

B. Grounding Rods for Tracer Wire:

1. Grounding of tracer wire shall be achieved by use of a drive-in magnesium grounding anode rod with a minimum 20ft of #12 red HDPE insulated copper clad steel wire connected to anode (minimum 1.5 lb.) and buried at the same elevation as the utility. Manufactured by Copperhead Industries or similar.
2. When grounding the trace wire at dead ends/stubs, the grounding anode shall be installed in a direction 180 degrees opposite of the trace wire, at the maximum possible distance.
3. Tracer wire must be properly grounded at all dead ends/stubs.
4. When grounding the trace wire in areas where the trace wire is continuous and neither the mainline trace wire or the grounding anode wire will be terminated at/above grade, install grounding anode directly beneath and in-line with the trace wire. Do not coil excess wire from grounding anode. In this installation method, the grounding anode wire shall be trimmed to an appropriate length before connecting to trace wire with a mainline to lateral lug connector.
5. When the anode wire will be connected to a trace wire access box, a minimum of 2 ft. of excess/slack wire is required after meeting final elevation.

C. Termination/Access Boxes for Tracer Wire:

1. All tracer wire termination points must utilize an approved tracer wire access box (above ground access box or grade level/in-ground access box as applicable), specifically manufactured for this purpose. Manufactured by Copperhead Industries or similar.
2. All grade level/in-ground access boxes shall be appropriately identified with the name of the utility (i.e. "sewer" or "water") cast into the cap and be color coded per APWA standards.
3. A minimum of 2 ft. of excess/slack wire is required in all trace wire access boxes after meeting final elevation.
4. All tracer wire access boxes must include a manually interruptible conductive/connective link between the terminal(s) for the trace wire connection and the terminal for the grounding anode wire connection.
5. Grounding anode wire shall be connected to the identified (or bottom) terminal on all access boxes.
6. Service laterals on private property – tracer wire must terminate at an approved above-ground trace wire access box, affixed to the building exterior directly above where the utility enters the building, at an elevation not greater than 5 vertical feet above finished grade, or terminate at an approved grade level/in-ground trace wire access box, located within 2 linear feet of the building being served by the utility.
7. Hydrants – Tracer wire must terminate at an approved above-ground trace wire access box, properly affixed to the hydrant grade flange. (affixing with tape or plastic ties shall not be acceptable)

D. Connectors for Tracer Wire:

1. Tracer wire connectors shall be manufactured by Copperhead Industries or similar.

2. Size: As required by text.
 3. Fabrication:
 - a. Legend: Preprinted.
 4. Color: White background, black printing.
- I. Type F - Underground Warning Tape:
1. Materials: Polyethylene.
 2. Size:
 - a. 6 IN wide (minimum).
 - b. Thickness: 3.5 mils.
 3. Fabrication:
 - a. Legend: Preprinted and permanently imbedded.
 - b. Message continuous printed.
 - c. Tensile strength: 1750 psi.
 4. Color: As specified.
- J. Type G - Stenciling System:
1. Materials:
 - a. Exterior type stenciling enamel.
 - b. Either brushing grade or pressurized spray can form and grade.
 2. Size: As required.
 3. Fabrication:
 - a. Legend: As required.
 4. Color: Black or white for best contrast.
- K. Type H – Non-Adhesive Strap-on Type Pipe Markers
1. Materials: Vinyl or Plastic Sheet.
 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 5 mils minimum.
 3. Fabrication:
 - a. Indoor/Outdoor grade.
 - b. Weather and UV resistant inks.
 - c. Legend: Preprinted.
 - d. Color: White with black lettering or as specified.
- L. Underground Tracer Wire:
1. Materials:
 - a. Wire:
 - 1) 12 GA AWG.
 - 2) Copperhead High Strength Copper clad steel (HS-CCS) or approved equal.
 - 3) Minimum 450 lb. break load.
 - 4) Minimum 30 mil HDPE insulation thickness
 - b. Ground Rods: See Paragraph 2.3
 - c. Termination/Access Boxes: See Paragraph 2.3
 - d. Connectors: See Paragraph 2.3
 - e. Color: Color coated per APWA Uniform Color Code for the specific utility being marked.

2.3 ACCESSORIES

- a. 3/16 IN mounting hole with metal eyelet.
 - b. Legend: Preprinted and permanently embedded and fade resistant.
- 4. Color:
 - a. Background: Manufacturer standard or as specified.
 - b. Lettering: Black.
- E. Type B2 - Nonmetallic Signs:
 - 1. Materials: Fiberglass reinforced or durable plastic.
 - 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 60 mils minimum.
 - 3. Fabrication:
 - a. Rounded corners.
 - b. Drilled holes in corners with grommets.
 - c. Legend: Preprinted, permanently embedded and fade resistant for a 10 year minimum outdoor durability.
 - 4. Color:
 - a. Background: Manufacturer standard or as specified.
 - b. Lettering: Black.
 - 5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.
- F. Type C - Laminated Name Plates:
 - 1. Materials: Phenolic or DR (high impact) acrylic.
 - 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 1/16 IN.
 - 3. Fabrication:
 - a. Outdoor rated and UV resistant when installed outdoors.
 - b. Two (2) layers laminated.
 - c. Legend: Engraved through top lamination into bottom lamination.
 - d. Two (2) drilled side holes, for screw mounting.
 - 4. Color: Black top surface, white core, unless otherwise indicated.
- G. Type D - Self-Adhesive Tape Tags and Signs:
 - 1. Materials: Vinyl tape or vinyl cloth.
 - 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 5 mils minimum.
 - 3. Fabrication:
 - a. Indoor/Outdoor grade.
 - b. Weather and UV resistant inks.
 - c. Permanent adhesive.
 - d. Legend: Preprinted.
 - e. Wire markers to be self-laminating.
 - 4. Color: White with black lettering or as specified.
 - 5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.
- H. Type E - Heat Shrinkable Tape Tags:
 - 1. Materials: Polyolefin.

2. Panduit.
 3. Seton.
 4. National Band and Tag Co.
 5. Carlton Industries, Inc.
- B. Tracer Wire: Subject to compliance with the Contract Documents, the following manufacturers are acceptable.
1. Copperhead Industries
- C. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 MANUFACTURED UNITS

- A. Type A1 - Round Metal Tags:
1. Materials:
 - a. Aluminum or stainless steel.
 - b. Stainless steel shall be used in corrosive environments.
 2. Size:
 - a. Diameter: 1-1/2 IN minimum.
 - b. Thickness: 0.035 IN (20 GA) minimum.
 3. Fabrication:
 - a. 3/16 IN minimum mounting hole.
 - b. Legend: Stamped and filled with black coloring.
 4. Color: Natural.
- B. Type A2 - Rectangle Metal Tags:
1. Materials: Stainless steel.
 2. Size:
 - a. 3-1/2 IN x 1-1/2 IN minimum.
 - b. Thickness: 0.036 IN (20 GA) minimum.
 3. Fabrication:
 - a. 3/16 IN minimum mounting hole.
 - b. Legend: Stamped and filled with black coloring.
 4. Color: Natural.
- C. Type A3 - Metal Tape Tags:
1. Materials: Aluminum or stainless steel.
 2. Size:
 - a. Width 1/2 IN minimum.
 - b. Length as required by text.
 3. Fabrication:
 - a. 3/16 IN minimum mounting hole.
 - b. Legend: Embossed.
 4. Color: Natural.
- D. Type B1- Square Nonmetallic Tags:
1. Materials: Fiberglass reinforced plastic.
 2. Size:
 - a. Surface: 2 x 2 IN minimum.
 - b. Thickness: 100 mils.
 3. Fabrication:

SECTION 10 14 00 - IDENTIFICATION DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Tag, tape, tracer wire and stenciling systems for equipment, piping, valves, pumps, ductwork and similar items, and hazard and safety signs.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 - General Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Society of Mechanical Engineers (ASME):
 - a. A13.1, Scheme for the Identification of Piping Systems.
2. The International Society of Automation (ISA).
3. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
 - a. Z535.1, Safety Color Code.
 - b. Z535.2, Environmental and Facility Safety Signs.
 - c. Z535.3, Criteria for Safety Symbols.
 - d. Z535.4, Product Safety Signs and Labels.
4. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC).
5. Occupational Safety and Health Administration (OSHA):
 - a. 29 CFR 1910.145, Specification for Accident Prevention Signs and Tags.

1.3 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Product technical data including:
 - a. Catalog information for all identification systems.
 - b. Acknowledgement that products submitted meet requirements of standards referenced.
3. Identification register, listing all items in PART 3 of this Specification Section to be identified, type of identification system to be used, lettering, location and color.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. W.H. Brady Co.

DIVISION 10
SPECIALTIES

This Page Left Blank Intentionally

- G. Measure coating dry film thickness in accordance with SSPC PA 2.
 - 1. Engineer may measure coating thickness at any time during project to assure conformance with these Specifications.
- H. Measure surface temperature of items to be painted with surface temperature gage specifically designed for such.
- I. Measure substrate humidity with humidity gage specifically designed for such.
- J. Provide wet paint signs.

3.7 CLEANING

- A. Clean paint spattered surfaces.
 - 1. Use care not to damage finished surfaces.
- B. Upon completion of painting, replace hardware, accessories, plates, fixtures, and similar items.
- C. Remove surplus materials, scaffolding, and debris.

3.8 COLOR CODING

- A. Color code piping in accordance with the SCHEDULE Article of this Specification Section.
 - 1. Place bands:
 - a. At 20 FT maximum centers along continuous lines.
 - b. At changes in direction or obstructions.
 - c. At valves, risers, "T" joints, machinery or equipment.
 - d. On both sides of an obstruction (e.g., wall, ceiling) that painted item passes through.
 - 2. Band width for individual colors (pipe diameter measured to outside of insulation, if applicable):
 - a. Piping up to 8 IN DIA: 2 IN minimum.
 - b. Piping greater than 8 IN up to 24 IN DIA: 4 IN minimum.
 - c. Piping greater than 24 IN up to 48 IN DIA: 6 IN minimum.
 - d. Piping greater than 48 IN DIA: 8 IN minimum.
- B. Label piping as indicated in Specification Sections 23 05 53 or 40 05 53, as applicable.

END OF SECTION 09 96 00

- c. Thickness Testing:
 - 1) Wet film thickness during application in accordance with ASTM D4414.
 - 2) Dry Film Thickness (DFT) in accordance with SSPC PA 2 and ASTM D7091.

D. Instrumentation:

- 1. Provide instrumentation as necessary to measure and record atmospheric and substrate conditions, including but not limited to:
 - a. Dry Film Thickness Gauge.
 - b. Wet Film Thickness Gauge.
 - c. Sling Psychrometer.
 - d. Surface Temperature Gauge.
 - e. Anemometer.
 - f. Moisture Meter.

E. Maintain Daily Records:

- 1. Record the following information during application:
 - a. Date, starting time, end time, and all breaks taken by painters.
 - b. Air temperature.
 - c. Relative humidity.
 - d. Dew point.
 - e. Moisture content and pH level of concrete or masonry substrates prior to coating.
 - f. Surface temperature of substrate.
 - g. Provisions utilized to maintain work area within manufacturer's recommended application parameters including temporary heating, ventilation, cooling, dehumidification and provisions utilized to mitigate wind blown dust and debris from contaminating the wet paint film.
 - h. For exterior painting:
 - 1) Sky condition.
 - 2) Wind speed and direction.
 - i. Record environmental conditions, substrate moisture content and surface temperature information not less than once every 4 HRS during application.
 - 1) Record hourly when temperatures are below 50 DegF or above 100 DegF.
- 2. Record the following information daily for the paint manufacturer's recommended curing period:
 - a. Date and start time of cure period for each item or area.
 - b. For exterior painting:
 - 1) Sky conditions.
 - 2) Wind speed and direction.
 - 3) Air temperature.
 - a) Dry Bulb.
 - b) Wet Bulb.
 - 4) Relative humidity.
 - 5) Dew point.
 - 6) Surface temperatures.
 - c. Record environmental conditions not less than once every 4 HRS.
 - 1) Record hourly when temperatures are below 50 DegF or above 100 DegF.
 - d. Provisions utilized to protect each item or area and to maintain areas within manufacturer's recommended curing parameters.
- 3. Format for daily record to be computer generated.

F. Measure wet coating with wet film thickness gages in accordance with ASTM D4414.

- a. Finish coats shall be applied in the field.
- b. Prime coat referred to here is prime coat as indicated in this Specification.
 - 1) Prime coating applied in factory (shop) as part of Fabricator's standard rust inhibiting and protection coating is not acceptable as replacement for specified prime coating.
- c. Application of all factory-applied paint coatings(s) on structural steel and miscellaneous steel and steel joist shall be continually observed and certified by NACE certified coatings inspector.
- 2. Prime all surfaces indicated to be painted.
 - a. Apply prime coat in accordance with coating manufacturer's written instructions and as written in this Specification Section.
- 3. Prime ferrous metals embedded in concrete to minimum of 1 IN below exposed surfaces.
- 4. Apply zinc-rich primers while under continuous agitation.
- 5. Brush or spray bolts, welds, edges and difficult access areas with primer prior to primer application over entire surface.
- 6. Touch up damaged primer coats prior to applying finish coats.
 - a. Restore primed surface equal to surface before damage.
- D. Finish Coat Application:
 - 1. Apply finish coats in accordance with coating manufacturer's written instructions and in accordance with this Specification Section; manufacturer instructions take precedent over these Specifications.
 - 2. Touch up damaged finish coats using same application method and same material specified for finish coat.
 - a. Prepare damaged area in accordance with the PREPARATION Article of this Specification Section.

3.6 FIELD QUALITY CONTROL

- A. Application Deficiencies:
 - 1. Surfaces showing runs, laps, brush marks, telegraphing of surface imperfections or other defects will not be accepted.
 - 2. Surfaces showing evidence of fading, chalking, blistering, delamination or other defects due to improper surface preparation, environmental controls or application will not be accepted.
 - a. Epoxy surfaces showing evidence of chalking or amine blush shall be prepared and recoated as follows:
 - 1) Solvent clean surfaces in accordance with SSPC SP1 and abrasive blast in accordance with SSPC SP7/NACE No. 4.
 - 2) Recoat with intermediate and finish coats in accordance with coating system specified herein.
- B. Provide protection for painted surfaces.
 - 1. Surfaces showing soiling, staining, streaking, chipping, scratches, or other defects will not be accepted.
- C. Contractor Performed Testing:
 - 1. The Contractor shall provide ongoing testing and inspection, including but not limited to the following:
 - a. Measurement and recording of environmental conditions as specified herein.
 - b. Measurement and recording of substrate conditions as specified herein.

5. Evenly spread to provide full, smooth coverage.
 - a. All paint systems are "to cover."
 - 1) In situations of discrepancy between manufacturer's square footage coverage rates and mil thickness, mil thickness requirements govern.
 - b. When color or undercoats show through, apply additional coats until paint film is of uniform finish and color.
 - c. Finished paint system shall be uniform and without voids, bugholes, holidays, laps, brush marks, roller marks, runs, sags or other imperfections.
 6. If so directed by Engineer, do not apply consecutive coats until Engineer has had an opportunity to observe and approve previous coats.
 7. Work each application of material into corners, crevices, joints, and other difficult to work areas.
 8. Avoid degradation and contamination of blasted surfaces and avoid inter-coat contamination.
 - a. Clean contaminated surfaces before applying next coat.
 9. Smooth out runs or sags immediately, or remove and recoat entire surface.
 10. Allow preceding coats to dry before recoating.
 - a. Recoat within time limits specified by coating manufacturer.
 - b. If recoat time limits have expired re-prepare surface in accordance with coating manufacturer's printed recommendations.
 11. Allow coated surfaces to cure prior to allowing traffic or other work to proceed.
 12. Coat all aluminum in contact with dissimilar materials.
 13. When coating rough surfaces which cannot be backrolled sufficiently, hand brush coating to work into all recesses.
 14. Backroll surfaces if paint coatings are spray applied.
 15. All surfaces of steel lintels and steel components of concrete lintels used in wall construction shall be completely painted with both prime and finish coats prior to placing in wall.
- B. Employ services of coating manufacturer's qualified technical representative to ensure that field-applied coatings are compatible with factory-applied or existing coatings.
1. Certify through material data sheets.
 2. Perform test patch.
 - a. Prepare existing coating surface to receive specified coating system.
 - b. Apply coating to a minimum 1 SF area and allow to cure in accordance with manufacturer's recommendations.
 - c. Evaluate adhesion to existing coating:
 - 1) Concrete or Masonry substrates: ASTM D4541.
 - 2) All other substrates: ASTM D6677 and ASTM D3359 (X-cut method).
 3. If field-applied coating is found to be not compatible, require the coating manufacturer's technical representative to recommend, in writing, product to be used as barrier coat, thickness to be applied, surface preparation and method of application.
 - a. Perform test patch as described above.
 4. At Contractor's option, coatings may be removed, surface re-prepared, and new coating applied using appropriate paint system listed in the MATERIALS Article, Paint Systems paragraph of this Specification Section.
 - a. All damage to surface as result of coating removal shall be repaired to original condition or better by Contractor at no additional cost to Owner.
- C. Prime Coat Application:
1. Apply structural steel and miscellaneous steel prime coat in the factory.

1. Schedule the abrasive blasting operation so blasted surfaces will not be wet after blasting and before painting.
2. Provide compressed air for blasting that is free of water and oil.
 - a. Provide accessible separators and traps.
3. Protect nameplates, valve stems, rotating equipment, motors and other items that may be damaged from blasting.
4. All abrasive-blasted ferrous metal surfaces shall be inspected immediately prior to application of paint coatings.
 - a. Inspection shall be performed to determine cleanliness and profile depth of blasted surfaces and to certify that surface has been prepared in accordance with these Specifications.
5. Perform additional blasting and cleaning as required to achieve surface preparation required.
 - a. Re-blast surfaces not meeting requirements of these Specifications.
 - b. Prior to painting, re-blast surfaces allowed to set overnight and surfaces that show rust bloom.
 - c. Surfaces allowed to set overnight or surfaces which show rust bloom prior to painting shall be re-inspected prior to paint application.
6. Profile depth of blasted surface: Not less than 1 mil or greater than 2 mils unless required otherwise by coating manufacturer.
7. Ensure abrasive blasting operation does not result in embedment of abrasive particles in paint film.
8. Confine blast abrasives to area being blasted.
 - a. Provide shields of polyethylene sheeting or other such barriers to confine blast material.
 - b. Plug pipes, holes, or openings before blasting and keep plugged until blast operation is complete and residue is removed.
9. Abrasive blasting media may be recovered, cleaned and reused providing Contractor submits, for Engineer's review, a comprehensive recovery plan outlining all procedures and equipment proposed in reclamation process.
10. Properly dispose of blasting material contaminated with debris from blasting operation.

J. All Plastic Surfaces:

1. Sand using 80-100 grit sandpaper to scarify surfaces.

3.5 APPLICATION

A. General:

1. Thin, mix and apply coatings by brush, roller, or spray in accordance with manufacturer's installation instructions.
 - a. Application equipment must be inspected and approved in writing by coating manufacturer.
2. Temperature and weather conditions:
 - a. Do not paint surfaces when surface temperature is below 50 DegF unless product has been formulated specifically for low temperature application and application is approved in writing by Engineer and paint manufacturer's authorized representative.
 - b. Avoid painting surfaces exposed to hot sun.
 - c. Do not paint on damp surfaces.
3. Apply materials under adequate illumination.
4. Provide complete coverage to mil thickness specified.
 - a. Thickness specified is dry mil thickness.

- C. Protection:
 - 1. Protect surrounding surfaces not to be coated.
 - 2. Remove and protect hardware, accessories, plates, fixtures, finished work, and similar items; or provide ample in-place protection.
 - 3. Protect code labels, equipment identification or rating plates and similar labels, tagging and identification.
- D. Prepare and paint before assembly all surfaces which are inaccessible after assembly.
- E. Ferrous Metal:
 - 1. Prepare ductile iron pipe in accordance with pipe manufacturer's recommendations and NAPF.
 - a. All piping, pumps, valves, fittings and any other component used in the water piping system that requires preparation for painting shall be prepared in accordance with requirements for immersion service.
 - b. Prepare all areas requiring patch painting in accordance with recommendations of manufacturer and NAPF.
 - c. Remove bituminous coating per piping manufacturer, paint manufacturer and NAPF recommendations.
 - 1) The most stringent recommendations shall apply.
 - 2. Complete fabrication, welding or burning before beginning surface preparation.
 - a. Chip or grind off flux, spatter, slag or other laminations left from welding.
 - b. Remove mill scale.
 - c. Grind smooth rough welds and other sharp projections.
 - 3. Solvent clean in accordance with SSPC SP 1.
 - 4. Restore surface of field welds and adjacent areas to original surface preparation.
- F. Galvanized Steel and Non-ferrous Metals:
 - 1. Solvent clean in accordance with SSPC SP 1 followed by brush-off blast clean in accordance with SSPC SP 16 to remove zinc oxide and other foreign contaminants.
 - a. Provide uniform 1 mil profile surface.
- G. Concrete:
 - 1. Cure for minimum of 28 days.
 - 2. Concrete surfaces shall be cleaned in accordance with ASTM D4258.
 - 3. Abrasive blast concrete surfaces in accordance with ASTM D4259 and SSPC SP 13/NACE No. 6.
 - a. Provide profile per ICRI 301.2 as listed in MATERIALS article of this Specification Section.
 - 4. Test pH and moisture content in accordance with EXAMINATION article in this Specification Section.
- H. Concrete Masonry:
 - 1. Cure for minimum of 28 days.
 - 2. Remove all mortar spatters and protrusions.
 - 3. Clean concrete masonry in accordance with Specification ASTM D4261.
 - 4. Test pH and moisture content in accordance with EXAMINATION article in this Specification Section.
- I. Preparation by Abrasive Blasting:

- 1) If moisture is detected, test moisture content of surface to be coated in accordance with ASTM F1869 or ASTM F2170.
- 2) Provide remedial measures as necessary to bring moisture content within coating manufacturer's recommended acceptable limits.
- 3) Retest surface until acceptable results are obtained.

B. Concrete Unit Masonry:

1. Test pH of surface to be painted in accordance with ASTM D4262.
 - a. If surface pH is not within coating manufacturer's required acceptable range, use methods acceptable to coating manufacturer as required to bring pH within acceptable limits.
 - b. Retest pH until acceptable results are obtained.
2. Verify that moisture content of surface to be painted is within coating manufacturer's recommended acceptable limits.
 - a. Test surface to be coated in accordance with ASTM D4263 to determine the presence of moisture.
 - 1) If moisture is detected, test moisture content of surface to be coated in accordance with ASTM F1869.
 - 2) Provide remedial measures as necessary to bring moisture content within coating manufacturer's recommended acceptable limits.
 - 3) Retest surface until acceptable results are obtained.

3.4 PREPARATION

A. General:

1. Prepare surfaces to be painted in accordance with coating manufacturer's instructions and this Specification Section unless noted otherwise in this Specification Section.
 - a. Where discrepancy between coating manufacturer's instructions and this Specification Section exists, the more stringent preparation shall be provided unless approved otherwise, in writing, by the Engineer.
2. Remove all dust, grease, oil, compounds, dirt and other foreign matter which would prevent bonding of coating to surface.
3. Adhere to manufacturer's recoat time surface preparation requirements.
 - a. Surfaces that have exceeded coating manufacturer's published recoat time and/or have exhibited surface chalking shall be prepared prior to additional coating in accordance with manufacturer's published recommendations.
 - 1) Minimum SSPC SP 7/NACE No. 4 unless otherwise approved by Engineer.
4. Preparation of all structural steel, miscellaneous steel and steel joist indicated to receive factory applied coatings shall be continually observed and certified by NACE certified coatings inspector.

B. Contractor shall obtain samples of existing paint film and have samples tested by a recognized testing laboratory to determine if existing paint film contains lead, asbestos or any other health hazard as defined by the EPA.

1. If existing paint film is found to contain lead, asbestos, or any other health hazard, notify the Engineer immediately.
2. Contractor shall prepare plan of action for safe, legal removal and disposal of contaminated paint.
3. Engineer, Contractor and Owner shall negotiate agreement for cost associated with removal.

1. Where specifically shown in the Contract Documents.
 2. Where in contact with concrete.
 3. Where in contact with dissimilar metals.
 4. Appurtenant surfaces as described in the ITEMS TO BE PAINTED article.
- I. Fiberglass Surfaces, except:
1. Fiberglass piping where specifically noted to be painted.
 2. Piping supports where specifically noted to be painted.
 3. Appurtenant surfaces as described in the ITEMS TO BE PAINTED article.
- J. Interior of Pipe, Ductwork, and Conduits.
1. See Division 23 for ductwork.
 2. See Division 40 for pipe linings.
- K. Galvanized Steel Items, unless specifically noted to be painted.
- L. Architectural Finishes:
1. Exterior concrete indicated to receive another finish.
 2. Prefinished masonry surfaces:
 - a. Burnished (ground face) concrete masonry.
 - b. Chisel-face concrete masonry.
 - c. Cast stone.
 - d. Face brick.
 3. Plastic laminate.
 4. Solid surface material.
 5. Fiberglass fabrications.
 6. Anodized aluminum.
 7. PVDF coated metals.
 8. Factory finished doors and frames.
 9. Aluminum windows, curtainwall and storefront framing systems.
 10. Finish hardware.
 11. Glass and glazing.
 12. Ceramic, porcelain, quarry tile or natural stone.
 13. Acoustical materials.
 14. Building specialties.
 15. Louvers.
 16. Casework and countertops.
 17. Pipe insulation and jacketing.

3.3 EXAMINATION

- A. Concrete:
1. Test pH of surface to be painted in accordance with ASTM D4262.
 - a. If surface pH is not within coating manufacturer's required acceptable range, use methods acceptable to coating manufacturer as required to bring pH within acceptable range.
 - b. Retest pH until acceptable results are obtained.
 2. Verify that moisture content of surface to be painted is within coating manufacturer's recommended acceptable limits.
 - a. Test surface to be coated in accordance with ASTM D4263 to determine the presence of moisture.

Environment	Surface Preparation	Filler/ Surfacer	Prime Coat	Intermediate Coat	Finish Coat(s)
CMU²					
Interior atmospheric	Refer to PART 3	100 to 150 SF/Gal Series 1254	175 to 200 SF/Gal Series N69		175 to 200 SF/Gal Series N69
Exterior atmospheric Corrosive Environment	Refer to PART 3	100 to 150 SF/Gal Series 1254	175 to 200 SF/Gal Series N69		275 to 300 SF/Gal Series 750
Exterior atmospheric Highly Corrosive Environment	Refer to PART 3	100 to 150 SF/Gal Series 1254	175 to 200 SF/Gal Series N69	175 to 200 SF/Gal Series N69	275 to 300 SF/Gal Series 750

1. Not used.

2. Coverage rates indicated are based on smooth-face normal weight CMU. Provide increased coverage rates in accordance with manufacturer's recommendations for more porous surfaces.

PART 3 EXECUTION

3.1 ITEMS TO BE COATED

A. Interior Areas:

1. New piping, fittings, valves and associated appurtenances.
2. New conduit, junction boxes, and appurtenances.

3.2 ITEMS NOT TO BE PAINTED

A. General: Do not paint items listed in this Article, unless noted otherwise.

B. Items with Approved Factory Finish: These items may require repair of damaged painted areas or painting of welded connections.

C. Electrical Equipment.

D. Moving parts of mechanical and electrical units where painting would interfere with the operation of the unit.

E. Code labels, equipment identification or rating plates and similar labels, tagging and identification.

F. Contact surfaces of friction-type structural connections.

G. Stainless Steel Surfaces, except:

1. Piping where specifically noted to be painted.
2. Banding as required to identify piping.

H. Aluminum Surfaces, except:

Environment	Surface Preparation	Filler/ Surfacer	Prime Coat	Intermediate Coat	Finish Coat(s)
Interior – Secondary Containment	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 218 and/or 215 as necessary to fill holes and depressions	50 to 60 mil Series 206SC	211-0215 Fiberglass mat Saturated with 8.0 to 12 mils Series 237SC	10 to 12 mil Series 237SC
Interior – Secondary Containment (Highly Corrosive)	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 218 and/or 215 as necessary to fill holes and depressions	6.0 to 8.0 mil Series 251SC	211-0215 Fiberglass mat Saturated with 8.0 to 12 mils Series 252SC	6.0 to 8.0 mil Series 252SC
Immersion – Wastewater (Abrasion Resistant)	SSPC SP-13/ NACE No. 6 ICRI CSP 5	1/16 to 1/4 IN Series 218	1/8 IN Series 434		15 to 25 mil Series 435
Vapor space at covered clarifiers, digesters and similar structures	SSPC SP-13/ NACE No. 6 ICRI CSP 5	1/16 to 1/4 IN Series 218			30 to 45 mil Series 435
Exterior atmospheric	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 218 and/or 215 as necessary to fill holes and depressions	150 to 175 SF/GAL Series 180 WB		150 to 175 SF/GAL Series 180 WB
Exterior atmospheric Highly Corrosive Environment	SSPC SP-13/ NACE No. 6 ICRI CSP 5	1/16 IN Series 218	3.0 to 4.0 mil Series N69	3.0 to 4.0 mil Series N69	2.5 to 3.5 mil Series 750
Exterior – Secondary Containment	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 218 and/or 215 as necessary to fill holes and depressions	50 to 60 mil Series 206SC	211-0215 Fiberglass mat Saturated with 8.0 to 12 mils Series 237SC	10 to 12 mil Series 237SC 2.0 to 3.0 mil Series 290 CRU
Exterior – Secondary Containment Highly Corrosive	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 218 and/or 215 as necessary to fill holes and depressions	6.0 to 8.0 mil Series 251SC	211-0215 Fiberglass mat Saturated with 8.0 to 12 mils Series 252SC	6.0 to 8.0 mil Series 252SC 2.0 to 3.0 mil Series 290 CRU

ENVIRONMENT	SURFACE PREPARATION	PRIME COAT	INTERMEDIATE COATS	FINISH COAT
Immersion – Wastewater	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	2.5 to 3.5 mil Series 1	5.0 to 7.0 mil Series 446	5.0 to 7.0 mil Series 446
Immersion – Wastewater (abrasion resistant)	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	15 to 20 mil Series 435		15 to 20 mil Series 435
Exterior atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil Series N69	3.0 to 4.0 mil Series N69	2.5 to 3.5 mil Series 750
Aeration piping - atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	5.0 to 7.0 mil Series 1224	40 to 50 mil Series 971	3.0 to 5.0 mil Series 1028T
Cast Iron				
Interior atmospheric	SSPC SP-1	4.0 to 6.0 mil Series 135	2.0 to 3.0 mil Series N69	2.0 to 3.0 mil Series N69
Exterior atmospheric	SSPC SP-1	4.0 to 6.0 mil Series 135	2.0 to 3.0 mil Series N69	2.5 to 3.5 mil Series 750
PVC Piping				
Interior atmospheric	Hand Sanding/ SSPC SP-1	3.0 to 4.0 mil Series N69		3.0 to 4.0 mil Series N69
Exterior atmospheric	Hand Sanding/ SSPC SP-1	3.0 to 4.0 mil Series N69		2.5 to 3.5 mil Series 750

Environment	Surface Preparation	Filler/ Surfacers	Prime Coat	Intermediate Coat	Finish Coat(s)
Concrete					
Interior walls, ceilings, etc. atmospheric	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 218 and/or 215 as necessary to fill holes and depressions	250 to 300 SF/GAL Series N69		250 to 300 SF/GAL Series N69
Interior floors ¹	SSPC SP-13/ NACE No. 6 ICRI CSP 5	Series 215 as necessary to fill holes and depressions	175 to 225 SF/GAL Series 237 clear	200 to 250 SF/GAL Series 237 pigmented	200 to 250 SF/GAL Series 237 pigmented

ENVIRONMENT	SURFACE PREPARATION	PRIME COAT	INTERMEDIATE COATS	FINISH COAT
Exterior atmospheric	SSPC SP-16	4.0 to 6.0 mil Series 135		2.5 to 3.5 mil Series 740
Field cut pipe threads	SSPC SP-3	4.0 to 6.0 mil Series 135	Coat per exposure above	Coat per exposure above
Non Ferrous Metals, including piping				
Dissimilar Materials Protection	SSPC SP-2	4.5 to 5.5 mil Series N69		
Interior atmospheric	SSPC SP-2	3.0 to 4.0 mil Series N69		3.0 to 4.0 mil Series N69
Immersion - Wastewater	SSPC SP-16	3.0 to 4.0 mil Series N69		5.0 to 6.0 mil Series N69
Exterior atmospheric	SSPC SP-2	4.0 to 6.0 mil Series N69		2.5 to 3.5 mil Series 750
Ferrous Piping				
Interior atmospheric	SSPC SP-6/ NACE No. 3	2.5 to 3.5 mil Series 94-H ₂ O	3.0 to 4.0 mil Series N69	3.0 to 4.0 mil Series N69
Immersion – Wastewater	SSPC SP-10/ NACE No. 2	2.5 to 3.5 mil Series 1	5.0 to 7.0 mil Series 446	5.0 to 7.0 mil Series 446
Immersion – Wastewater (abrasion resistant)	SSPC SP-10/ NACE No. 2 min. 3 mil anchor profile	15 to 20 mil Series 435		15 to 20 mil Series 435
Exterior atmospheric	SSPC SP-10/ NACE No. 2	2.5 to 3.5 mil Series 94-H ₂ O	3.0 to 4.0 mil Series N69	2.5 to 3.5 mil Series 750
Aeration piping - atmospheric	SSPC SP-6/ NACE No. 3	5.0 to 7.0 mil Series 1224	40 to 50 mil Series 971	3.0 to 5.0 mil Series 1028T
High-temperature >250 <500 DegF	SSPC SP-10/ NACE No. 2	2.0 to 2.5 mil Thurmalox Series 260C		2.0 to 2.5 mil Thurmalox Series 260C
High-temperature >500 <1000 DegF	SSPC SP-10/ NACE No. 2	4.0 to 5.0 mil Thurmalox Series 225 HD		2.0 to 3.0 mil Thurmalox Series 230C
Ductile Iron Piping				
Interior atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil Series N69	3.0 to 4.0 mil Series N69	3.0 to 4.0 mil Series N69

GENERIC DESCRIPTION	PRODUCT
Inorganic Hybrid Water-Based Epoxy	Series 1254 Epoxoblock WB

F. High Temperature Coatings:

GENERIC DESCRIPTION	PRODUCT
Modified Silicone Copolymer	Dampney Thurmalox 225HD
Air Dry Silicone Copolymer (>250 <500 DegF)	Dampney Thurmalox 260C
Air Dry Silicone Copolymer (>500 <1000 DegF)	Dampney Thurmalox 230C

2.3 COATING SYSTEMS:

ENVIRONMENT	SURFACE PREPARATION	PRIME COAT	INTERMEDIATE COATS	FINISH COAT
Ferrous Metals (Structural & Miscellaneous Metals)				
Interior atmospheric (corrosive environment)	SSPC SP-10/ NACE No. 2 min. 2 mil anchor profile	2.5 to 3.5 mil Series 94-H ₂ O	3.0 to 4.0 mil Series N69	3.0 to 4.0 mil Series N69
Interior atmospheric (highly corrosive environment)	SSPC SP-10/ NACE No. 2 min. 2 mil anchor profile	2.5 to 3.5 mil Series 94-H ₂ O	3.0 to 4.0 mil Series N69	2.0 to 3.0 mil Series 290 CRU
Immersion – Wastewater	SSPC SP-10/ NACE No. 2	2.5 to 3.5 mil Series 1	5.0 to 7.0 mil Series 446	5.0 to 7.0 mil Series 446
Immersion – Wastewater (abrasion resistant)	SSPC SP-10/ NACE No. 2 min. 3 mil anchor profile	15 to 20 mil Series 435		15 to 20 mil Series 435
Exterior atmospheric	SSPC SP-6/ NACE No. 3	2.5 to 3.5 mil Series 94-H ₂ O	3.0 to 5.0 mil Series N69	2.5 to 3.5 mil Series 740
Bar Joists	SSPC SP-3	2.5 to 3.5 mil Series 1		3.0 to 4.0 mil Series N69
Galvanized Steel				
Interior atmospheric	SSPC SP-16	4.0 to 6.0 mil Series 135		2.0 to 3.0 mil Series N69

D. For unspecified materials such as thinner, provide manufacturer's recommended products.

E. High Performance Industrial Coatings:

GENERIC DESCRIPTION	PRODUCT
Modified Aromatic Polyurethane Primer	Series 1 Omnithane
Modified Polyamine Epoxy	Series 22 Pota-Pox 100
Polyamidoamine Epoxy	Series N69 Hi-Build Epoxoline II
Zinc-Rich Urethane	Series 94-H ₂ O Hydro-Zinc
Modified Polyamidoamine Epoxy	Series 135 Chembuild
Acrylic Emulsion	Series 180 WB Tneme-Crete
Modified Polyamine Epoxy	Series 201 Epoxoprime
Modified Flexible Polyamine Epoxy	Series 206SC Chembloc
Modified Polyamine Epoxy Surfacer/Filler	Series 215 Surfacing Epoxy
Epoxy Modified Cementitious Mortar	Series 218 MortarClad
Modified Polyamine Epoxy	Series 237 Power-Tread
Modified Polyamine Epoxy (Secondary Containment)	Series 237SC Chembloc
Novolac Vinyl Ester (Primer)	Series 251SC Chembloc
Novolac Vinyl Ester (Secondary Containment)	Series 252SC Chembloc
Aliphatic Polyester Polyurethane	Series 290 CRU
Modified Aliphatic Amine Epoxy Mortar	Series 434 Perma-Shield H2S
Modified Polyamine Epoxy	Series 435 Perma-Glaze
Fiber-Reinforced Modified Polyamine Epoxy	Series 436 Perma-Shield FR
Hydrophobic Aromatic Polyurethane	Series 446 Perma-Shield MCU
Polyfunctional Hybrid Urethane (Gloss)	Series 740 UVX
Polyfunctional Hybrid Urethane (Semi-Gloss)	Series 750 UVX
Insulative Acrylic	Series 971 Aerolon
High Dispersion Acrylic Thermal Polymer	Series 1028T Enduratone with thermal glass beads
Water-based Cementitious Epoxy	Series 1224 Epoxoline WB

- B. Store materials in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 DegF.

1.6 PROJECT CONDITIONS

- A. Verify that atmosphere in area where coating is to take place is within coating manufacturer's acceptable temperature, humidity and sun exposure limits.
 - 1. Provide temporary heating, shade and/or dehumidification as required to bring area within acceptable limits.
 - a. Provide temporary dehumidification equipment properly sized to maintain humidity levels required by coating manufacturer.
 - b. Provide clean heat with heat exchanger type equipment sufficient in size to maintain temperature on a 24 HR basis.
 - 1) Vent exhaust gases to exterior environment.
 - 2) No exhaust gases shall be allowed to vent into the space being coated or any adjacent space.
 - 2. Do not apply coatings in snow, rain, fog or mist.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 - 1. High Performance Industrial Coatings:
 - a. PPG Industries.
 - b. Sherwin Williams.
 - c. Tnemec.
- B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 MATERIALS

- A. Coatings used for interior finishes shall meet the requirements of the Building Code.
- B. General:
 - 1. High Performance Industrial Coatings: Products listed are manufactured by Tnemec.
 - 2. Products of other manufacturers will be considered for use provided that the product:
 - a. Is of the same generic resin.
 - b. Requires comparable surface preparation.
 - c. Has comparable application requirements.
 - d. Meets the same VOC levels or better.
 - e. Provides the same finish and color options.
 - f. Will withstand the atmospheric or immersion conditions of the location where it is to be applied.
 - 3. Where manufacturer's product data sheet indicates a minimum mil thickness per coat that is greater than specified herein, mil thickness for entire coating system shall be increased proportionately.
- C. Coatings shall comply with the VOC limits of EPA and:
 - 1. State of Illinois.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Applicator experience qualifications.
 - a. No submittal information will be reviewed until Engineer has received and approved applicator qualifications.
3. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's application instructions.
 - c. Manufacturer's surface preparation instructions.
 - d. If products being used are manufactured by Company other than listed in the MATERIALS Article of this Specification Section, provide complete individual data sheet comparison of proposed products with specified products including application procedure, coverage rates and verification that product is designed for intended use.
 - e. Contractor's written plan of action for containing airborne particles created by blasting operation and location of disposal of spent contaminated blasting media.
 - f. Coating manufacturer's recommendation on abrasive blasting.
 - g. Manufacturer's recommendation for universal barrier coat.
 - h. Manufacturer's recommendation for providing temporary or supplemental heat or dehumidification or other environmental control measures.
4. Manufacturer's statement regarding applicator instruction on product use.
5. Certification that High Performance Coating Systems proposed for use have been reviewed and approved by Senior Corrosion Specification Specialist employed by the coating manufacturer.

B. NACE inspector experience qualifications.

C. Samples:

1. Manufacturer's full line of colors for Engineer's preliminary color selection.
2. After preliminary color selection by Engineer provide two (2) 3 x 5 IN samples of each final color selected.

D. Informational Submittals:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Approval of application equipment.
3. Applicator's daily records:
 - a. Submit daily records at end of each week in which coating work is performed unless requested otherwise by Engineer's on-site representative.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver in original containers, labeled as follows:

1. Name or type number of material.
2. Manufacturer's name and item stock number.
3. Contents, by volume, of major constituents.
4. Warning labels.
5. VOC content.

- a. Condensation, spillage or splash of a corrosive material such as water, wastewater or chemical solution.
 - b. Exposure to corrosive caustic or acidic agent, chemicals, chemical fumes, chemical mixture, or solutions.
 - c. For purposes of this Specification Section, corrosive environments include:
 - 1) Waste Backwash Holding Tanks
- D. Highly Corrosive Environment:
 - 1. Immersion in or subject to exposure to environments with a pH below 5 or above 9 or otherwise determined to be highly corrosive to building materials or equipment:
 - a. Condensation, spillage or splash of a highly corrosive material such as wastewater, or chemical solution.
 - b. Exposure to highly corrosive caustic or acidic agent, chemicals, chemical fumes, chemical mixture, or solutions.
 - c. For purposes of this Specification Section, highly corrosive environments include:
 - 1) Surfaces within 10 FT of chemical fill stations.
 - 2) Areas within 6 FT of chemical tank vents.
 - 3) Chemicals storage and feed areas:
 - a) Chlorine Room
 - b) Chemical Room
- E. Holiday:
 - 1. A void, crack, thin spot, foreign inclusion, or contamination in the coating film that significantly lowers the dielectric strength of the coating.
 - 2. May also be identified as a discontinuity or pinhole.
- F. Exposed Exterior Surface:
 - 1. Exterior surface that is exposed to view.
 - 2. Exterior surface that is exposed to weather but not necessarily exposed to view.
- G. Finished Area: An area listed in or has finish called for on Room Finish Schedule or is indicated on Drawings to be coated.
- H. Immersion Service:
 - 1. Any surface immersed in water or some other liquid.
 - 2. Surface of any pipe, valve, or any other component of the piping system subject to frequent wetting.
 - 3. Surfaces within two feet above high water level in water bearing structures.
- I. Surface Hidden from View:
 - 1. Within pipe chases.
 - 2. Between top side of ceilings and underside of floor or roof structures above.
- J. HPIC: High performance industrial coatings.
 - 1. Epoxies, urethanes, vinyl ester, waterborne vinyl acrylic emulsions, acrylates, silicones, alkyds, acrylic emulsions and any other coating listed as a HPIC.
- K. Water level for purposes of coating: See Drawings.

- a. 500-03, Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings:
 - 1) 500-03-04, Abrasive Blast Cleaning for Ductile Iron Pipe.
 - 2) 500-03-05, Abrasive Blast Cleaning for Cast Ductile Iron Fittings.
 - 4. Steel Door Institute/American National Standards Institute (SDI/ANSI):
 - a. A250.10, Test Procedure and Acceptance Criteria For Prime Painted Steel Surfaces for Steel Doors and Frames.
 - 5. The Society for Protective Coatings (SSPC):
 - a. PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
 - b. SP 1, Solvent Cleaning.
 - c. SP 16, Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.
 - 6. The Society for Protective Coatings/NACE International (SSPC/NACE):
 - a. SP 5/NACE No. 1, White Metal Blast Cleaning
 - b. SP 6/NACE No. 3, Commercial Blast Cleaning.
 - c. SP 7/NACE No. 4, Brush-off Blast Cleaning.
 - d. SP 10/NACE No. 2, Near-White Blast Cleaning.
 - e. SP 13/NACE No. 6, Surface Preparation of Concrete.
- B. Qualifications:
- 1. Coating manufacturer's authorized representative shall provide written statement attesting that applicator has been instructed on proper preparation, mixing and application procedures for coatings specified.
 - 2. Applicators shall have minimum of 10 years of experience in application of similar products on similar project.
 - a. Provide references for minimum of three (3) different projects completed in last five (5) years with similar scope of work.
 - b. Include name and address of project, size of project in value (painting) and contact person.
- C. Miscellaneous:
- 1. Furnish coating through one (1) manufacturer unless noted otherwise.
- D. Deviation from specified mil thickness or product type is not allowed without written authorization of Engineer.
- E. Material shall not be thinned unless approved, in writing, by coating manufacturer's authorized representative.

1.3 DEFINITIONS

- A. Installer or Applicator:
 - 1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
 - 2. Installer and applicator are synonymous.
- B. Approved Factory Finish: Finish on a product in compliance with the finish specified in the Specification Section where the product is specified or in Specification Section 01 61 03.
- C. Corrosive Environment:
 - 1. Immersion in or subject to exposure to environments with a pH between 5 and 9:

SECTION 09 96 00 - HIGH PERFORMANCE INDUSTRIAL COATINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. High performance industrial coatings (HPIC).
2. Any other coating, thinner, accelerator, inhibitor, etc., specified or required as part of a complete System specified in this Specification Section.
3. Minimum surface preparation requirements.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Procurement and Contracting Requirements.
2. Division 01 - General Requirements.
3. Section 01 61 03 - Equipment: Basic Requirements.
4. Section 01 74 13 - Cleaning.
5. Section 03 35 00 - Concrete Finishing and Repair of Surface Defects.
6. Section 09 01 92 - Architectural Coatings.
7. Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC).
8. Division 26 - Electrical.
9. Division 40 - Process Interconnections.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
 - a. D3359, Standard Test Methods for Measuring Adhesion by Tape Test.
 - b. D4258, Standard Practice for Surface Cleaning Concrete for Coating.
 - c. D4259, Standard Practice for Abrading Concrete.
 - d. D4261, Standard Practice for Surface Cleaning Concrete Unit Masonry for Coating.
 - e. D4262, Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
 - f. D4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
 - g. D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
 - h. D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
 - i. D6677, Standard Test Method for Evaluating Adhesion by Knife.
 - j. D7091, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.
 - k. F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - l. F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
2. International Concrete Repair Institute (ICRI):
 - a. 310.2, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair
3. National Association of Pipe Fabricators (NAPF):

DIVISION 09

FINISHES

- (2) Dry exposure: Polyurethane.
6. Interior concrete slab formed or saw-cut control joints: Polyurea joint filler.

END OF SECTION

3.4 FIELD QUALITY CONTROL

A. Adhesion Testing:

1. Perform adhesion tests in accordance with ASTM C1521 per the following criteria:
 - a. Water bearing structures: One (1) test per every 1000 LF of joint sealed.
 - b. Exterior precast concrete wall panels: One (1) test per every 2000 LF of joint sealed.
 - c. Chemical containment areas: One (1) test per every 1000 LF of joint sealed.
 - d. Building expansion joints: One (1) test per every 500 LF of joint sealed.
 - e. All other type of joints except butt glazing joints: One (1) test per every 3000 LF of joint sealed.
 - f. Manufacturer's authorized factory representative shall recommend, in writing, remedial measures for all failing tests.

3.5 SCHEDULE

A. Furnish sealant as indicated for the following areas:

1. Exterior areas:
 - a. Above grade: Polyether.
 - b. Below grade: Polyurethane.
2. Interior areas:
 - a. Noncorrosive areas:
 - 1) Wet exposure: Polyether.
 - a) Toilet rooms, locker rooms, janitor closets or similar areas: Mildew resistant silicone.
 - 2) Dry exposure: Polyether, unless noted otherwise.
 - b. Corrosive areas:
 - 1) Wet exposure: Polysulfide.
 - 2) Dry exposure: Polyurethane.
 - c. Fire-rated construction: See Specification Section 07 84 00.
 - d. Sealant exposed to or having the potential of being exposed to concentrated chlorine gas or chlorine liquid: Polysulfide.
 - e. Casework, countertops and solid surface materials: Silicone.
 - 1) Sinks, fixtures or other areas subject to potential splash, spillage or condensation: Mildew Resistant Silicone.
3. Immersion:
 - a. Prolonged contact with or immersion in:
 - 1) Nonpotable water, wastewater or sewage: Polysulfide.
4. Compressible sealant: Where indicated.
5. Exterior wall penetrations: Expanding urethane foam, with finish sealant.
 - a. Finish sealant:
 - 1) Exterior side:
 - a) Above grade: Polyether.
 - b) Below grade: Polyurethane.
 - 2) Interior side:
 - a) Noncorrosive area:
 - (1) Wet exposure: Polyether.
 - (2) Dry exposure: Polyether, unless noted otherwise.
 - b) Corrosive area:
 - (1) Wet exposure: Polysulfide.

- E. Make depth of sealing compounds, except expanding foam and polyurea sealant, not more than one-half width of joint, but in no case less than 1/4 IN nor more than 1/2 IN unless recommended otherwise by the manufacturer.
- F. Provide correctly sized backer rod, compressible filler or compressible sealant in all joints to depth recommended by manufacturer:
 - 1. Take care to not puncture backer rod and compressible filler.
 - 2. Provide joint backer rod as recommended by the manufacturer for polyurea joint filler.
- G. Apply bond breaker where required.
- H. Tool sealants using sufficient pressure to fill all voids.
- I. Upon completion, leave sealant with smooth, even, neat finish.
- J. Where piping, conduit, ductwork, etc., penetrate wall, seal each side of wall opening.
- K. Install compressible sealant to position at indicated depth.
 - 1. Size so that width of material is twice joint width.
 - 2. Take care to avoid contamination of sides of joint.
 - 3. Protect side walls of joint (to depth of finish sealant).
 - 4. Install with adhesive faces in contact with joint sides.
 - 5. Install finish sealant where indicated.
- L. Install expanding foam sealant to minimum 4 IN depth or thickness of wall being penetrated if less than 4 IN or as indicated on Drawings.
 - 1. Provide adequate fire rated backing material as required.
 - 2. Hold material back from exposed face of wall as necessary to allow for installation of backer rod and finish sealant.
 - a. Allow expanding foam sealant to completely cure prior to installing backer rod and finish sealant.
 - 3. Trim off excess material flush with surface of the wall if not providing finished sealant.
 - 4. Prior to using expanding foam sealant in openings occurring in the veneer wythe of cavity wall construction, install backer rod to a depth that will provide sufficient foam sealant depth, per the manufacturer, and will also prevent the foam from expanding into and filling the cavity.

3.3 SEALANT WORK

- A. General:
 - 1. Work includes but is not limited to: Sealing all joints which will permit penetration of dust, air, or moisture.
 - 2. Refer to SCHEDULE for materials to be used.
- B. Penetrations of walls, floors and decks.
- C. Other joints where sealant, expanding foam sealant or compressible sealant is indicated.

H. Polyurethane Sealant:

1. One (1) or two (2) components.
2. Paintable.
3. Meet ASTM C920 Type S or Type M, Grade NS or P, Class 25, Use NT, T, M, A and O.
 - a. Pecora Dynatrol-IXL, Dynatrol II, Urexpan NR-200, NR-201.
 - b. Sika Chemical Corporation Sikaflex-1a, Sikaflex-2C NS/SL.
 - c. BASF MasterSeal NP-1, NP-II, SL-1 SL-2.
 - d. Tremco Dymonic or Dymeric, Vulkem 116,227,45,245.

I. Silicone Sealant:

1. One (1) component.
2. Meet ASTM C920, Type S, Grade NS, Class 25, Use NT, G, A, O.
 - a. ChemLink: DuraSil.
 - b. General Electric: Silpruf, Silglaze II.
 - c. General Electric: Sanitary 1700 sealant for sealing around plumbing fixtures.
 - d. Dow Corning: 786 for sealing around plumbing fixtures.
 - e. Dow Corning: 7565, 790, 791, 795.
 - f. Tremco: Spectrem 1, Spectrem 3, Tremsil 600.
3. Mildew resistant for sealing around plumbing fixtures.

PART 3 EXECUTION

3.1 PREPARATION

- A. Before use of any sealant, investigate its compatibility with joint surfaces, fillers and other materials in joint system.
- B. Use only compatible materials.
- C. Where required by manufacturer, prime joint surfaces.
 1. Limit application to surfaces to receive sealant.
 2. Mask off adjacent surfaces.
- D. Provide joint depth for joints receiving polyurea joint filler in accordance with manufacturer's recommendations.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions and UL requirements.
- B. Clean all joints.
- C. Make all joints water and airtight.
- D. At changes in direction of joints, joint intersections and where sealant joints interface with other construction, install continuous sealant as necessary to ensure a weather-tight seal.

- a. Closed cell polyethylene, polyethylene jacketed polyurethane foam, or other flexible, nonabsorbent, non-bituminous material recommended by sealant manufacturer to:
 - 1) Control joint depth.
 - 2) Break bond of sealant at bottom of joint.
 - 3) Provide proper shape of sealant bead.
 - 4) Serve as expansion joint filler.
- B. Compressible Sealant:
 1. Foamed polyurethane strip saturated with polymerized polybutylene waterproofing coated on front face with nonreactive release agent that will act as bond breaker for applied sealant.
 - a. Polytite Manufacturing Corp. "Polytite-B."
 2. Fire rated where required.
 3. Adhesive: As recommended by sealant manufacturer.
- C. Expanding Foam Sealant:
 1. One (1) or two (2) component fire rated moisture cured expanding urethane.
 2. Shall not contain formaldehyde.
 3. Density: Minimum 1.5 pcf.
 4. Closed cell content: Minimum 70 percent.
 5. R-value: Minimum 5.0/IN.
 6. Flame spread: Less than 25.
 7. Smoke developed: Less than 25.
- D. Fire-Resistant Sealant: See Specification Section 07 84 00.
- E. Polyether Sealant:
 1. Silyl-terminated polyether polymer.
 2. ASTM C920, Type S, Grade NS, Class 50, Use NT, M, A, and O.
 - a. BASF MasterSeal 150.
 - b. ChemLink DuraLink.
 - c. Tremco Dymonic FC
- F. Polysulfide Rubber Sealant:
 1. One (1) or two (2) component.
 2. Meet ASTM C920.
 - a. Pecora Synthacalk GC2+.
 - b. PolySpec THIOKOL 2235.
- G. Polyurea Joint Filler:
 1. Two (2) component, semi-rigid material for filling formed or saw-cut control joints in interior concrete slabs.
 - a. Dayton Superior Specialty Chemical Corp. "Joint Fill, Joint Seal, Joint Saver II" as required for condition and recommended by manufacturer.
 - b. Euclid Chemical Co. "EUCO QWIK" joint.
 - c. L&M Construction Chemicals, Inc. "Joint Tite 750".
 - d. BASF MasterSeal "CRI00" control joint filler.
 2. Comply with ACI 302.1R performance recommendations regarding control and construction joints.
 3. Color: Gray.

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Compressible sealant:
 - a. Polytite Manufacturing Corporation.
 - b. Emseal.
 - c. Norton.
 - d. Sandell.
2. Expanding foam sealant:
 - a. Macklanburg Duncan.
 - b. Convenience Products.
 - c. FAI International, Inc.
3. Fire-resistant sealant: See Specification Section 07 84 00.
4. Polyether sealants:
 - a. BASF.
 - b. ChemLink, Inc.
 - c. Tremco.
5. Polysulfide rubber sealant:
 - a. Pecora.
 - b. BASF.
 - c. PolySpec.
6. Polyurea joint filler:
 - a. Dayton Superior Specialty Chemical Corporation.
 - b. Euclid Chemical Co.
 - c. L&M Construction Chemicals, Inc.
 - d. BASF.
7. Polyurethane sealants:
 - a. Pecora.
 - b. Sika Chemical Corp.
 - c. BASF.
 - d. Tremco.
8. Silicone sealants:
 - a. ChemLink.
 - b. GE Construction Sealants.
 - c. Dow Corning.
 - d. Tremco.
9. Backer rod, compressible filler, primer, joint cleaners, bond breaker: As recommended by sealant manufacturer.

B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 MATERIALS

A. Sealants - General:

1. Provide colors matching materials being sealed.
2. Where compound is not exposed to view in finished work, provide manufacturer's color which has best performance.
3. Nonsagging sealant for vertical and overhead horizontal joints.
4. Sealants for horizontal joints: Self-leveling pedestrian/traffic grade.
5. Joint cleaner, primer, bond breaker: As recommended by sealant manufacturer.
6. Sealant backer rod and/or compressible filler:

- C. Finish sealant: Sealant material per this specification applied over face of compressible sealant or expanding foam sealant specified, to provide a finished, colored sealant joint.
- D. Installer or Applicator:
 - 1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
 - 2. Installer and applicator are synonymous.
- E. "Interior wet areas":
 - 1. Process areas.
 - 2. Equipment rooms, pump rooms and similar areas.
- F. "Seal," "sealing" and "sealant": Joint sealant work.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 - 2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
 - c. Manufacturer's recommendations for joint cleaner, primer, backer rod, tooling and bond breaker.
 - 3. Certification from sealant manufacturer stating product being used is recommended for and is best suited for joint in which it is being applied.
 - 4. Certification of applicator qualification.
- B. Test Results:
 - 1. Provide adhesion test results for each sealant sample including adhesion results compared to adhesion requirements.
 - 2. Manufacturer's authorized factory representative recommended remedial measures for all failing tests.
- C. Samples:
 - 1. Cured sample of each color for Engineer's color selection.
 - 2. Color chart not acceptable.
- D. Informational Submittals:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver material in manufacturer's original unopened containers with labels intact; Labels shall indicate contents and expiration date on material.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sealing all joints that will permit penetration of dust, air or moisture.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. Section 07 84 00 - Firestopping.
 - 4. Section 09 96 00 - High Performance Industrial Coatings.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Concrete Institute (ACI):
 - a. 302.1R, Guide for Concrete Floor and Slab Construction.
 - 2. ASTM International (ASTM):
 - a. C834, Standard Specification for Latex Sealants.
 - b. C920, Standard Specification for Elastomeric Joint Sealants.
 - c. C1521, Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
 - 3. Underwriters Laboratories, Inc. (UL).
- B. Qualifications: Sealant applicator shall have minimum five (5) years experience using products specified on projects with similar scope.
- C. Mock-Ups:
 - 1. Before sealant work is started, a mock-up of each type of joint shall be sealed where directed by the Engineer.
 - a. The approved mock-ups shall show the workmanship, bond, and color of sealant materials as specified or selected for the work and shall be the minimum standard of quality on the entire project.
 - b. Each sample shall cure for a minimum of seven (7) days at which time the sealant manufacturer's authorized factory representative shall perform adhesion tests on each sample joint.
 - 1) Perform adhesion tests per ASTM C1521.
 - 2) If mock-up is not acceptable or if adhesion test fails, provide additional mock-up and adhesion testing as required until acceptable to Engineer.

1.3 DEFINITIONS

- A. Corrosive Areas Include:
 - 1. For purposes of this Specification Section, corrosive environments include:
 - a. Chlorination Room, All Buildings
- B. Defect(ive): Failure of watertightness or airtightness.

DIVISION 07

THERMAL AND MOISTURE PROTECTION

- H. Remove concrete elements and structures to limits indicated on plans.
- I. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- J. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- K. Remove temporary work, signage, and barriers after completion.
- L. Provide for visual inspection of bearing surfaces.
- M. Do not burn or bury materials on-Site. Leave Site in clean condition.

END OF SECTION 02 41 19

- C. Cease operations immediately when hazardous or contaminated materials are discovered and notify Engineer.

PART 2 - EXECUTION

2.1 PREPARATION

- A. Notify affected utility companies before starting work and comply with their requirements.
- B. Mark location and termination of utilities.
- C. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, Owner, and existing improvements indicated to remain.
- D. Erect and maintain weatherproof closures for exterior openings.
- E. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy.
- F. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.
- G. Provide appropriate temporary signage including signage for exit or building egress.
- H. Do not close or obstruct building egress path.
- I. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

2.2 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent building areas.
- B. Maintain protected egress from and access to adjacent existing buildings at all times.
- C. Do not close or obstruct roadways and sidewalks without permits.
- D. Cease operations immediately when structure appears to be in danger and notify Engineer.
- E. Disconnect and remove utilities within demolition areas.
- F. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.
- G. Demolish in an orderly and careful manner. Protect existing improvements, supporting structural members.

1.4 QUALITY ASSURANCE

- A. Conform to applicable code for demolition work, dust control, products requiring electrical disconnection.
- B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.
- C. Obtain required permits from authorities having jurisdiction.
- D. Perform Work in accordance with all applicable governing agencies.

1.5 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.6 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.
- B. Owner will conduct salvage operations before demolition begins to remove materials Owner chooses to retain.

1.7 SCHEDULING

- A. Section 01 30 00 - Administrative Requirements and 01 32 16 - Construction Progress Schedule: Requirements for scheduling.
- B. Schedule Work to coincide with new construction.
- C. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation and in adjoining spaces.
- D. All work shall be limited between the hours of 7:00 a.m. and 5:00 p.m. Monday through Saturday. Additional restrictions may be placed by other governing jurisdictional agencies. The contractor will be responsible for abiding by all additional restrictions placed by these agencies.

1.8 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent building areas.
- B. Cease operations immediately if structure appears to be in danger and notify Engineer. Do not resume operations until directed.

SECTION 02 41 19 - SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolishing designated building equipment and fixtures.
2. Demolishing designated construction.
3. Cutting and alterations for completion of the Work.
4. Protecting items designated to remain.
5. Removing demolished materials.

B. Related Sections:

1. Section 01 10 00 – Summary
2. Section 01 30 00 – Administrative Requirements
3. Section 01 32 16 – Construction Progress Schedule
4. Section 01 33 00 – Submittal Procedures
5. Section 01 70 00 – Execution and Closeout Requirements

1.2 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services.

C. Shop Drawings:

1. Indicate demolition and removal sequence.
2. Indicate location and construction of temporary work.

1.3 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition, subsurface obstructions, and other unexpected items.

C. Operation and Maintenance Data: Submit description of system, inspection data, and parts lists.

DIVISION 02
EXISTING CONDITIONS

This Page Intentionally Left Blank

**SCHEDULE B. OPENINGS AND PENETRATIONS SCHEDULE
FOR EXISTING CONSTRUCTION**

APPLICATIONS	DUCTS		PIPING		CONDUIT	
	OPENING TYPE	SEAL CATEGORY	OPENING TYPE	SEAL CATEGORY	OPENING TYPE	SEAL CATEGORY
Through floors with one side a corrosive location	B E	7 Not Req	B ⁽¹⁾ E ⁽³⁾ H ⁽²⁾	7 Not Req 7	B ⁽¹⁾ E ⁽³⁾ H ⁽²⁾	7 Not Req 7
Through floors on grade above water table	B	7	B	7	B	7
Through slab on grade below water table	E	Not Req	E	Not Req	E	Not Req
Through floors in washdown areas	G	3	G H ⁽²⁾	3 3	G H ⁽²⁾	3 3
Through walls where one side is a hazardous area	B E	7 Not Req	B ⁽¹⁾ B ⁽³⁾ E H ⁽²⁾	7 1 Not Req 7	B ⁽¹⁾⁽³⁾ E H ⁽²⁾	7 Not Req 7
Through exterior wall below grade above water table	B	7	B ⁽¹⁾ B ⁽³⁾ H ⁽²⁾	7 1 7	B ⁽¹⁾⁽³⁾ H ⁽²⁾	7 7
Through wall from tankage or wet well (above high water level) to dry well or dry area	B E	7 Not Req	B E H ⁽²⁾	1 Not Req 1	B ⁽¹⁾⁽³⁾ E H ⁽²⁾	7 Not Req 7
Through wall from tankage or wet well (below high water level) to dry well or dry area	E	Not Req	E	Not Req	E	Not Req
Through exterior wall above grade	G	6	G ⁽¹⁾⁽³⁾ H ⁽²⁾	5 5	G ⁽¹⁾⁽³⁾ H ⁽²⁾	5 7
Roof penetrations	G	2	G ⁽¹⁾⁽³⁾ H ⁽²⁾	2	G	2
Through interior walls and slabs not covered by the above applications	G	4	G ⁽¹⁾⁽³⁾ H ⁽²⁾	4 4	G ⁽¹⁾⁽³⁾ H ⁽²⁾	4 4

⁽¹⁾ Multiple piping 3 IN and smaller or multiple conduits.

⁽²⁾ Single pipe 3 IN and smaller or single conduit.

⁽³⁾ Single pipe or conduit larger than 3 IN.

END OF SECTION 01 73 20

2. Provide seals of material and method described as follows.
 - a. Category 1 - Modular Mechanical Seal.
 - b. Category 2 - Roof curb and flashing according to SMACNA specifications unless otherwise noted on Drawings. Refer to Specification Section 07 62 00 and roofing Specification Sections for additional requirements.
 - c. Category 3 - 12 GA sheet metal drip sleeve set in bed of silicon sealant with backing rod and sealant used in sleeve annulus.
 - d. Category 4 - Backer rod and sealant.
 - e. Category 5 - Full depth compressible sealant with escutcheons on both sides of opening.
 - f. Category 6 - Full depth compressible sealant and flanges on both sides of opening. Flanges constructed of same material as duct, fastened to duct and minimum 1/2 IN larger than opening.
 - g. Category 7 - Full depth compressible sealant and finish sealant or full depth expanding foam sealant depending on application.
3. Furnish openings and sealing materials through new floors, roofs, grating, partitions and walls in accordance with Schedule A, Openings and Penetrations for New Construction.
4. Furnish openings and sealing materials through existing floors, grating, roofs, partitions and walls in accordance with Schedule B, Openings and Penetrations for Existing Construction.

2. If blockout size is not sufficient to allow placement of dowels, provide keyway along all sides of blockout.
 - a. Size blockout based on sleeve size required plus 2 to 4 IN each side of sleeve for concrete encasement.
- T. For interior wall applications where backer rod and sealant are specified, provide backer rod and sealant at each side of wall.
- U. Refer to Drawings for location of fire-rated walls, floors, and ceilings.
 1. Utilize firestopping materials and procedures specified in Specification Section 07 84 13 and 07 84 43 in conjunction with scheduled opening type to produce the required fire rating.
- V. Use full depth expanding foam sealant for seal applications where single or multiple pipes, conduits, etc., pass through a single sleeve.
- W. Do not make duct or conduit penetrations below high water levels when entering or leaving tankage, wet wells, or other water holding structures.
- X. Modular Mechanical Seals:
 1. Utilize one (1) seal for concrete thickness less than 8 IN and two (2) seals for concrete, 8 IN thick or greater.
 2. Utilize two (2) seals for piping 16 IN diameter and larger if concrete thickness permits.
 3. Install seals such that bolt heads are located on the most accessible side of the penetration.
- Y. Backer Rod and Sealant:
 1. Install in accordance with Specification Section 07 92 00.
 2. Provide backer rod and sealant for modular mechanical seal applications.
 - a. Apply on top side of slab penetrations and on interior, dry side wall penetrations.

3.3 SCHEDULES

- A. General Schedule of Penetrations through Floors, Roofs, Foundation Base Slabs, Foundation Walls, Foundation Footings, Partitions and Walls for Ductwork, Piping, and Conduit:
 1. Provide the following opening and penetration types:
 - a. Type A - Block out 2 IN larger than outside dimensions of duct, pipe, or conduits.
 - b. Type B - Saw cut or line-drill opening. Place new concrete with integrally cast sheet metal or pipe sleeve.
 - c. Type C - Fabricated sheet metal sleeve or pipe sleeve cast-in-place. Provide pipe sleeve with water ring for wet and/or washdown areas.
 - d. Type D - Commercial type casting or fabrication.
 - e. Type E - Saw cut or line-drill opening. Place new concrete with integrally cast pipe, duct or conduit spools.
 - f. Type F - Integrally cast pipe, duct or conduit.
 - g. Type G - Saw cut or line-drill and remove area 1 IN larger than outside dimensions of duct, pipe or conduit.
 - h. Type H - Core drill.
 - i. Type I - Block out area. At later date, place new concrete with integrally cast sheet metal or pipe sleeve.
 - j. Type J- Grating Banding for any field cut openings

- K. Where pipes, conduits or ducts pass through grating, provide banding at the entire perimeter of the opening.
 - 1. Metal grating: See Specification Section 05 50 00.
 - 2. FRP grating: See Specification Section 06 82 00.
- L. Where pipes, conduits or ducts are removed where passing through grating:
 - 1. Metal grating:
 - a. Provide banding at perimeter and cover opening with 1/4 IN plate of the same material of the grating.
 - b. See Specification Section 05 50 00.
 - 2. FRP grating:
 - a. Provide full depth cover meeting same loading requirement as existing material or replace grating section.
 - b. See Specification Section 06 82 00.
- M. Do not cut into or core drill any beams, joists, or columns.
- N. Do not install sleeves in beams, joists, or columns.
- O. Do not install recesses in beams, joists, columns, or slabs.
- P. Field Cutting and Coring:
 - 1. Saw or core drill with non-impact type equipment.
 - 2. Mark opening and drill small 3/4 IN or less holes through structure following opening outline.
 - 3. Sawcut opening outline on both surfaces.
 - a. Knock out within sawcuts using impact type equipment.
 - b. Do not chip or spall face of surface to remain intact.
 - c. Do not allow any overcut with saw kerf.
- Q. Precast-Prestressed Concrete Construction:
 - 1. Do not cut openings or core drill vertically or horizontally through stems of members.
 - 2. Do not locate or install sleeves or recess sleeves vertically or horizontally through or in stems of members.
 - 3. Cast openings and sleeves into flanges of units.
 - 4. Cast openings larger than 6 IN in diameter or 6 IN maximum dimension in units at time of manufacture.
 - 5. Cast openings smaller than 6 IN in diameter or 6 IN maximum dimensions in flanges of units at time of manufacture or field cut.
- R. Where alterations are necessary or where new and old work join, restore adjacent surfaces to their condition existing prior to start of work.
- S. Where area is blocked out to receive sheet metal sleeve at later date:
 - 1. If blockout size is sufficient to allow placement, utilize dowels for interface of initially placed concrete and sleeve encasement concrete which is placed later.
 - a. Size blockout based on sleeve size required plus 4 to 6 IN each side of sleeve for concrete encasement.
 - b. Provide #4 dowels at 12 IN spacing along each side of blockout with minimum of two (2) dowels required per side.

PART 3 EXECUTION

3.1 FABRICATION

- A. Fabricate pipe sleeves in accordance with Specification Section 05 50 00.
- B. Provide waterstop plate/anchor flange for piping, ducts, castings and sleeves cast-in-place in concrete.
 - 1. For fabricated units, weld plate to sleeve, pipe, or ductwork.
 - 2. For commercial castings, cast water stop/anchor with wall pipe.
 - 3. Plate is to be same thickness as sleeve, pipe, casting or ductwork.
 - 4. For fabricated units, diameter of plate or flange to be 4 IN larger than outside diameter of sleeve, pipe or ductwork.
 - 5. For commercial castings, waterstop/anchor size to be manufacturer standard.
 - 6. Provide continuous around entire circumference of sleeve, pipe, or ductwork.
- C. Factory or shop-coat painted components in accordance with Specification Section 09 96 00.

3.2 INSTALLATION AND APPLICATION

- A. Firestopping materials used in fire-resistance rated construction shall be in full compliance with Specification Section 07 84 13 and 07 84 43.
- B. Seal openings and penetrations in non-fire-resistance-rated construction in accordance with Specification Section 07 92 00.
- C. Obtain prior approval from Engineer when any opening larger than 100 SQ IN must be made in existing or newly completed construction.
- D. Perform HVAC penetrations in accordance with NFPA 90A.
- E. Perform electrical penetrations in accordance with NFPA 70, Article 501.
- F. Install sleeves and castings in accordance with ACI 318, Chapter #6.
- G. When mechanical or electrical work cannot be installed as structure is being erected, provide and arrange for building-in of boxes, sleeves, insets, fixtures or devices necessary to permit installation later.
 - 1. Lay out chases, holes or other openings which must be provided in masonry, concrete or other work.
- H. Where pipes, conduits or ducts pass through floors in washdown areas, install sleeves with top 3 IN above finish floors.
 - 1. In non-washdown areas, install sleeves with ends flush with finished surfaces.
- I. Size sleeves, blockouts and cutouts which will receive sealant seal such that free area to receive sealant is minimized and seal integrity may be obtained.
- J. For insulated piping and ducts, size sleeves, blockouts and cutouts large enough to accommodate full thickness of insulation.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. For each structure provide dimensioned or scaled (minimum 1/8 IN = 1 FT) plan view drawings containing the following information:
 - a. Vertical and horizontal location of all required openings and penetrations.
 - b. Size of all openings and penetrations.
 - c. Opening type.
 - d. Seal type.
3. Manufacturer's installation instructions for standard manufactured products.

1.5 PROJECT CONDITIONS

- A. For purposes of this Project, water table level is elevation 726.00.

PART 2 PRODUCTS

2.1 MATERIALS

A. Pipe Sleeves:

1. Areas listed as Corrosive Areas in PART 1:
 - a. Stainless steel, Type 316L.
 - b. Penetrations 24 IN DIA or less: ASTM A269, ASTM A312 or ASTM A554, Schedule 40.
 - c. Penetrations larger than 24 IN DIA: Stainless steel, ASTM A666, Minimum 1/4 IN thickness.
2. All other Areas:
 - a. Steel, Hot-dipped galvanized after fabrication.
 - b. Penetrations 24 IN DIA or less: ASTM A53, Schedule 40.
 - c. Penetrations larger than 24 IN DIA: ASTM A36, Minimum 1/4 IN thickness.

- B. Backing Rod and Sealant: See Specification Section 07 92 00.

C. Modular Mechanical Seals:

1. Acceptable manufacturers:
 - a. Link-Seal.
2. 316 Stainless steel bolts, nuts and washers.

- D. Firestopping Material: See Specification Section 07 84 13 and 07 84 43.

E. Sheet Metal Sleeves:

1. Areas listed as Corrosive Areas in PART 1: Stainless steel: ASTM A240, Type 316L.
2. All other areas: Galvanized steel: ASTM A653, G90.
3. Minimum 12 GA.

F. Commercial Wall Castings:

1. Ductile iron, ASTM A536.
2. Grade equal to connecting piping system.

SECTION 01 73 20 - OPENINGS AND PENETRATIONS IN CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Methods of installing and sealing openings and penetrations in construction.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 01 - General Requirements.
 - 3. Section 07 92 00 - Joint Sealants.
 - 4. Section 09 96 00 - High Performance Industrial Coatings.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Concrete Institute (ACI):
 - a. 318, Building Code Requirements for Structural Concrete.
 - 2. ASTM International (ASTM):
 - a. A36, Standard Specification for Carbon Structural Steel.
 - b. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - c. A269, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - d. A312, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 - e. A351, Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.
 - f. A554, Standard Specification for Welded Stainless Steel Mechanical Tubing.
 - g. A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - h. A666, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - i. A995, Castings, Austenitic-Ferritic (Duplex) Stainless Steel, for Pressure-Containing Parts.
 - 3. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC):
 - 1) Article 501, Class I Locations.
 - b. 90A, Standard for Installation of Air Conditioning and Ventilating Systems.
 - c. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).

1.3 DEFINITIONS

- A. Corrosive Areas: For the purpose of this specification section, the following areas are defined as corrosive:
 - 1. Chlorination Room, All Buildings
- B. Washdown Areas: Areas having floor drains or hose bibs.

This Page Left Blank Intentionally

- B. All areas disturbed by the contractor shall be restored to their original condition and approved by the Engineer. Restoration is intended to restore areas both paved and unpaved included but not limited to areas disrupted during construction in addition to those areas indicated as paved, sodded, mulched, and paved.
- C. The Contractor will be responsible for any additional maintenance of the rehabilitated items until the item has been restored to its original condition as deemed by the Engineer.

3.7 FINAL CLEANING

- A. Execute final cleaning to the satisfaction of the Owner prior to final Project assessment.
 - 1. Employ experienced personnel or professional cleaning firm.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces.
- C. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and sanitary and storm drainage systems.
- F. Clean Site; sweep and wash paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION 01 70 00

- 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products according to requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. At penetrations of fire-rated walls, partitions, ceiling, or floor construction, completely seal voids with fire-rated material according to Section 07 84 13 – Penetration Firestopping and 07 84 43 – Joint Firestopping, to full thickness of penetrated element.
- J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- K. Identify hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

3.6 RESTORATION

- A. The Contractor shall take all necessary steps to prevent the damage or disruption of the use of existing improvements.

- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
 - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
 - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Engineer for final decision.
- E. Allow for expansion of materials and building movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
 - 1. Refer questionable mounting heights choices to Engineer for final decision.
 - 2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill 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 nonconforming Work.
 - 4. Remove samples of installed Work for testing.

- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

17. Start-up report, performance tests and warranties shall be incorporated into final operations and maintenance manual with appropriate sign offs.

18. Additional Requirements: As specified in individual product Specification Sections.

1.9 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.10 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include table of contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.
- H. Contractor shall provide the Owner with a 1-year warranty on all work, to commence upon final acceptance.

1.11 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in Specification Sections during construction.

7. Additional Requirements: As specified in individual product Specification Sections.

N. Manual for Equipment and Systems

1. Design data / basis of design
2. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
3. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; by label machine.
4. Include color-coded wiring diagrams as installed.
5. Include safety precautions to be taken when operating and maintaining or working around equipment.
6. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
7. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
8. Include servicing and lubrication schedule and list of lubricants required.
9. Include manufacturer's printed operation and maintenance instructions
10. Include sequence of operation by controls manufacturer.
11. Include shop drawings, original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
12. Include control diagrams by controls manufacturer as installed.
13. Include Contractor's Coordination Drawings with color-coded piping diagrams as installed.
14. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
15. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
16. Include test and balancing reports as specified in Section 01 40 00 - Quality Requirements.

equipment suppliers responsible for the installation of the work covered by the Operation and Maintenance Manual.

- G. Operation and Maintenance Manuals shall be submitted for each Specification Section. Specification Sections that are related to each other may be combined into one Operation and Maintenance Manual, with prior written approval from the Engineer. In the event multiple Specification Sections are combined into one Operation and Maintenance Manual, they shall be arranged by process flow, subdivided by Specification Section and each Specification Section shall have a directory as noted in 1.8.F above.
- H. Submit two (2) copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
- I. Manuals for materials and finishes: submit one (1) copy of completed volumes fifteen (15) days prior to substantial completion request. This copy will be reviewed and returned after substantial completion inspection, with Engineer comments. Revise content of document set as required prior to final submission.
- J. Manuals for equipment and systems: submit PDF or one (1) copy of completed volumes thirty (30) days prior to equipment start-up. This copy will be reviewed and returned with Engineer comments. Revise content of all document sets as required prior to final submission.
- K. Submit PDF and five (5) sets of revised and compiled final volumes within fifteen (15) days after substantial completion certificate has been issued.
- L. For equipment, or parts of equipment put into service during construction and operated by Owner, submit final documents within ten (10) days after acceptance
- M. Manual for Materials and Finishes:
 - 1. Design data.
 - 2. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.
 - 3. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - 4. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
 - 5. Include safety precautions to be taken when operating and maintaining or working around equipment.
 - 6. Performance tests and warranties shall be incorporated into final operations and maintenance manual with appropriate sign offs

1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates used.
 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 2. Include locations of concealed elements of the Work.
 3. Identify and locate existing buried or concealed items encountered during Project.
 4. Measured depths of foundations in relation to project datum.
 5. Measured horizontal and vertical locations of existing and installed underground utilities and appurtenances, referenced to permanent surface improvements.
 6. Measured locations of existing and installed internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 7. Field changes of dimension and detail.
 8. Details not on original Drawings.
- G. Submit marked-up paper copy documents and PDF electronic files of marked up documents to Engineer prior to claim for final Application for Payment.
1. Contractor is responsible for making sure that all work performed by subcontractors is recorded and provided to the Owner at the end of the project.
 2. Failure to provide accurate record drawings will result in the Contractor being back-charged for engineering services required to correct at the applicable billing rate of the person responsible for performing the work.
 3. Payment for time necessary to create record drawings will be charged directly to the Contractor.

1.8 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE MANUAL," title of Project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper. Prior to the table of contents, include a directory listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel prior to date of Substantial Completion.
- B. Demonstrate Project equipment and instruct in classroom environment and instructed by manufacturer's representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

1.6 TESTING, ADJUSTING, AND BALANCING

- A. Reports will be submitted by independent firm to Engineer indicating observations and results of tests and indicating compliance or noncompliance with requirements of Contract Documents.

1.7 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:

- c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Accounting statement for final changes to Contract Sum.
 - e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
 - f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.
 - g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.
 - h. Submittals that are required by governing or other authorities.
3. Perform final cleaning for Contractor-soiled areas according to this Section.
- D. Final Completion Inspection:
- 1. Within seven days after receipt of request for final inspection, Engineer and Owner will make inspection to determine whether Work or designated portion is complete.
 - 2. Should Engineer or Owner consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
 - c. Engineer and Owner will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer and Owner's inspection.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.
- B. Notify Engineer seven days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute startup under supervision of manufacturer's representative and Contractors' personnel according to manufacturer's instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.
- H. Submit a written report according to Section 01 33 00 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1. When Contractor considers Work to be substantially complete, submit to Engineer:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
 2. Within seven days after receipt of request for Substantial Completion, Engineer and Owner will make an inspection to determine whether Work or designated portion is substantially complete.
 3. Should Engineer or Owner determine that Work is not substantially complete:
 - a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
 - c. Engineer and Owner will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer and Owner's inspection.
 4. When Engineer and Owner find that Work is substantially complete, Engineer will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
 5. After Work is substantially complete, Contractor shall:
 - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
 - b. Complete Work listed for completion or correction within time period stipulated.
 6. Owner will occupy all portions of new and rehabilitated buildings and facilities as specified in Section 01 10 00 - Summary.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
 2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.
 - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

- C. Prior to beginning Work, verify and establish floor elevations of existing facilities to ensure that new Work will meet existing elevations in smooth and level alignment except where specifically detailed or indicated otherwise.
- D. Verify setbacks and easements; confirm Drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.
- F. Submit copy of Site drawing certifying elevations and locations of the Work are in conformance with Contract Documents.
- G. Maintain complete and accurate log of control and survey Work as Work progresses.
- H. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.
- I. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- J. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.3 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
 - 1. Submit maintenance manuals, Project record documents, and other similar final record data in compliance with this Section.
 - 2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
 - 3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
 - 4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
 - 5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
 - 6. Make final change-over of locks eliminating construction master-key system and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
 - 7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
 - 8. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Field engineering.
- B. Closeout procedures.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Testing, adjusting, and balancing.
- F. Project record documents.
- G. Operation and maintenance data.
- H. Spare parts and maintenance products.
- I. Product warranties and product bonds.
- J. Maintenance service.
- K. Examination.
- L. Preparation.
- M. Execution.
- N. Cutting and patching.
- O. Protecting installed construction.
- P. Restoration.
- Q. Final cleaning.

1.2 FIELD ENGINEERING

- A. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- B. Control datum for survey is established by Owner-provided survey and is indicated on Drawings.

- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.5 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products (finished painted, motorized, or items with electronics), in weathertight, climate-controlled enclosures in an environment suitable to product. If on site storage is not available, contractor shall be responsible for supplying offsite storage for these products.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Provide bonded 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 well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products; use 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.

1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 01 25 00 - Substitution Procedures.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 60 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.

1.2 DEFINITIONS

- A. Product: Manufactured material or equipment.

1.3 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.
- E. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- F. Furnish interchangeable components from same manufacturer for components being replaced.

1.4 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

- D. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- E. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
- F. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.
- G. Comply with the Stormwater Pollution Prevention Plan as shown in the contract documents.

1.27 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise from construction operations.

1.28 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of State of Illinois and all regulatory agencies having jurisdiction over the project.

1.29 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet below finished grade. Grade site as indicated
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 50 00

2. Construction: Framing and plywood sheet materials with closed joints and sealed edges at intersections with existing surfaces.
3. Paint surfaces exposed to view from Owner-occupied areas.

1.23 SECURITY

A. Security Program:

1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner's existing security system at Project mobilization.
3. Maintain program throughout construction period until Owner occupancy. Owner's acceptance precludes need for Contractor's security.

B. Entry Control:

1. Restrict entrance of persons and vehicles to Project Site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. Maintain log of workers and visitors and make available to Owner on request.
4. Owner will control entrance of persons and vehicles related to Owner's operations.

1.24 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

1.25 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.

1.26 EROSION AND SEDIMENT CONTROL

- A. Erosion control practices are to be constructed and maintained in accordance with the Illinois Urban Manual (latest edition) or as specified on the plans
- B. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- C. Minimize surface area of bare soil exposed at one time.

- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
 - 1. Provide one fire extinguisher at each stairway on each floor of buildings under construction and demolition.
 - 2. Provide minimum of one fire extinguisher in every construction trailer and storage shed.
 - 3. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

1.21 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access.
- C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
 - 1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
 - 2. Replace trees and plants damaged by construction operations.
- D. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.22 ENCLOSURES AND FENCING

- A. Construction: Commercial-grade chain-link fence.
- B. Provide 7-foot-high fence around construction Site; equip with vehicular and pedestrian gates with locks.
- C. Exterior Enclosures:
 - 1. Provide temporary weathertight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual Specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- D. Interior Enclosures:
 - 1. Provide temporary partitions and ceilings as indicated on Drawings to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

1. Before Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
 2. Avoid traffic loading beyond paving design capacity. Tracked vehicles are not allowed.
 3. Use of permanent parking structures is permitted.
- F. Maintenance:
1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original or specified condition.
- G. Removal, Repair:
1. Remove temporary materials and construction before Substantial Completion.
 2. Remove underground Work and compacted materials to depth of 2 feet; fill and grade Site as indicated.
 3. Repair existing facilities damaged by use, to original condition and/or specified condition.
- H. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.19 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Clean public roadways, site access roads and parking areas at the end of each week or as needed to maintain clean roadways.
- C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.
- D. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.
- E. Collect and remove waste materials, debris, and rubbish from Site periodically and dispose of off-Site.
- F. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.20 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within buildings and on owner's property. Coordinate designated smoking area with Owner, smoking area shall only be located where smoking is permitted. Provide approved ashtrays in designated smoking areas.

- C. "Fresh Oil" signs (W21-2) shall be used when prime is applied to pavement that is open to traffic. The signs are to remain until tracking of the prime ceases. The sign shall be erected a minimum of 500 feet preceding the start of the prime and on all side roads within the posted area. The "Fresh Oil" sign on the side of the road shall be posted a minimum of 200 feet from the mainline pavement.

1.16 BARRICADES

- A. Any drop off greater than three inches, but less than six inches within eight feet of the pavement edge shall be protected by Type I or II barricades equipped with mono-directional steady bum lights at 100 foot center to center spacing. If the drop off within eight feet of the pavement edge exceeds six inches, the barricades mentioned above shall be placed at 50 foot center-to-center spacing. Barricades that must be placed in excavated areas shall have leg extensions installed such that the top of the barricade is in compliance with the height requirements of Standard 702001.
- B. Check barricades shall be placed in work areas perpendicular to traffic every 100 feet, one per lane and per shoulder, to prevent motorists from using work areas as a traveled way. Two additional check barricades shall be placed in advance of each patch excavation or any other hazard in the work area, the first at the edge of the open traffic lane and the second centered in the closed lane. Check barricades shall be Type I or II and equipped with a flashing light.
- C. Vertical panels, drums or other delineating devices may be substituted for Type I or II barricades with the approval of the Engineer.

1.17 DIRECTION OF OPERATIONS

- A. Placement of all signs and barricades shall proceed in the direction of flow of traffic. Removal of all signs and barricades shall start at the end of the construction areas and proceed toward oncoming traffic unless otherwise directed by the Engineer.

1.18 PARKING

- A. Use of designated areas of existing on-site streets, parking lots and driveways used for construction traffic is permitted, provided they are cleaned at the end of each work day.
- B. Arrange for temporary gravel surface parking areas to accommodate construction personnel. Locate as approved by Engineer and Owner.
- C. When Site space is not adequate, provide additional off-Site parking. Off street parking shall be permitted at locations as shown on the plans and other locations as approved by the owner in writing.
- D. Do not allow heavy vehicles or construction equipment in parking areas.
- E. Permanent Pavements and Parking Facilities:

- P. The initial erection of a traffic control installation shall not include devices that are bent, scratched, faded, worn, dirty or otherwise present a shabby appearance. The Contractor is required to conduct routine inspections of the worksite at a frequency that will allow for the prompt replacement of any traffic control device that has become worn or damaged to the extent that it no longer conforms to the shape, dimensions, color and operational requirements of the MUTCD, and the Traffic Control Standards or will no longer present a neat appearance to motorists. A sufficient quantity of replacement devices, based on vulnerability to damage, shall be readily available to meet this requirement.
- Q. The Contractor shall be responsible for the proper location, installation, and arrangement of all traffic control devices. Special attention shall be given to advance warning signs during construction operations in order to keep lane assignment consistent with barricade placement at all times. The Contractor shall cover all traffic control devices that are inconsistent with detour or lane assignment patterns during the transition from one construction phase to another.
- R. The Contractor shall coordinate all traffic control work on this project with adjoining or overlapping projects, including barricade placement necessary to provide a uniform traffic detour patterns. When directed by the Engineer, the Contractor shall remove all traffic control devices which were furnished, installed maintained by him under this contract, and such devices shall remain the property of the Contractor. All traffic control devices shall remain in place until specific authorization for relocation or removal is received from the Engineer.
- S. The Contractor shall ensure all traffic control devices installed by him are operational 24 hours a day, including Sundays and holidays. The Contractor shall furnish the name of the individual in his direct employ who is to be responsible for the installation and maintenance of the traffic control for this project. If the actual installation and maintenance are to be accomplished by a Subcontractor, consent shall be requested at the time of the preconstruction meeting in accordance with IDOT Article 108.01. This shall not relieve the Contractor of the foregoing requirement for a responsible individual in its direct employ.

1.15 SIGNS

- A. Construction signs referring to daytime lane closures during working hours shall be removed or covered during non-working hours.
- B. Throughout the duration of this project, all existing traffic signs shall be maintained by the Contractor. All provisions of Article 107.25 of the Standard Specifications shall apply, except the third paragraph shall be revised to read: "The Contractor shall maintain, furnish and replace at his own expense, any traffic sign or post which has been damaged or lost by the Contractor or a third party."

1.14 VEHICULAR ACCESS

- A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.
- D. Provide unimpeded access for emergency vehicles. Maintain 20 foot-wide driveways with turning space between and around combustible materials.
- E. Provide and maintain access to fire hydrants and control valves free of obstructions.
- F. Provide and maintain access to driveways.
- G. Provide means of removing mud from vehicle wheels before entering streets.
- H. Designated existing on-site roads may be used for construction traffic provided they are cleaned at the end of each work day.
- I. Damage to any paved areas as a result of any project related activities shall be repaired by the Contractor at his expense, to the satisfaction of the Engineer.
- J. Tracked vehicles shall not be allowed on paved areas under any circumstances.
- K. Traffic Control and Protection shall be provided as called for in the plan, these Specifications, applicable Highway Standards, or as directed by the Owner or Engineer.
- L. Comply with the ordinances and requirements of the City of St. Charles, the Kane County Division of Transportation, the Illinois Department of Transportation and other local authorities having jurisdiction.
- M. The governing factor in the execution and staging of work for this project is to provide the motoring public with the safest possible travel conditions along the roadway through the construction zone. The Contractor shall arrange his operations to keep the closing of any lane of the roadway to a minimum.
- N. All Traffic Control devices used on this Project shall conform to the Plans, Special Provisions, Traffic Control Standards, Traffic Specifications and the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways." No modifications of these requirements will be allowed without prior written approval of the Engineer.
- O. Traffic Control devices include: signs and their supports, signals, pavement markings, barricades with sand bags, channelizing devices, warning lights, arrow boards, flaggers, or any other device used for the purpose of regulating, warning or guiding traffic through or around the construction zone.

I.13 TEMPORARY OWNER FACILITIES

- A. Security Program for Owner:
 - 1. Protect Work, existing premises and Owner's operations from theft, vandalism and unauthorized entry.
 - 2. Restrict entrance of persons and vehicles into Project site and existing facilities temporary Owner storage and maintenance areas.
 - 3. Allow entrance only to authorized persons with proper identification.
- B. Temporary Electricity for Owner
 - 1. Owner shall pay cost of energy used. Contractor to exercise measures to conserve energy.
 - 2. Complement existing power service capacity and characteristics as required.
 - 3. Provide power outlets for construction Owner operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
 - 4. Provide main service disconnect and over-current protection at convenient location
 - 5. Permanent convenience receptacles may be utilized during construction for low amperage, short duration applications such as power hand tools, etc.
- C. Temporary Lighting for Owner
 - 1. Provide and maintain lighting for construction Owner operations.
 - 2. Provide and maintain lighting to exterior staging and storage areas after dark for security purposes.
 - 3. Provide and maintain lighting to interior work areas after dark for security purposes.
 - 4. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
 - 5. Maintain lighting and provide routine repairs.
 - 6. Permanent building lighting may be utilized during construction.
- D. Temporary Heating and Cooling for Owner
 - 1. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction Owner operations.
 - 2. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
 - 3. Maintain minimum ambient temperature of 50° F and maximum ambient temperature of 80 DegF in areas where construction Owner operations is are in progress, unless indicated otherwise in product sections.
- E. Temporary Ventilation for Owner
 - 1. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors or gases.
 - 2. Utilize existing ventilation equipment if available. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction Owner operations. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

- C. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress unless indicated otherwise in individual product Sections.

1.8 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment if available. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.9 COMMUNICATION SERVICES

- A. Telephone Service: Provide, maintain, and pay for telephone service to field office and Engineer's field office at time of Project mobilization and until completion of Work.
- B. Internet Service: Provide, maintain, and pay for broadband Internet service to field office and Engineer's field office at time of Project mobilization. Provide desktop computer with Microsoft operating system and appropriate office function software, modem, and printer.

1.10 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations. Connect to existing water source. Provide separate metering and reimburse Owner for cost of water used.

1.11 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

1.12 FIELD OFFICES AND SHEDS

- A. Designated existing spaces may be used for field offices and for storage. Coordinate locations with Engineer and/or Owner prior to project mobilization
- B. Fire Extinguishers: Appropriate type fire extinguisher at each office and each storage area.
- C. Engineer's Field Office: An Engineer's Field Office will not be required.

- C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- D. Provide main service disconnect and over-current protection at convenient location.
- E. Permanent convenience receptacles may be utilized during construction for low amperage, short duration applications such as power hand tools, etc.
- F. Provide distribution equipment, wiring, and outlets for single-phase branch circuits for power and lighting.

1.5 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.
- B. Provide and maintain lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- E. Maintain lighting and provide routine repairs.
- F. Permanent building lighting may be utilized during construction.

1.6 TEMPORARY HEATING

- A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
- B. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress unless indicated otherwise in individual product Sections.

1.7 TEMPORARY COOLING

- A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.
- B. Prior to operation of permanent equipment for temporary cooling purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide

1.2 REFERENCES

A. ASTM International:

1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

B. Traffic Control and Protection

1. Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction
2. Illinois Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
3. Illinois Department of Transportation, Standard Specifications for Traffic Control Items and Other Highway Standards.
4. IDOT Section 701 – Work Zone Traffic Control.

1.3 TEMPORARY FACILITIES UNDER AGREEMENT

A. Temporary Provisions Provided by Contractor:

1. Temporary barriers, barricades, covered walkways, fencing, exterior closures, and interior closures.
2. Temporary field offices.
3. Cleaning during construction.
4. Access roads and approaches.
5. Temporary sanitary facilities.
6. Temporary heating and ventilating after enclosure.
7. Temporary electrical service and distribution system for power and lighting.
8. Temporary telephone and internet service.
9. Construction aids.
10. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
11. Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.
12. Temporary tree and plant protection.
13. Temporary provisions for protection of installed Work.

1.4 TEMPORARY ELECTRICITY

- A. Owner shall pay cost of energy used. Exercise measures to conserve energy. Contractor shall install temporary electric metering devices to meter power used during construction.
- B. Complement existing power service capacity and characteristics as required for construction operations.

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Temporary facilities under Agreement.
- B. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary cooling.
 - 5. Temporary ventilation.
 - 6. Communication services.
 - 7. Temporary water service.
 - 8. Temporary sanitary facilities.
- C. Construction Facilities:
 - 1. Temporary owner facilities.
 - 2. Vehicular access.
 - 3. Signs
 - 4. Barricades
 - 5. Direction of operations
 - 6. Public convenience and safety.
 - 7. Parking.
 - 8. Progress cleaning and waste removal.
 - 9. Project identification.
 - 10. Fire-prevention facilities.
- D. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Dust control.
 - 6. Erosion and sediment control.
 - 7. Noise control.
 - 8. Pest and rodent control.
 - 9. Pollution control.
- E. Removal of utilities, facilities, and controls.

This Page Left Blank Intentionally

SDI	Steel Deck Institute P.O. Box 9506 Canton, Ohio 44711
SDI	Steel Door Institute 712 Lakewood Center North 14600 Detroit Avenue Cleveland, Ohio 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Drive Chicago, Illinois 60601
SJI	Steel Joist Institute 1205 48th Avenue North Suite A Myrtle Beach, South Carolina 29577
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 8224 Old Court House Road Vienna, Virginia 22180
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, Pennsylvania 15213
SSRBC	Standard Specifications for Road and Bridge Construction Illinois Department of Transportation Latest Edition
TCA	Tile Council of America, Inc. Box 326 Princeton, New Jersey 08540
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, Illinois 60062

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 42 19

NEMA	National Electrical Manufacturers' Association 2101 'L' Street, N.W. Washington, DC 20037
NFPA	National Fire Protection Association Battery March Park Quincy, Massachusetts 02269
NFPA	National Forest Products Association 1619 Massachusetts Avenue, N.W. Washington, DC 20036
NSWMA	National Solid Wastes Management Association 1730 Rhode Island Ave., N.W. Washington, DC 20036
NTMA	National Terrazzo and Mosaic Association 3166 Des Plaines Avenue Des Plaines, Illinois 60018
NWMA	National Woodwork Manufacturers Association 205 W. Touhy Avenue Park Ridge, Illinois 60068
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, Illinois 60077
PCI	Prestressed Concrete Institute 201 North Wells Street Chicago, Illinois 60606
PS	Product Standard U. S. Department of Commerce Washington, DC 20203
RIS	Redwood Inspection Service One Lombard Street San Francisco, California 94111
RCSHSB	Red Cedar Shingle and Handsplit Shake Bureau 515 116th Avenue Bellevue, Washington 98004

GA	Gypsum Association 1603 Orrington Avenue Evanston, Illinois 60201
ICBO	International Conference of Building Officials 5360 S. Workman Mill Road Whittier, California 90601
IEEE	Institute of Electrical and Electronics Engineers 345 East 47th Street New York, New York 10017
IMIAC	International Masonry Industry All-Weather Council International Masonry Institute 815 15th Street, N.W. Washington, DC 20005
MBMA	Metal Building Manufacturer's Association 1230 Keith Building Cleveland, Ohio 44115
MFMA	Maple Flooring Manufacturers Association 60 River Drive Northbrook, Illinois 60062
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, Pennsylvania 19120
ML/SFA	Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, Illinois 60601
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, Illinois 60601
NCMA	National Concrete Masonry Association P.O. Box 781 Herndon, Virginia 22070
NEBB	National Environmental Balancing Bureau 8224 Old Courthouse Road Vienna, Virginia 22180

CDA	Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, New York 10174
CLFMI	Chain Link Fence Manufacturers Institute 1101 Connecticut Avenue, N.W. Washington, DC 20036
CISPI	Cast Iron Pipe Soil Institute
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, Illinois 60195
DHI	Door and Hardware Institute 7711 Old Springhouse Road McLean, Virginia 22102
EJCDC	Engineers' Joint Contract Documents Committee American Consulting Engineers Council 1015 15th Street, N.W. Washington, DC 20005
EJMA	Expansion Joint Manufacturers Association 25 North Broadway Tarrytown, New York 10591
FGMA	Flat Glass Marketing Association 3310 Harrison White Lakes Professional Building Topeka, Kansas 66611
FM	Factory Mutual System 1151 Boston-Providence Turnpike P.O. Box 688 Norwood, Massachusetts 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407

APA	American Plywood Association Box 11700 Tacoma, Washington 98411
ARI	Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, Virginia 22209
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, Georgia 30329
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, New York 10017
ASPA	American Sod Producers Association 4415 West Harrison Street Hillside, Illinois 60162
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, Pennsylvania 19103
AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, Virginia 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, Maryland 20014
AWS	American Welding Society 550 LeJeune Road, N.W. Michigana, Florida 33135
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, Colorado 80235
BIA	Brick Institute of America 11490 Commerce Park Drive Reston, Virginia 22091

AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Reford Station Detroit, Michigan 48219
ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, Illinois 60601
AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006
AI	Asphalt Institute Asphalt Institute Building College Park, Maryland 20740
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, Illinois 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
AITC	American Institute of Timber Construction 333 W. Hampden Avenue Englewood, Colorado 80110
AMCA	Air Movement and Control Association 30 West University Drive Arlington Heights, Illinois 60004
ANSI	American National Standards Institute 1430 Broadway, New York, New York 10018

SECTION 01 42 19 – REFERENCE STANDARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Quality assurance
2. Schedule of references

1.2 RELATED SECTIONS

- A. SECTION – 00 72 00 – Standard General Conditions: Reference Standards.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005

This Page Left Blank Intentionally

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION 01 40 00

- H. Agency Responsibilities:
1. See Section 01 40 01 – Special Inspections, Inspector Qualifications, and Reporting Requirements.
 2. Test Samples of mixes submitted by Contractor.
 3. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
 4. Perform indicated sampling and testing of products according to specified standards.
 5. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 6. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.
 7. Perform additional tests required by Engineer.
- I. Agency Reports: After each test, promptly submit two copies of report to authorities having jurisdiction and upload to Project Website. When requested by Engineer, provide interpretation of test results. Include the following:
1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and Specification Section.
 6. Location in Project.
 7. Type of inspection or test.
 8. Date of test.
 9. Results of tests.
 10. Conformance with Contract Documents.
- J. Limits on Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency or laboratory may not approve or accept any portion of the Work.
 3. Agency or laboratory may not assume duties of Contractor.
 4. Agency or laboratory has no authority to stop the Work.

1.7 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer fifteen (15) days in advance of required observations. Observer is subject to approval of the Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 01 33 00 - Submittal Procedures, "Manufacturer's Field Reports" Article.

- C. Accepted mockups shall be comparison standard for remaining Work.
- D. Where mockup has been accepted by Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Engineer.

1.6 TESTING AND INSPECTION SERVICES

- A. Contractor shall employ and pay for services of an independent testing agency or laboratory acceptable to Engineer to perform specified testing and special inspections.
 - 1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time specialist and responsible officer.
 - 2. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Engineer.
 - 1. Laboratory: Authorized to operate in State of Illinois.
 - 2. Laboratory Staff: Maintain full-time Professional Engineer or specialist on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer.
- D. Reports shall be submitted by independent firm to Engineer, Contractor, and authorities having jurisdiction, in duplicate, indicating observations and results of tests and compliance or noncompliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as noncompliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 24 hours before expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.
- F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

- H. Products, materials, and equipment may be subject to inspection by Engineer at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- I. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
- J. All manufactured items must be supplied new from the factory with verifiable production date codes. The use of surplus or reconditioned materials is not allowed unless noted otherwise.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.
- B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Mockup requirements.
- F. Testing and inspection services.
- G. Manufacturers' field services.
- H. Examination
- I. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturer's instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work using persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on Shop Drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion and/or disfigurement.

containing language other than that specified in Paragraph 1.3-A.2.a., will not be reviewed for technical content and will be returned without any action.

3. Transmittals returned with Action "A" or "B" are considered ready for fabrication and installation. If for any reason a transmittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.
4. Transmittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
 - a. The portion of the transmittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference). One copy or the one transparency of the "C" or "D" drawings will be marked up and returned to the Contractor. Correct and resubmit items so marked.
 - b. Items marked "A" or "B" will be fully distributed.
 - c. If a portion of the items or system proposed are acceptable, however, the major part of the individual drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action. This is at the sole discretion of the Engineer. In this case, some drawings may contain relatively few or no comments or the statement, "Resubmit to maintain a complete package." Distribution to the Owner and field will not be made (unless previously agreed to otherwise).
5. Failure to include any specific information specified under the submittal paragraphs of the specifications will result in the transmittal being returned to the Contractor with "C" or "D" Action.
6. Transmittals such as submittals which the Engineer considers as "Not Required," submittal information which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" Action in a prior transmittal, will be returned with Action "E. Engineer's Review Not Required."
7. Samples may be retained for comparison purposes. Remove samples when directed. Include in bid all costs of furnishing and removing samples.
8. Approved samples submitted or constructed, constitute criteria for judging completed work. Finished work or items not equal to samples will be rejected.
9. Excessive review time due to a failure by the Contractor, subcontractor, manufacturer and/or supplier to properly revise submittal(s) will be billed to the Contractor by the Engineer at a rate of one hundred dollars (\$100.00) per hour, minimum two hours.
 - a. Payment for excessive review time will be charged to the Contractor directly.
 - b. Excessive time is defined as more than two reviews of any shop drawing submitted.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 33 00

1.17 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

1.18 ENGINEER REVIEW

- A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.
- B. Informational submittals and other similar data are for Engineer's information and will be stamped for information purposes only and returned to acknowledge receipt.
- C. Submittals made by Contractor that are not required by Contract Documents will be stamped for information purposes only and returned to acknowledge receipt.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, or Contract Modification Request (CMR).
- E. Shop Drawings, Samples and Miscellaneous Submittals:
 - 1. Items within transmittals will be reviewed for overall design intent and will receive one of the following actions:
 - a. A – NO EXCEPTIONS NOTED.
 - b. B – EXCEPTIONS NOTED (BY ENGINEER).
 - c. C – REVISE AND RESUBMIT.
 - d. D – REJECTED.
 - e. E – ENGINEER'S REVIEW NOT REQUIRED.
 - 2. Transmittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp. Drawings not stamped by the Contractor or stamped with a stamp

- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.13 CERTIFICATES

- A. Informational Submittal: When specified in individual specification sections, Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.14 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing to Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.15 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit report in duplicate within fifteen (15) days of observation to Engineer for information.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.16 ERECTION DRAWINGS

- A. Informational Submittal: Submit Drawings for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Engineer for aesthetic, color, and finish selection.
 - 2. Submit Samples of finishes, textures, and patterns for Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one (1) Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.10 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 01 70 00 - Execution and Closeout Requirements.
- B. Permits: Within 15 days after date established in Notice to Proceed, submit a list of permits and licenses to be obtained, identifying the granting agency and the required date of permit submittal.
- C. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.
- D. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 DESIGN DATA

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

1.12 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.8 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
 1. Include signed and sealed calculations to support design.
 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Post electronic submittals as PDF electronic files to Project website.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.9 SAMPLES

- A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

- 5) Include legible scale details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout drawings, parts catalogs, rough-in diagrams, wiring diagrams, controls, weights and other pertinent data. Arrange data and performance information in format similar to that provided in Contract Documents. Provide, at minimum, the detail provided in the Contract Documents.
- 6) If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Comply with Section 01 32 16 - Construction Progress Schedule

1.5 PROPOSED PRODUCT LIST

- A. Within 10 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Post electronic submittals as PDF electronic files to Project website.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.7 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

1. Shop Drawings:
 - a. Scope of any letter of transmittal:
 - 1) Limited to one Specification Section.
 - 2) Do not submit under any Specification Section entitled (in part) "Basic Requirements".
 - b. Numbering letter of transmittal:
 - 1) Include as prefix the specification section number followed by "-xx" beginning with "01".
 - 2) If more than one submittal under any specification section, number transmittals consecutively.
 - c. Describing transmittal contents:
 - 1) Provide listing of each component or item in submittal capable of receiving an independent review action.
 - 2) Identify for each item:
 - a) Manufacturer and Manufacturer's drawing or data number.
 - b) Contract Document tag number(s).
 - c) Contract Drawing Section or detail number if appropriate.
 - d) Specification Article/Paragraph number if appropriate.
 - d. Resubmittals:
 - 1) Number with original root number and a suffix letter starting with "A" on a (new) duplicate transmittal form.
 - 2) Do not increase the scope of any prior transmittal.
 - 3) Account for all components of prior transmittal.
 - a) If items in prior transmittal received "A" or "B" Action code, list them and indicate "A" or "B" as appropriate. Do not include submittal information for items with prior "A" or "B" Action in transmittal.
 - b) Indicate "Outstanding-To Be Resubmitted At a Later Date" for any prior "C" or "D" Action item not included in resubmittal. Obtain Engineer's prior approval to exclude items.
 - e. For 8-1/2"x 11" size sheets, provide two (2) copies of each page for Engineer, plus the number required by the Contractor. The number of copies required by the Contractor will be defined at the Preconstruction Conference, but shall not exceed a total of six (6).
 - f. Provide clear space (4" SQ) for Engineer stamping of each component defined in 1.4-A.4.
 - g. Contractor shall not use red color for marks on transmittals. Duplicate all marks on all copies transmitted, and ensure marks are photocopy reproducible. Outline Contractor marks on reproducible transparencies with a rectangular box.
 - h. Transmittal contents:
 - 1) Coordinate and identify shop drawing contents so that all items can be easily verified by the Engineer.
 - 2) Identify equipment or material use, tag number, drawing detail reference, weight, and other project specific information.
 - 3) Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
 - 4) Submit items like equipment brochures, cuts of fixtures, product data sheets or catalog sheets on 8-1/2"x 11" pages. Indicate exact item or model and all options proposed.

- H. All transmittals must be from Contractor and bear his approval stamp. Transmittals will not be received from or returned to subcontractors.
 - 1. Shop drawing transmittal stamp shall read “(Contractor's Name) has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval as stipulated under General Conditions Paragraph 6.17D”. Transmittals will not be received from or returned to subcontractors.
- I. Provide legible submittal information defining specific equipment or materials utilized on the project. Generalized product information not clearly defining specific equipment or materials to be provided will be rejected.
 - 1. Original fax copies are acceptable providing all information is legible.
 - 2. Second generation fax copies are not acceptable.
- J. Calculations required in individual specification sections will be received for information purposes only and will be stamped and returned to acknowledge receipt.
- K. Submittal schedule:
 - 1. Schedule of shop drawings:
 - a. Submitted and approved within 20 days of receipt of Notice to Proceed.
 - b. Account for multiple transmittals under any specification section where partial submittals will be transmitted.
 - 2. Shop drawings:
 - a. Submittal and approval prior to 50 percent completion.
- L. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- M. Allow space on submittals for Contractor and Engineer review stamps.
- N. When revised for resubmission, identify changes made since previous submission.
- O. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- P. Submittals not requested will not be recognized nor processed, they will be stamped for information purposes only and returned to acknowledge receipt.
- Q. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.
- R. Miscellaneous Submittals:
 - 1. Transmit under Contractor's standard letter of transmittal or letterhead.
 - 2. Submit in triplicate or as specified in individual specification section.
 - 3. Transmit to Engineer's main office.
 - 4. Provide copy of letter of transmittal to Resident Project Representative.
 - a. Exception for concrete, soils compaction and pressure test reports.
 - 1) Transmit one copy to Resident Project Engineer.
 - 2) Transmit one copy to location and individual indicated above for other miscellaneous submittals.
- S. Preparation of Submittals

- B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.
- C. Shop Drawings:
 - 1. See General Conditions.
 - 2. Product data and samples are Shop Drawing information.
- D. Miscellaneous Submittals:
 - 1. Submittals other than Shop Drawings:
 - 2. Representative types of miscellaneous submittal items include but are not limited to:
 - 3. Construction schedule.
 - 4. Installed equipment and systems performance test reports.
 - 5. Manufacturer's installation certification letters.
 - 6. Instrumentation and control commissioning reports.
 - 7. Warranties.
 - 8. Service agreements.
 - 9. Construction photographs.
 - 10. Cost breakdown (Schedule of Values).

1.3 SUBMITTAL PROCEDURES

- A. The project will be using Submittal Exchange as the project management collaborative software tool for this project.
- B. The General Contractor is required to utilize Submittal Exchange for the duration of this project, including project closeout (i.e. Contract Duration + 90 days) and shall provide all project information via this program. This includes, but is not limited to contracts, applications for payment, change orders, requests for information, submittals, daily reports, closeout documentation etc.
- C. The General Contractor is required to purchase licenses to be utilized on the Submittal Exchange Hosted System from Submittal Exchange and maintain the licenses, software support, and hosting services through the duration of this project. These licenses will be assigned to all members of the project team and trades. At end of the project, these licenses shall be turned over to the owner for perpetual use. The licenses, support of the licenses, and hosting fees shall be included by the General Contractor in the General Conditions costs for this project.
- D. Transmit each submittal with Engineer accepted form.
- E. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- F. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- G. Post submittals as PDF electronic files to Project website. Coordinate submission of related items.

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Use of electronic CAD files of Project Drawings.
- G. Shop Drawings.
- H. Samples.
- I. Other submittals.
- J. Design data.
- K. Test reports.
- L. Certificates.
- M. Manufacturer's instructions.
- N. Manufacturer's field reports.
- O. Erection Drawings.
- P. Contractor review.
- Q. Engineer review.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

This Page Left Blank Intentionally

1.9 DISTRIBUTION

- A. Following joint review, distribute copies of updated schedules to Contractor's Project site file, to Subcontractors, suppliers, Engineer, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 32 16

1. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:
 - a. Subcontract Work.
 - b. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
 - c. Move-in and other preliminary activities.
 - d. Equipment and equipment system test and startup activities.
 - e. Project closeout and cleanup.
 - f. Work sequences, constraints, and milestones.
2. Listings identified by Specification Section number.
3. Identification of the following:
 - a. Horizontal time frame by year, month, and week.
 - b. Duration, early start, and completion for each activity and subactivity.
 - c. Critical activities and Project float.
 - d. Subschedules to further define critical portions of Work.

1.7 REVIEW AND EVALUATION

- A. Participate in joint review and evaluation of schedules with Engineer at each submittal.
- B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.
- C. After review, revise schedules incorporating results of review, and resubmit within 10 days.

1.8 UPDATING SCHEDULES

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Annotate and Update schedules to depict current status of Work.
- C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- D. Upon approval of a Change Order, include the change in the next schedule submittal.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit sorts as required to support recommended changes.
- G. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect including effects of changes on schedules of separate Contractors.

- B. Illustrate order and interdependence of activities and sequence of Work; how start of given activity depends on completion of preceding activities, and how completion of activity may restrain start of subsequent activities.
- C. Illustrate complete sequence of construction by activity, identifying Site Work or Work of separate buildings. Indicate dates for submittals and return of submittals; dates for procurement and delivery of products; and dates for installation and provision for testing. Include legend for symbols and abbreviations used.
- D. Mathematical Analysis: Tabulate each activity of detailed network diagrams using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 15-day intervals.
 - 4. Status of critical activities.
 - 5. Earliest start date.
 - 6. Earliest finish date.
 - 7. Actual start date.
 - 8. Actual finish date.
 - 9. Latest start date.
 - 10. Latest finish date.
 - 11. Total and free float; accrue float time to Owner and to Owner's benefit.
 - 12. Monetary value of activity, keyed to Schedule of Values.
 - 13. Percentage of activity completed.
 - 14. Responsibility.
- E. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, and of accepting revised completion dates, and of recomputing of scheduled dates and float.
- F. Required Sorts: List activities in sorts or groups:
 - 1. By preceding Work item or event number from lowest to highest.
 - 2. By longest float, then in order of early start.
 - 3. By responsibility in order of earliest possible start date.
 - 4. In order of latest allowable start dates.
 - 5. In order of latest allowable finish dates.
 - 6. Contractor's periodic payment request sorted by Specification Sections.
 - 7. List of basic input data-generating report.
 - 8. List of activities on critical path.
- G. Prepare subschedules for each stage of Work and Sequencing of Construction Plan identified in Section 01 10 00 - Summary.
- H. Coordinate contents with Schedule of Values in Section 01 33 00 - Submittal Procedures.

1.6 BAR CHART SCHEDULES

- A. Format: Bar chart Schedule, to include at least:

I. Schedule Updates:

1. Overall percent complete, projected and actual.
2. Completion progress by listed activity and sub-activity, to within seven calendar days prior to submittal.
3. Changes in Work scope and activities modified since submittal.
4. Delays in submittals or resubmittals, deliveries, or Work.
5. Adjusted or modified sequences of Work.
6. Other identifiable changes.
7. Revised projections of progress and completion.

J. Narrative Progress Report:

1. Submit with each monthly submission of Progress Schedule.
2. Summary of Work completed during the past period between reports.
3. Work planned during the next period.
4. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
5. Current and anticipated delaying factors and estimated impact on other activities and completion milestones.
6. Corrective action taken or proposed.

1.3 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel specializing in CPM scheduling with two years' minimum experience in scheduling construction work of complexity comparable to the Project, and having use of computer facilities capable of delivering detailed graphic printout within 48 hours of request.
- B. Contractor's Administrative Personnel: Two years' minimum experience in using and monitoring CPM schedules on comparable Projects.

1.4 FORMAT FOR NETWORK ANALYSIS SCHEDULE

- A. Listings: Reading from left to right, in ascending order for each activity. Identify each activity with applicable Specification Section number.
- B. Diagram Sheet Size: 11 inches high x 17 inches wide required.
- C. Scale and Spacing: To allow for notations and revisions.

1.5 NETWORK ANALYSIS SCHEDULES

- A. Prepare network analysis diagrams and supporting mathematical analyses using critical path method.

SECTION 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. Format for network analysis schedules.
- D. Network analysis schedules.
- E. Bar chart schedules.
- F. Review and evaluation.
- G. Updating schedules.
- H. Distribution.

1.2 SUBMITTALS

- A. Within 10 days after date of Owner-Contractor Agreement, submit proposed preliminary network diagram defining planned operations for first 60 days of Work, with general outline for remainder of Work.
- B. Participate in review of preliminary and complete network diagrams jointly with Engineer.
- C. Within 20 days after joint review of proposed preliminary network diagram, submit draft of proposed complete network diagram for review. Include written certification that mechanical and electrical Subcontractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete network analysis consisting of network diagrams and mathematical analyses.
- E. Submit updated network schedules with each Application for Payment.
- F. Submit number of opaque reproductions Contractor requires, plus four copies Engineer will retain.
- G. Post as electronic file to Project website.
- H. Submit network schedules under transmittal letter form specified in Section 01 33 00 - Submittal Procedures.

This Page Left Blank Intentionally

- E. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- F. Remove debris and abandoned items from area and from concealed spaces.
- G. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- H. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- I. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original or specified condition.
- J. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.
- K. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- L. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Engineer for review.
- M. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition to Engineer for review.
- N. Trim existing doors to clear new floor finish. Refinish trim to as required.
- O. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.
- P. Finish surfaces as specified in individual product Sections.

END OF SECTION 01 30 00

6. Temporary indoor-air-quality plan and procedures.
7. Contractor's inspection of Work.
8. Contractor's preparation of an initial "punch list."
9. Procedure to request Engineer inspection to determine date of Substantial Completion.
10. Completion time for correcting deficiencies.
11. Inspections by authorities having jurisdiction.
12. Certificate of Occupancy and transfer of insurance responsibilities.
13. Partial release of retainage.
14. Final cleaning.
15. Preparation for final inspection.
16. Closeout Submittals:
 - a. Project record documents.
 - b. Operating and maintenance documents and materials.
 - c. Affidavits.
17. Final Application for Payment.
18. Contractor's demobilization of Site.
19. Maintenance.

D. Engineer will record minutes and distribute copies after meeting to the participants.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION – Not Used

3.1 ALTERATION PROCEDURES

- A. Entire facility will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
 1. Perform Work not to interfere with operations of occupied areas.
 2. Keep utility and service outages to a minimum and perform only after written approval of Owner.
 3. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.
- B. Materials: As specified in product Sections; match existing products with new and salvaged products for patching and extending Work.
- C. Employ skilled and experienced installer to perform alteration and renovation Work.
- D. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 01 70 00 - Execution and Closeout Requirements.

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal 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. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

E. Engineer will record minutes and distribute copies after meeting to the participants.

1.5 PREINSTALLATION MEETINGS

- A. When required in individual Specification Sections or requested by Engineer or Owner, convene preinstallation meetings at Project Site before starting Work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Engineer seven (7) days in advance of meeting date.
- D. Engineer shall prepare agenda and preside over meeting:
 1. Review conditions of installation, preparation, and installation procedures.
 2. Review coordination with related Work.

E. Engineer will record minutes and distribute copies after meeting to the participants.

1.6 CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Notify Engineer seven days in advance of meeting date.
- B. Attendance Required: Contractor's Office Representative, Contractor's Resident Superintendent, Any Subcontractor's or Supplier's representatives whom Contractor may desire to invite or Engineer may request, Engineer's Representatives, Owner's Representatives, applicable Local Utilities Representatives, and Resident Project Representative.
- C. Minimum Agenda:
 1. Start-up of facilities and systems.
 2. Operations and maintenance manuals.
 3. Testing, adjusting, and balancing.
 4. System demonstration and observation.
 5. Operation and maintenance instructions for Owner's personnel.

- F. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial and permanent occupancy.
- G. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice of Award.
- B. Attendance Required: Contractor's Office Representative, Contractor's Resident Superintendent, Any Subcontractor's or Supplier's representatives whom Contractor may desire to invite, or Engineer may request, Engineer's Representatives, Owner's Representatives, applicable Local Utilities Representatives, and Resident Project Representative.
- C. Minimum Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
 - 5. Staging of Materials
 - 6. Designation of personnel representing parties involved.
 - 7. Communication procedures.
 - 8. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
 - 9. Scheduling.
 - 10. Critical Work sequencing.
 - 11. Scheduling activities of Geotechnical Engineer and special inspections.
- D. Engineer will record minutes and distribute copies after meeting to the participants.

1.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at intervals requested by the Owner or Engineer.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Engineer, Owner, Resident Project Representative, and others as appropriate to agenda topics for each meeting.
- D. Minimum Agenda:

SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Preinstallation meetings.
- E. Closeout meeting.
- F. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements. Delays caused by the Contractor by failure to properly order, schedule, coordinate, execute or otherwise reconcile, which result in project delays, shall be the sole burden of the Contractor. Any associated cost shall be absorbed by the Contractor and not passed on to the Owner.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - 1. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.
- D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
 6. Will reimburse Owner and Engineer for review or redesign services associated with reapproval by authorities having jurisdiction.
- 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 Contract Documents.
- F. Substitution Submittal Procedure:
1. Submit three copies of Request for Substitution for consideration. Limit each request to one proposed substitution.
 2. Submittal shall include, at a minimum:
 - a. Manufacturer's name, representative's contact information, and specification section and/or drawing reference of originally specified product in submittal.
 - b. Shop Drawings, Product Data, and certified test results attesting to the proposed product equivalence. Burden of proof is on the party submitting the proposal.
 - c. Data relating to changes in electrical, mechanical or structural requirements.
 - d. Data relating to changes in construction schedule.
 - e. Data relating to changes in cost.
 3. Engineer 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 01 25 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Product options.
- C. Product substitution procedures.

1.2 QUALITY ASSURANCE

- A. Contract is based on products and standards established in Contract Documents without consideration of proposed substitutions.
- B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.
- C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

1.3 PRODUCT OPTIONS

- A. See Section 01 60 00 - Product Requirements.

1.4 PRODUCT SUBSTITUTION PROCEDURES

- A. Engineer will consider requests for substitutions only within 30 days after date of Owner-Contractor Agreement.
- B. Substitutions maybe considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents.
- D. A request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for substitution as for 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 Owner.

This Page Left Blank Intentionally

1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
2. Promptly revise Progress Schedules to reflect change in Contract Time, revise subschedules to adjust times for other items of Work affected by the change, and resubmit.
3. Promptly enter changes in Record Documents.

1.7 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Engineer and/or Owner, it is not practical to remove and replace the Work, the Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Owner.
- D. Defective Work will be partially repaired according to instructions of Owner, and unit sum/price will be adjusted to new sum/price at discretion of Owner.
- E. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Engineer and Owner to assess defects and identify payment adjustments is final.
- G. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
 1. Products wasted or disposed of in a manner that is not acceptable.
 2. Products determined as unacceptable, or not approved in accordance with Section 01 60 00, before or after placement.
 3. Products not completely unloaded from transporting vehicle.
 4. Products placed beyond lines and levels of the required Work.
 5. Products remaining on hand after completion of the Work.
 6. Loading, hauling, and disposing of rejected products.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 20 00

2. Engineer may respond with a direct answer on the Request for Interpretation form, AIA G710 - Architect's Supplemental Instruction, or AIA G709 - Work Changes Proposal Request.
- D. Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions in writing on AIA G710.
 - E. Engineer may issue a Contract Modification Request (CMR) including a detailed description of proposed change with supplementary or revised Drawings and Specifications. Contractor shall complete the request form indicating any change in Contract Price and changes in Contract Time for executing the change. Contractor will prepare and submit estimate within 14 days.
 - F. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on the Work by separate or other Contractors.
 - G. Document requested substitutions according to Section 01 25 00 - Substitution Procedures.
 - H. Stipulated Sum/Price Change Order: Based on Contract Modification Request (CMR) and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Engineer.
 - I. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of that which are not predetermined, execute Work under Work Directive Change. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
 - J. Work Directive Change: Engineer may issue directive, on a Contract Modification Request (CMR) signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
 - K. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
 - L. Maintain detailed records of Work done on time and material basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
 - M. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.
 - N. Change Order Forms: See Section 00 63 63 – Change Order Form.
 - O. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
 - P. Correlation of Contractor Submittals:

media driven form may be acceptable provided that it contains similar detail to AIA Form G702 and if approved by Owner.

- C. Content and Format: Use Schedule of Values for listing items in Application for Payment.
- D. Submit updated construction schedule with each Application for Payment.
- E. Payment Period: Submit at intervals stipulated in the Agreement.
- F. Submit submittals with transmittal letter as specified in Section 01 33 00 - Submittal Procedures.
- G. Submit signed copies of current waivers of lien.
- H. Submit one (1) signed and three (3) copies of Certified Payroll reports for all contractors working during the payment period.
- I. Submit backup information for request of material payment. Backup information should include items such as delivery tickets, Purchase Orders, Invoices, etc. Backup information should include the project name printed from shipping entity on each document.
- J. All Waivers of Lien and Certified Payroll information shall be kept current for each Payment Application Period. Failure to do so may result in delaying the processing of the Payment Application.
- K. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 - 1. Partial release of liens from major Subcontractors and vendors.
 - 2. Record Documents as specified in Section 01 70 00 - Execution and Closeout Requirements, for review by Owner, which will be returned to Contractor.
 - 3. Affidavits attesting to off-Site stored products.
 - 4. Construction Progress Schedule, revised and current as specified in Section 01 33 00 - Submittal Procedures.

1.6 CHANGE PROCEDURES

- A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Engineer of any error, inconsistency, omission, or apparent discrepancy.
- C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Engineer; establish procedures for handling queries and clarifications.
 - 1. Use AIA G716 - Request for Information for requesting interpretations.

1. Assist Engineer in selection of products, suppliers, and installers.
 2. Obtain proposals from suppliers and installers and offer recommendations.
 3. Upon notification of selection by Engineer, execute purchase agreement with designated supplier and installer.
 4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- E. Engineer shall review and approve all expenditures for allowances prior to commencing associated work. All costs shall be presented in accordance with Section 01 20 00.
- F. Differences in costs will be adjusted by Change Order.
- G. Allowance Schedule:
1. See Specification Section 00 42 13 Proposal Form.

1.4 SCHEDULE OF VALUES

- A. Submit electronic (compatible with Microsoft Excel) and printed schedule on AIA G703 - Continuation Sheet for G702 or Progress Estimate schedule on EJCDC C-620.
- B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify Site mobilization, bonds and insurance, and allowances.
- D. Include in each line item amount of allowances as specified in this Section. For unit cost allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.
- E. Include within each line item, direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders with each Application for Payment.
- G. For lump sum unit prices, Contractor shall submit a breakdown schedule of values for each lump sum in accordance with the requirements listed above. The breakdown shall be revised until suitable to the Engineer.

1.5 APPLICATION FOR PAYMENT

- A. Submit electronic (compatible with Microsoft Excel) schedule of values for initial review prior to submittal of hard copies. See above section for requirements of schedule of values.
- B. Submit three copies of each Application for Payment on AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702 Contractor's electronic

SECTION 01 20 00 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Drawings and Contract Documents for Contractor Use.
- B. Cash allowances.
- C. Schedule of Values.
- D. Application for Payment.
- E. Change procedures.
- F. Defect assessment.

1.2 DRAWINGS AND CONTRACT DOCUMENTS FOR CONTRACTOR USE

- A. Refer to General Conditions.
- B. Contractor shall pick up all "no charge" documents within 10 days from date of Notice to Proceed.
- C. Additional documents requested after the "no charge" documents have been distributed will be furnished to Contractor by Engineer at cost plus fifteen percent (15%).

1.3 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.
- B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.
- C. Engineer Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- D. Contractor Responsibilities:

This Page Left Blank Intentionally

1.6 WORK SEQUENCE

- A. Construct Work in order to accommodate Owner's occupancy requirements during construction period. Coordinate construction schedule and operations with Engineer and Owner:
- B. Sequencing of Construction Plan: Before start of construction, submit three copies post electronic file to Project website of construction plan regarding phasing of demolition, renovation, and new Work for acceptance by Owner. After acceptance of plan, construction sequencing shall comply with accepted plan unless deviations are accepted by Owner in writing.

1.7 OWNER OCCUPANCY

- A. Schedule and substantially complete designated portions of the Work for occupancy before Substantial Completion of the entire Work.
 - 1. Owner's use and occupancy of designated areas before Substantial Completion of the entire Project do not relieve Contractor of responsibility to maintain specified insurance coverages on a 100 percent basis until date of final payment.
- B. Owner will occupy Site during entire period of construction.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.8 PERMITS

- A. Furnish all necessary permits for construction of Work.

1.9 SPECIFICATION CONVENTIONS

- A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 10 00

1.4 OWNER-FURNISHED PRODUCTS

A. Owner's Responsibilities:

1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and Samples to Contractor.
2. Arrange and pay for delivery to Site.
3. Upon delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:

1. Review Owner-reviewed Shop Drawings, Product Data, and Samples.
2. Receive and unload products at Site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install, and finish products.
4. Repair or replace items damaged after receipt.

1.5 CONTRACTOR'S USE OF SITE

A. Limit use of Site and premises to allow:

1. Owner occupancy.
2. Owner and engineer access.
3. Work by Others and Work by Owner.

B. Access to Site: Limited to 7:00 AM to 5:00 PM without 48 hours advance notice to the Owner.

C. Maintain all Emergency Building Exits during Construction.

D. Construction Operations: Limited to areas indicated on Drawings.

E. Utility Outages and Shutdown:

1. Coordinate and schedule electrical and other utility outages with Owner at least 48 hours in advance.
2. Outages: Allowed only at previously agreed upon times.
3. At least one week before scheduled outage, submit Outage Request Plan to Engineer itemizing the dates, times, and duration of each requested outage.

F. Construction Plan: Before start of construction, submit three copies and post electronic file to Project website of construction plan regarding access to Work, use of Site, and utility outages for acceptance by Owner. After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by Owner in writing.

SECTION 01 10 00 - SUMMARY

PART I - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Contract description.
2. Work by Owner or other Work at the Site.
3. Owner-furnished products.
4. Contractor's use of Site.
5. Work sequence.
6. Owner occupancy.
7. Permits.
8. Specification conventions.

1.2 CONTRACT DESCRIPTION

A. Well Sites Rehabilitation (Well #5, 6 & 7)

1. Demolition of existing gaseous chlorination system including chlorinators, scales, injectors, and all associated piping systems.
2. Installation of new liquid sodium hypochlorite chemical feed single skid system
3. Install chemical injection
4. Install peristaltic pumps
5. Install associated piping and electrical systems.

B. DuPage Water Commission Feed Sites Rehabilitation (DWC Site A & B)

6. Demolition of existing gaseous chlorination system including chlorinators, scales, injectors, and all associated piping systems.
1. Installation of new liquid sodium hypochlorite chemical feed duplex skid system
2. Install chemical injection
3. Install peristaltic pumps
4. Install flow meters
5. Install associated piping systems
6. Controls wiring and integration into SCADA

C. Perform Work of Contract under stipulated sum Contract with Owner according to Conditions of Contract

1.3 WORK BY OWNER OR OTHERS

A. Coordinate Work with utilities of Owner and public or private agencies.

C. Fittings:

1. Clean gasket seats thoroughly, and wipe gaskets clean prior to installation.
2. Install fittings according to manufacturer's instructions.
3. Tighten bolts progressively, drawing up bolts on opposite sides until bolts are uniformly tight; use torque wrench to tighten bolts to manufacturer's recommendations.

D. Provide required upstream and downstream clearances from devices as indicated.

E. Install piping with sufficient slopes for venting or drainage of liquids and condensate to low points.

F. Support piping as specified in Section 40 05 07 – Pipe Support Systems.

G. Provide expansion joints as specified in Section 40 05 06 - Couplings, Adapters and Specials for Process Piping and pipe guides as specified in Section 22 05 29 – Hangers and Supports for HVAC and Plumbing Piping and Equipment and in Section 40 05 07 – Pipe Support Systems to compensate for pipe expansion due to temperature differences.

H. Disinfection: Disinfect potable water piping as specified in Section 40 05 06 - Couplings, Adapters and Specials for Process Piping.

I. Field Cuts: According to pipe manufacturer's recommendations.

J. Joining:

1. The systems will be installed with the fewest number of underground joints as possible.
2. Perform heat joining according to ASTM D2657.
3. Perform electrofusion joining according to ASTM F 1290.
4. Primers and Cleaners: ASTM F402.
5. PVC Solvent-Cemented Joints: ASTM D2855.

K. Underground Piping:

1. Install potable water piping as specified in Section 33 11 13 - Public Water Utility Distribution Piping.
2. Install natural gas piping in accordance with NFPA, local gas company regulations, codes and local ordinances, complete with necessary appurtenances.
 - a. Install buried pipe at approximately 30 IN deep.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Requirements for tolerances.

B. Laying Tolerances: As specified in Section 33 11 13 - Public Water Utility Distribution Piping.

3.5 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

4. Pipe systems must be designed to compensate for thermal expansion/contraction.
5. Products are intended for use in underground service only.
6. MEGA-BOND Coating System.
7. Internal pipe stiffeners must be used. Stiffener length must be sufficient to fully encompass the area of the pipe being restrained.

2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that field dimensions are as indicated on Drawings.
- C. Inspect existing flanges for nonstandard bolt hole configurations or design, and verify that new pipe and flange mate properly.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Ream pipe ends. Remove burrs.
- C. Thoroughly clean pipe and fittings before installation.
- D. Surface Preparation: Clean surfaces to remove foreign substances.

3.3 INSTALLATION

- A. Run piping straight along alignment indicated on Drawings with minimum number of joints.
- B. Install piping and components according to ASME B31.3.

- a. Furnish shutoff and drain valves at locations as indicated on Drawings, according to this Section.
 - b. Install shutoff and isolation valves; isolate equipment, part of systems, or vertical risers as indicated on Drawings.
 - c. Install valves for throttling, bypass, or manual flow-control services as indicated on Drawings.
 - d. Install ball valves in all systems for shutoff service.
 - 2. Seals shall be compatible with the chemical being pumped.
- C. PVC Tube and Fittings:
- 1. Tube:
 - a. Clear.
 - b. Size and Wall Thickness: Size as indicated on Drawings, minimum 1/8 IN wall thickness.
 - c. Pressure Rating: Minimum equal to that of associated feed system rating.
 - 2. Fittings: Compression type; materials suitable for service indicated on Drawings.
 - 3. Threads: Straight; ASME B1.1.

2.2 PE PIPE AND FITTINGS

- A. Polyethylene Pipe: ASTM D2513, SDR 11.0
- B. Fittings: Socket fusion or butt fusion fittings complying with ASTM D2683 and ASTM D3261.
- C. Joints:
 - 1. Mechanical or Compression fit.
 - 2. Fusion jointing system or as directed by local gas company.

2.3 ACCESSORIES

- A. PVC Piping:
 - 1. Solvent Cement: ASTM D2564; primers according to ASTM F656.
- B. High Density PE Pipe Restraint
 - 1. For use in restraining HDPE pipe to AWWA fittings, valves and similar appurtenances.
 - a. Series 2000PV Mechanical Joint Restraint
 - 1) 2004 PV: Rated 160 psi
 - 2) 2006 PV: Rated 160 psi
 - 2. Pipe must be manufactured in accordance with AWWA Standard ANSI/AWWA C906 with respect to size
 - 3. Operating pressure is limited to the pressure rating of the pipe, derated as appropriate for service temperature.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

1.10 AMBIENT CONDITIONS

- A. Section 01 50 00 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.
- B. Temperature: Do not install pipe when temperature is below 40 DegF or above 90 DegF if pipe is exposed to direct sunlight.
- C. Ultraviolet (UV) Protection: Provide pipe installed above ground or outside with UV protection.

1.11 EXISTING CONDITIONS

- A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PVC PIPE, VALVES, TUBE, AND FITTINGS

- A. PVC Pipe and Fittings:
 - 1. Pipe: PVC, Type 1, Grade 1, Schedule 80 according to ASTM D1785; ASTM D2241, SDR-26 for 125-psig pressure rating, calculated according to ASTM D2837.
 - 2. Fittings:
 - a. Exposed service: Solvent welded socket type for service indicated on Drawings complying with ASTM D2467.
 - b. Buried service: Solvent welded socket type for service indicated on Drawings complying with ASTM D2466.
 - 3. Joints:
 - a. Exposed service: Solvent welded for service indicated on Drawings with unions at valves, penetrations through structures and equipment connections for pipe 2 IN and less and flanges at those locations for pipe above 2 IN.
 - b. Buried service: Solvent welded for service indicated on Drawings.
 - 4. Materials: ASTM D1784, minimum cell classification 12545-C.
 - 5. Coating:
 - a. Exposed: Paint per Section 09 96 00 – High-Performance Coatings.
 - b. Buried: None.
- B. PVC Valves:
 - 1. Furnish valves, appurtenances, and accessories as specified in Section 40 05 06 - Couplings, Adapters and Specials for Process Piping and as specified by valve type in Division 40 - Process Integration.

3. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission.

1.3 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with equipment installation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer's catalog information on pipe materials and fittings.
- C. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, sizes, and materials lists.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance materials.
- B. Spare Parts: Furnish one set of manufacturer's recommended spare parts.

1.7 QUALITY ASSURANCE

- A. Maintain one copy of each standard affecting the Work of this Section on-Site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.
- B. Manufacturer: Company listed with the Plastic Pipe Institute as meeting the recipe and mixing requirements of the resin manufacturer for the resin used to manufacture each of the respective thermoplastic pipe systems.
- C. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience.

7. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
8. ASTM D2464 - Standard Specification for Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
9. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
10. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
11. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
12. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe.
13. ASTM D2657 - Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings.
14. ASTM D2737 - Standard Specification for Polyethylene (PE) Plastic Tubing.
15. ASTM D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products.
16. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
17. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
18. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
19. ASTM D3222 - Standard Specification for Unmodified Poly(Vinylidene Fluoride) (PVDF) Molding Extrusion and Coating Materials.
20. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
21. ASTM D3892 - Standard Practice for Packaging/Packing of Plastics.
22. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
23. ASTM F656 - Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
24. ASTM F714 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter.
25. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing.
26. ASTM F1055 - Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing.
27. ASTM F1290 - Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings.

C. American National Standards Institute / National Sanitation Foundation:

1. ANSI/NSF Standard 14, Plastics Piping System Components and Related Materials.

D. American Water Works Association:

1. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In., for Water Transmission and Distribution.
2. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.

SECTION 40 05 31 - THERMOPLASTIC PROCESS PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. PVC pipe, valves, tube, and fittings.
2. Polyethylene (PE) pipe, tube, and fittings.
3. Accessories for plastic piping and fittings.
4. High Density Polyethylene Pipe Restraints.

B. Related Requirements:

1. Section 40 05 06 - Couplings, Adapters and Specials for Process Piping
2. Section 40 05 07 - Process Pipe Support Systems.
3. Section 40 05 51 - Common Requirements for Process Valves

1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B1.1 - Unified Inch Screw Threads (UN and UNR Thread Form).
2. ASME B1.20.1 - Pipe Threads, General Purpose (Inch).
3. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800
4. ASME B16.5 - Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys.
5. ASME B16.20 - Metallic Gaskets for Pipe Flanges.
6. ASME B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges.
7. ASME B31.3 - Process Piping Guide.

B. ASTM International:

1. ASTM A193 - Standard Specification for Alloy-Steel and Stainless-Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
2. ASTM A194 - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
3. ASTM D1527 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80.
4. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
5. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
6. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.

This Page Left Blank Intentionally

- c. Similar internal forces.
- B. Weld Supports:
 - 1. AWS D1.1.
 - 2. Weld anchors to pipe in accordance with ASME B31.3.
- C. Locate piping and pipe supports as to not interfere with open accesses, walkways, platforms, and with maintenance or disassembly of equipment.
- D. Inspect Hangers for:
 - 1. Design offset.
 - 2. Adequacy of clearance for piping and supports in the hot and cold positions.
 - 3. Guides to permit movement without binding.
 - 4. Adequacy of anchors.
- E. Inspect hangers after erection of piping systems and prior to pipe testing and flushing.
- F. Install individual or continuous slot concrete inserts for use with hangers for piping and equipment.
 - 1. Install concrete inserts as concrete forms are installed.
- G. Welding:
 - 1. Welding rods: ASTM and AWS standards.
 - 2. Integral attachments:
 - a. Include welded-on ears, shoes, plates and angle clips.
 - b. Ensure material for integral attachments is of good weldable quality.
 - 3. Preheating, welding and postheat treating: ASME B31.3, Chapter V.
- H. Field Painting: Comply with Specification Section 09 96 00.

END OF SECTION 40 05 07

PIPE SIZES - IN	MAXIMUM SPAN - FT
2 thru 4	10
5 thru 8	15
10 and greater	20

3. Copper pipe support schedule:

PIPE SIZES - IN	MAXIMUM SPAN - FT
2-1/2 and less	5
3 thru 6	10
8 and greater	15

4. PVC pipe support schedule:

PIPE SIZES - IN	MAXIMUM SPAN - FT
1-1/4 and less	3
1-1/2 thru 3	4
4 and greater	5

* Maximum fluid temperature of 120 DegF.

5. Support each length and every fitting:
 - a. Bell and spigot piping:
 - 1) At least one (1) hanger.
 - 2) Applied at bell.
 - b. Mechanical coupling joints:
 - 1) Place hanger within 2 FT of each side of fittings to keep pipes in alignment.
6. Space supports for soil and waste pipe and other piping systems not included above every 5 FT.
7. Provide continuous support for nylon tubing.
8. For PVC, FRP and copper piping:
 - a. Provide Unistruct Unicushion wrap of pipe at each support.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Provide piping systems exhibiting pulsation, vibration, swaying, or impact with suitable constraints to correct the condition.
 1. Included in this requirement are movements from:
 - a. Trap discharge.
 - b. Water hammer.

1. Provide 5 to 1 safety factor.
- B. Allow free expansion and contraction of the piping to prevent excessive stress resulting from service and testing conditions or from weight transferred from the piping or attached equipment.
- C. Design supports and hangers to allow for proper pitch of pipes.
- D. For chemical and waste piping, design, materials of construction and installation of pipe hangers, supports, guides, restraints, and anchors:
 1. ASME B31.3.
 2. MSS SP-58 and MSS SP-69.
 3. Except where modified by this Specification.
- E. For steam and hot and cold water piping, design, materials of construction and installation of pipe hangers, supports, guides, restraints, and anchors:
 1. ASME B31.1.
 2. MSS SP-58 and MSS SP-69.
- F. Check all physical clearances between piping, support system and structure.
 1. Provide for vertical adjustment after erection.
- G. Support vertical pipe runs in pipe chases at base of riser.
 1. Support pipes for lateral movement with clamps or brackets.
- H. Place hangers are to be installed on outside of pipe insulation.
 1. Use a pipe covering protection saddle for insulated pipe at support point.
 2. Insulated piping 1-1/2 IN and less:
 - a. Provide a 9 IN length of high density perlite or high density calcium silicate at saddle.
 - b. See Specification Section 40 42 00.
 3. Insulated piping over 1-1/2 IN: Provide a 12 IN length of high density perlite or high density calcium silicate at saddle.
- I. Provide 20 GA galvanized steel pipe saddle for fiberglass and plastic support points to ensure minimum contact width of 4 IN.
- J. Pipe Support Spacing:
 1. General:
 - a. Factor loads by specific weight of liquid conveyed if specific weight is greater than water.
 - b. Locate pipe supports at maximum spacing scheduled unless indicated otherwise on the Drawings.
 - c. Provide at least one (1) support for each length of pipe at each change of direction and at each valve.
 2. Steel, stainless steel, cast-iron, ductile iron pipe support schedule:

PIPE SIZES - IN	MAXIMUM SPAN - FT
1-1/2 and less	5

- G. Vertical Pipe Supports:
 - 1. At base of riser.
 - 2. Lateral movement:
 - a. Clamps or brackets:
 - 1) ANVIL Figure 261.
- H. Expanding Pipe Supports:
 - 1. Spring hanger type.
 - 2. MSS SP-58.
- I. Pipe Support Saddle:
 - 1. For pipe located 3 FT or less from floor elevation, except as otherwise indicated on Drawings.
 - 2. ANVIL Figure 264.
- J. Pipe Support Risers:
 - 1. Schedule 40 pipe.
 - 2. Galvanized.
 - 3. Size: As recommended by saddle manufacturer.
- K. Pipe Support Base Plate:
 - 1. 4 IN larger than support.
 - 2. Collar 3/16 IN thickness, circular in shape, and sleeve type connection to pipe.
 - 3. Collar fitted over outside of support pipe and extended 2 IN from floor plate.
 - 4. Collar welded to floor plate.
 - 5. Edges ground smooth.
 - 6. Assembly hot-dipped galvanized after fabrication.
- L. Pipe Covering Protection Saddle:
 - 1. For insulated pipe at point of support.
 - 2. ANVIL Figure 167, Type B.
- M. Wall Brackets:
 - 1. For pipe located near walls and 8 FT or more above floor elevation or as otherwise indicated on the Drawings.
 - 2. ANVIL Figure 199.
- N. Pipe Anchors:
 - 1. For locations shown on the Drawings.
 - 2. 1/4 IN steel plate construction.
 - 3. Hot-dipped galvanized after fabrication.
 - 4. Designed to prevent movement of pipe at point of attachment.
- O. Pipe Guides:
 - 1. For locations on both sides on each expansion joint or loop.
 - 2. To ensure proper alignment of expanding or contracting pipe.
 - 3. ANVIL Figure 256.

2.3 DESIGN REQUIREMENTS

- A. Supports capable of supporting the pipe for all service and testing conditions.

NOMINAL ROD DIAMETER	MAXIMUM SAFE LOAD, (LBS)
3/8 IN DIA (min)	610
1/2 IN DIA	1,130
5/8 IN DIA	1,810
3/4 IN DIA	2,710
7/8 IN DIA	3,770
1 IN DIA	4,960

C. Hangers:

1. Hangers for use directly on copper pipe: Copper or cadmium plated.
2. Hangers for use other than directly on copper pipe: Cadmium plated or galvanized.
3. Hanger type schedule:

APPLICATION	PIPE SIZE	HANGER TYPE
All except noted	4 IN and less	ANVIL Figure 108 with Figure 114
All except noted	Over 4 IN	ANVIL Figure 590
Steam, condensate and hot water	All	ANVIL Figure 181, Figure 82
Service in chemical storage areas and as indicated on drawings for corrosion resistance	All	CorPro CP - Hanger or equal

D. Concrete Inserts for Hanger Rods:

1. Continuous slots: Unistrut #P1000.
2. Individual inserts: ANVIL Figure 281.
3. See Specification Section 03 15 19, mechanical anchors.

E. Beam Clamps for Hanger Rods:

1. Heavy duty.
2. ANVIL Figure 134.

F. Trapeze Hangers for Suspended Piping:

1. General:
 - a. Material: Steel.
 - b. Galvanized.
 - c. Angles, channels, or other structural shapes.
 - d. Curved roller surfaces at support point corresponding with type of hanger required.
2. In chemical storage and feed areas and as indicated on the drawings:
 - a. Materials: FRP.
 - b. Unistrut fiberglass channel or equal.

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 - 2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
 - c. Itemized list of wall sleeves, anchors, support devices and all other items related to pipe support system.
 - d. Scaled Drawings showing location, installation, material, loads and forces, and deflection of all hangers and supports.
 - e. Analyze each pipe system for all loads and forces on hangers and supports and their reaction forces to the structure to which they are fastened.
 - f. Support systems for piping systems over 12 IN DIA, systems operating over 100 psig or systems operating over 200 DegF designed by the Contractor: Submit detail design calculations and scaled Drawings prepared and signed by a registered Professional Engineer in the state of Illinois.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the manufacturers listed in the applicable Articles below are acceptable.
- B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 MANUFACTURED UNITS

- A. General:
 - 1. Galvanized components:
 - a. Electro-galvanized components:
 - 1) Bar, forged or cast fabrications: ASTM B633, SC4.
 - 2) Rolled sheet fabrications: ASTM A917 and ASTM A918, 50N50NU.
 - b. Hot-dipped galvanized components: See Specification Section 05 50 00.
 - 2. Dissimilar metals protection:
 - a. Galvanized-to-galvanized and galvanized-to-aluminum: No protection required.
 - b. All other galvanized-to-dissimilar metal connections: Neoprene or nylon pads, shims, grommets, etc.
- B. Hanger Rods:
 - 1. Material:
 - a. ASTM A36.
 - b. ASTM A575, Grade M1020.
 - c. ASTM A576, Grade 1020.
 - d. Minimum allowable tensile stress of 12,000 psi at 650 DegF per MSS SP-58.
 - 2. Continuously threaded.
 - 3. Electro-galvanized or cadmium plated after threads are cut.
 - 4. Load limit:

SECTION 40 05 07 – HANGERS AND SUPPORTS FOR PROCESS PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Pipe support and anchor systems for Process Piping.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. Section 09 96 00 - High Performance Industrial Coatings.
 - 4. Section 40 05 31 - Thermoplastic Process Pipe.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Society of Mechanical Engineers (ASME):
 - a. B31.1, Power Piping.
 - b. B31.3, Process Piping.
 - 2. ANVIL International (ANVIL).
 - 3. ASTM International (ASTM):
 - a. A36, Standard Specification for Carbon Structural Steel.
 - b. A276, Standard Specification for Stainless Steel Bars and Shapes.
 - c. A575, Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades.
 - d. A576, Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.
 - e. A917, Standard Specification for Steel Sheet, Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface (General Requirements).
 - f. A918, Standard Specification for Steel Sheet, Zinc-Nickel Alloy Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
 - g. B633, Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
 - 4. American Welding Society (AWS):
 - a. D1.1, Structural Welding Code - Steel.
 - 5. Manufacturers Standardization Society of the Valve and Fittings Industry Inc. (MSS):
 - a. SP-58, Pipe Hangers and Supports - Materials, Design and Manufacture.
 - b. SP-69, Pipe Hangers and Supports - Selection and Application.
- B. Responsibility:
 - 1. Contractor shall design all piping support systems.
 - 2. Contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to design, furnish and install the system of hangers, supports, guidance, anchorage and appurtenances.

- C. Each type of pipe hanger or support shall be the product of one manufacturer.

1.3 SUBMITTALS

J. All underground piping shall have warning tape and tracer wire as indicated in Section 10 14 00 – Identification Devices, unless otherwise noted.

K. All pipe connections to equipment less than 3” diameter must include an isolation ball valve, a union, and if dissimilar metals are present a dielectric fitting.

3.4 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

C. After installation, inspect for proper supports and interferences.

D. Repair damaged coatings with material equal to original coating.

3.5 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

B. Keep equipment interior clean as installation progresses.

END OF SECTION 40 05 06

- E. Verify that pipe plain ends to receive sleeve-type couplings are smooth and round for 12 inches from pipe ends.
- F. Verify that pipe outside diameter conforms to sleeve manufacturer's requirements.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Cleaning: Thoroughly clean end connections before installation.
- C. Close pipe and equipment openings with caps or plugs during installation.
- D. Surface Preparation: Clean surfaces to remove foreign substances.

3.3 INSTALLATION

- A. According to ASME B31.3.
- B. Coating: Finish piping appurtenances as specified in Section 09 96 00 - High Performance Industrial Coatings for service conditions.
- C. Pipe Penetrations: Install pipe penetrations as specified in Section 01 73 20 - Openings and Penetrations in Construction.
- D. Firestopping: Install firestopping as specified in Section 07 84 13 - Penetration Firestopping and 07 84 43 - Joint Firestopping.
- E. Restrained Joints: As specified in associated piping Sections.
- F. Expansion Joints:
 - 1. Install flexible couplings and expansion joints at connections to equipment and where indicated on Drawings.
 - 2. If expansion joint is supplied with internal sleeve, indicate flow direction on outside of joint.
- G. Air Release and Vacuum Breakers: Provide vacuum breakers on all tanks and process equipment and as indicated on Drawings.
- H. Backflow Preventers:
 - 1. Install with nameplate and test cock accessible.
 - 2. Install according to local code requirements.
 - 3. Do not install in vertical position.
- I. Disinfection: Disinfect potable water piping.

1. Mercer Rubber Company.
2. Substitutions: As specified in Section 01 60 00 - Product Requirements.

B. Description:

1. Type: Heavy duty expansion joints.
2. Neoprene Elements: Tubes and covers, thicknesses per manufacturer standard.
3. Single arch design, unless approved in writing by Engineer.
4. Rated Working Pressure: 150 psig.
5. Control Rod Assemblies: Required when piping or equipment are spring-mounted or unanchored.

C. Performance and Design Criteria:

1. Bellow Design: According to Section C of EJMA Standards.

2.7 FINISHES

- A. Prepare piping appurtenances for field finishes as specified in Section 09 96 00 - High Performance Coatings.

2.8 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.

1. Provide shop inspection and testing of completed assemblies.

B. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that field dimensions are as indicated on Shop Drawings.
- C. Inspect existing flanges for nonstandard bolthole configurations or design and verify that new pipe and flanges mate properly.
- D. Verify that openings are ready to receive sleeves and firestopping.

- 1) All fuel gas piping.
- 2) Fuel gas trains.
- b. Purge air filled system with fuel gas:
 - 1) Providing piping length is less than:
 - a) 30 FT for 3 IN pipe.
 - b) 15 FT for 4 IN pipe.
 - c) 10 FT for 6 IN pipe.
 - d) Any length for 8 IN and larger pipe.
 - 2) Providing a moderately rapid and continuous flow of fuel gas is introduced.
 - a) Introduce fuel gas at one (1) end.
 - b) Vent air at opposite end.
 - 3) Provided fuel gas flow is continuous without interruption until vented gas is free of air.
 - 4) The point of discharge shall not be left unattended during purging.
- c. If the piping is 3 IN or larger and exceeds lengths stated above.
 - 1) Purge air with inert gas in accordance with NFPA 54 and NFPA 69.
 - 2) Purge inert gas with fuel gas.
3. Discharge of purged gases:
 - a. Open end of piping shall not discharge into confined spaces or areas where there are sources of ignition.

2.3 PLASTIC TUBING

- A. General: Provide PTFE tubing with fittings and appurtenances as shown on drawings.
- B. Materials: Clear Polytetrafluorethylene tubing with a minimum safety factor of 4 to 1 ratio of burst pressure to working pressure at maximum temperature. Provide tubing with working pressure of 150 psi at 180 °F.
- C. Fittings: Install tubing with PTFE fittings and connectors.
 1. Use barbed type adapters with stainless steel clamps.
 2. Provide fittings capable of withstanding temperatures from a minus -70° F to 250° F. Ensure fittings have the same pressure and temperature rating as the tubing.

2.4 PIPE PENETRATIONS

- A. As specified in Section 01 73 20 - Openings and Penetrations in Construction.

2.5 RESTRAINED JOINTS

- A. As specified in associated piping Sections.

2.6 EXPANSION JOINTS

- A. Manufacturers:

5. At completion of work and prior to Final Acceptance, thoroughly clean work installed under these Specifications.
 - a. Clean equipment, fixtures, pipe, valves, and fittings of grease, metal cuttings, and sludge which may have accumulated by operation of system, from testing, or from other causes.
 - b. Repair any stoppage or discoloration or other damage to parts of building, its finish, or furnishings, due to failure to properly clean piping system, without cost to Owner.
6. After erection of piping and tubing, but prior to installation of service outlet valves, blow natural gas systems clear of free moisture and foreign matter by means of air, nitrogen or carbon dioxide.
 - a. Oxygen shall never be used.
7. Clean chlorine piping in accordance with CI Pamphlet 6.

B. Disinfection of Potable Water Systems:

1. After favorable performance of pressure test and prior to Final Acceptance, thoroughly flush entire potable water piping system including supply, source and any appurtenant devices and perform disinfection as prescribed.
2. Perform work, including preventative measures during construction, in full compliance with AWWA C651.
3. Perform disinfection using sodium hypochlorite complying with AWWA B300.
4. Flush each segment of system to provide flushing velocity of not less than 2.5 FT per second.
5. Drain flushing water to sanitary sewer.
 - a. Do not drain flushing water to receiving stream.
6. Use continuous feed method of application.
 - a. Tag system during disinfection procedure to prevent use.
7. After required contact period, flush system to remove traces of heavily chlorinated water.
8. After final flushing and before placing water in service, obtain an independent laboratory approved by the Owner to collect samples and test for bacteriological quality.
 - a. Repeat entire disinfection procedures until satisfactory results are obtained.
9. Secure and deliver to Owner, satisfactory bacteriological reports on samples taken from system.
 - a. Ensure sampling and testing procedures are in full compliance to AWWA C651, local water purveyor and applicable requirements of State of Illinois.

C. Purging Natural Gas:

1. Existing piping:
 - a. Turn off gas supply.
 - b. Vent line pressure outdoors.
 - c. If section exceeds the following, then remaining gas shall be displaced with an inert gas.
 - 1) 50 FT for 2-1/2 IN pipe.
 - 2) 30 FT for 3 IN pipe.
 - 3) 15 FT for 4 IN pipe.
 - 4) 10 FT for 6 IN pipe.
 - 5) Any length for 8 IN or larger pipe.
2. New piping:
 - a. Including but not limited to:

- 3) Minimum test heights shall be 10 FT above highest stack inlet.
- c. Larger diameter (above 36 IN) gravity plant piping:
 - 1) Plug downstream end of segment to be tested. Provide bracing as required.
 - 2) Fill segment and upstream structure to normal operating level as per hydraulic profile.
 - 3) Allow 24 HRS for absorption losses.
 - 4) Refill to original level.
 - 5) Provide reservoir to maintain constant head over duration of test.
 - 6) Record reservoir water volume at beginning and end of test.
4. Natural gas systems - testing methodology (Unless otherwise specified in the Piping Specification Schedules 40 05 00):
 - a. Maintain specified test pressure until each joint has been thoroughly examined for leaks by means of soap suds and glycerine.
 - b. Wipe joints clean after test.
5. Air testing methodology (Unless otherwise specified in the Piping Specification Schedules 40 05 00):
 - a. General:
 - 1) Assure air is ambient temperature.
 - b. Low pressure air testing:
 - 1) Place plugs in line and inflate to 25 psig.
 - 2) Check pneumatic plugs for proper sealing.
 - 3) Introduce low pressure air into sealed line segment until air pressure reaches 4 psig greater than ground water that may be over the pipe.
 - a) Use test gage conforming to ASME B40.100 with 0 to 15 psi scale and accuracy of 1 percent of full range.
 - 4) Allow 2 minutes for air pressure to stabilize.
 - 5) After stabilization period (3.5 psig minimum pressure in pipe) discontinue air supply to line segment.
 - 6) Record pressure at beginning and end of test.

C. Dielectric Testing Methods and Criteria:

1. Provide electrical check between metallic non-ferrous pipe or appurtenances and ferrous elements of construction to assure discontinuity has been maintained.
2. Wherever electrical contact is demonstrated by such test, locate the point or points of continuity and correct the condition.

2.2 CLEANING, DISINFECTION AND PURGING

A. Cleaning:

1. Clean interior of piping systems thoroughly before installing.
2. Maintain pipe in clean condition during installation.
3. Before jointing piping, thoroughly clean and wipe joint contact surfaces and then properly dress and make joint.
4. Immediately prior to pressure testing, clean and remove grease, metal cuttings, dirt, or other foreign materials which may have entered the system.

- c. Hydrostatic infiltration test for sanitary and stormwater sewers (groundwater level is above the top of pipe):
 - 1) Allowable leakage rate: 200 GAL per inch diameter per mile of pipe per day when depth of groundwater over top of pipe is 2 to 6 FT.
 - 2) Leakage rate at heads greater than 6 FT: Allowable leakage rate (gallons per inch diameter per mile of pipe per day) = $82 \times (\text{actual head to the } 1/2 \text{ power})$.
- d. Large diameter (above 48 IN) gravity plant piping systems shall have a maximum exfiltration of 25 gpd per inch-mile.
- e. Non-hazardous gas and air systems which are tested with air shall have a maximum pressure drop of 5 percent of the specified test pressure throughout the duration of the test.
- f. For low pressure (less than 25 psig) air testing, the acceptable time for loss of 1 psig of air pressure shall be:

Pipe Size (inches diameter)	Time (minutes per 100 LF)
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0
42	7.3
48	7.6

- 3. Hydrostatic pressure testing methodology (Unless otherwise specified in the Piping Specification Schedules 40 05 00):
 - a. General:
 - 1) All joints, including welds, are to be left exposed for examination during the test.
 - 2) Provide additional temporary supports for piping systems designed for vapor or gas to support the weight of the test water.
 - 3) Provide temporary restraints for expansion joints for additional pressure load under test.
 - 4) Isolate equipment in piping system with rated pressure lower than pipe test pressure.
 - 5) Do not paint or insulate exposed piping until successful performance of pressure test.
 - b. Soil, waste, drain and vent systems:
 - 1) Test at completion of installation of each stack or section of piping by filling system with water and checking joints and fittings for leaks.
 - 2) Eliminate leaks before proceeding with work or concealing piping.

2. Utilize pressures, media and pressure test durations as specified in Piping Specification Schedules (Specification 40 05 00).
3. Isolate equipment which may be damaged by the specified pressure test conditions.
4. Perform pressure test using calibrated pressure gauges and calibrated volumetric measuring equipment to determine leakage rates.
 - a. Select each gauge so that the specified test pressure falls within the upper half of the gauge's range.
 - b. Notify the Engineer 24 HRS prior to each test.
5. Completely assemble and test new piping systems prior to connection to existing pipe systems.
6. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.
7. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.

B. Pressure Testing:

1. Testing Medium: Unless otherwise specified in the Piping Specification Schedules (40 05 00), utilize the following test media.
 - a. Process and plant air systems:
 - 1) 2 IN and smaller, tested at 75 psi or less: Air or water
 - 2) 2 IN and smaller, tested at greater than 75 psi: Water
 - 3) Greater than 2 IN, tested at 3 psi or less: Air or water
 - 4) Greater than 2 IN, tested at greater than 3 psi: Water
 - b. Natural gas systems: Cylinder nitrogen.
 - c. Liquid systems:
 - 1) Up to and including 48 IN gravity systems, tested at 25 psig or less: Air or water.
 - 2) Above 48 IN gravity systems, tested at 25 psig or less: Water.
 - 3) All sizes of pumped systems, tested at 250 psig or less: Water
2. Allowable Leakage Rates (Unless otherwise specified in the Piping Specification Schedules 40 05 00):
 - a. Hazardous gas systems, all exposed piping systems, all pressure piping systems and all buried, insulated piping systems which are hydrostatically pressure tested shall have zero leakage at the specified test pressure throughout the duration of the test.
 - b. Hydrostatic exfiltration and infiltration for sanitary and stormwater sewers (groundwater level is below the top of pipe):
 - 1) Leakage rate: 200 GAL per inch diameter per mile of pipe per day at average head on test section of 3 FT.
 - 2) Average head is defined from groundwater elevation to average pipe crown.
 - 3) Acceptable test head leakage rate for heads greater than 3 FT: Acceptable leakage rate (gallons per inch diameter per mile per day) = $115 \times (\text{actual test head to the } 1/2 \text{ power})$.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.
- C. Welders: ASME qualified within previous 12 months for employed weld types.
- D. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of Illinois.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

1.10 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

1.11 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish one-year manufacturer's warranty for items covered under this specification section.

PART 2 - PRODUCTS

2.1 PIPE PRESSURE TESTING

- A. Pipe Testing - General:
 - 1. Test piping systems as follows:
 - a. Test exposed, non-insulated piping systems upon completion of system.
 - b. Test exposed, insulated piping systems upon completion of system but prior to application of insulation.
 - c. Test concealed interior piping systems prior to concealment and, if system is insulated, prior to application of insulation.
 - d. Test buried piping (insulated and non-insulated) prior to backfilling and, if insulated, prior to application of insulation.

C. Shop Drawings:

1. Identification:
 - a. Submit list of wording, symbols, letter size, and color coding for pipe identification.
 - b. Comply with ASME A13.1.
2. Indicate restrained joint details and materials.
3. Submit layout drawings showing piece numbers and location, indicating restrained joint locations.
4. Indicate layout of piping systems, including flexible connectors, expansion joints and compensators, loops, offsets, and swing joints.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

1.7 QUALITY ASSURANCE

- A. Materials in Contact with Potable Water: Certified to NSF Standards 61 and 372.
- B. Perform Work according to ASME B31.9 for installation of piping systems and according to ASME BPVC-IX for welding materials and procedures.
- C. Perform Work according to ASME B31.3, ASME B31.9 and applicable code for installation of piping systems.
- D. Through-Penetration Firestopping of Fire-Rated Assemblies shall be in full compliance with Section 07 84 13 – Penetration Firestopping.
- E. Through-Penetration Firestopping of Non-fire-rated Floor and Roof Assemblies shall be in full compliance with Section 07 92 00 - Joint Sealant.
- F. Fire-Resistive Joints in Fire-Rated Floor, Roof, and Wall Assemblies:
 1. Comply with UL 2079.
 2. Rating: As indicated on Drawings for assembly in which joint is installed.
- G. Fire-Resistive Joints between Floor Slabs and Exterior Walls:
 1. Comply with ASTM E119.
 2. Minimum Positive Pressure Differential: 0.1-inch wg to achieve fire-resistance rating as indicated on Drawings for floor assembly.
- H. Surface-Burning Characteristics: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

4. ASME Boiler and Pressure Vessel Code (BPVC), Section IX - Welding, Brazing, and Fusing Qualifications.
- D. ASTM International:
1. ASTM D2000 - Standard Classification System for Rubber Products in Automotive Applications.
 2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 3. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 4. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.
 5. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.
- E. Expansion Joint Manufacturers Association, Inc.:
1. EJMA Standards.
- F. NSF International:
1. NSF 61 - Drinking Water System Components - Health Effects.
 2. NSF 372 - Drinking Water System Components - Lead Content.
- G. UL:
1. UL 263 - Fire Tests of Building Construction and Materials.
 2. UL 1479 - Fire Tests of Through-Penetration Firestops.
 3. UL 2079 - Tests for Fire Resistance of Building Joint Systems.

1.4 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with installation of valves and equipment.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 1. Submit manufacturer catalog information for each specified product.
 2. Firestopping: Submit data on product characteristics, performance, and limitation criteria.
 3. Flexible Pipe Connectors: Indicate maximum temperature and pressure rating, face-to-face length, live length, hose wall thickness, hose convolutions per foot and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid.
 4. Expansion Joints: Indicate maximum temperature, pressure rating, and expansion compensation.

SECTION 40 05 06 - COUPLINGS, ADAPTERS, AND SPECIALS FOR PROCESS PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe pressure testing.
2. Cleaning, disinfection, and purging.
3. Plastic Tubing
4. Pipe penetrations.
5. Restrained joints.
6. Expansion joints.

B. Related Requirements:

1. Section 01 73 20 - Openings and Penetrations in Construction.
2. Section 07 92 00 - Joint Sealants.
3. Section 10 14 00 - Identification Devices.
4. Section 40 05 07 - Pipe Support Systems.
5. Section 40 05 51 - Common Requirements for Process Valves.

1.2 DEFINITIONS

- A. FM: Factory Mutual Insurance Company; FM Global is the communicative name of the company.
- B. WH: Warnock Hersey; indicates compliance to relevant building codes, association criteria, and product safety and performance standards.

1.3 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA C219 - Bolted, Sleeve-Type Couplings for Plain-End Pipe.

B. American Welding Society:

1. AWS D1.1/D1.1M - Structural Welding Code - Steel.

C. ASME International:

1. ASME A13.1 - Scheme for the Identification of Piping Systems.
2. ASME B31.3 - Process Piping.
3. ASME B31.9 - Building Services Piping.

- equipment connected to water lines.
8. Install unions between valves and connections to each piece of equipment, and install sufficient number of unions throughout piping system to facilitate installation and servicing.
 - a. On copper pipe lines, install wrought, solder-joint, copper to copper unions for lines 2 IN and smaller and, for lines 2-1/2 IN and over install brass flange unions.
 9. Construct and equip plumbing fixtures and equipment with anti-siphon devices as to entirely eliminate any danger of siphoning waste material into potable water supply system.
 10. Where exposed pipes 6 IN in size and smaller pass through floors, finished walls, or finished ceilings, fit with nickel or chrome-plated plates large enough to completely close hole around pipes.
 - a. Secure plates to pipe by set screw in approved manner.
 11. Size supply branches to individual fixtures as scheduled or indicated on Drawings.
 12. Install piping so as to be free to expand with proper loops, anchors and joints without injury to system or structure.
 13. Provide branches to wall hydrants or hose bibbs in exterior locations with interior shutoff and drain valves.
 14. Provide approved type vacuum breaker and backflow preventer installations indicated or as required by Code.
 15. Install concealed in finished structures such as administration and office facilities and at locations shown on Drawings.

END OF SECTION 40 05 00

- l. Install piping parallel to other piping, but maintain a minimum 12 IN clearance between gas piping and any piping that could reach 200 DegF.
- m. All gas piping in air plenums to be all-welded and encased in a Schedule 40 pipe sleeve.
 - 1) Ends of the sleeve open to atmosphere or sealed with the annulus vented (gas pipe size) to atmosphere.

F. SPECIFICATION SCHEDULE - SYSTEM 6

- 1. General:
 - a. Piping symbol and service:
 - 1) Finished Water (Potable Water) less than 3 IN
 - b. Test requirements:
 - 1) Test medium: Water.
 - 2) Pressure: 150 psig.
 - 3) Duration: 2 HRS.
 - 4) Leakage: 0 psi (zero)
- 2. System components:
 - a. Pipe size to 3 IN:
 - 1) Exposed service:
 - a) Material: Copper tubing, Type L.
 - b) Solder: Cadmium and lead-free solder compatible with tubing and fittings materials.
 - c) Reference: ASTM B88.
 - d) Lining: None.
 - e) Coating: Paint.
 - f) Fittings: Wrought copper or bronze fittings meeting ASME B16.22.
 - g) Joints: Soldered or brazed with unions at valves and equipment.
 - 2) Buried service:
 - a) Material: Copper tubing, Type K.
 - b) Reference: ASTM B88.
 - c) Lining: None.
 - d) Coating: None.
 - e) Fittings: AWWA C800.
 - f) Joints: Flared.
 - 3. Install drain tees with capped nipples of IPS brass 3 IN long at low points.
 - a. If low point occurs in concealed piping, provide approved flush access panel.
 - b. These drains are not shown on Drawings.
 - 4. Slope water lines down to drain points not less than 1 IN in 60 FT.
 - 5. Install all threaded piping with clean-cut tapered threads and with ends thoroughly reamed after cutting to remove burrs.
 - a. Pipe joint cement permitted only on external threads.
 - 6. For screwed nipples for connections to flush valves, lavatory supplies, and other equipment with threaded connections use iron, copper, or brass pipe.
 - 7. Install ball, butterfly and plug valves where indicated or required to adequately service all parts of system and equipment.
 - a. Install valves on each branch serving restroom.
 - b. Install valves on inlet and outlet connections of heat exchangers and on other

E. SPECIFICATION SCHEDULE - SYSTEM 5

1. General:
 - a. Piping symbol and service:
 - 1) NG - Natural Gas.
 - b. Test requirements:
 - 1) Test medium: Cylinder Nitrogen.
 - 2) Pressure: 25 psig.
 - 3) Duration: 8 HRS.
 - 4) Leakage: 0 psi (zero)
2. System components:
 - a. Pipe size through 26 IN:
 - 1) Exposed service:
 - a) Material: Steel, Grade B, black, Schedule 40.
 - b) Reference: ASTM A53.
 - c) Lining: None.
 - d) Coating: Paint.
 - e) Fittings: Malleable iron meeting ASTM A197, ASME B16.3, Class 150.
 - f) Joints: Threaded, ASME B16.9 steel butt- or socket-welded joints.
3. Natural Gas Piping Installation:
 - a. Install piping in accordance with NFPA, local gas company regulations, codes and local ordinances, complete with necessary appurtenances.
 - b. Install buried pipe at approximately 30 IN deep.
 - c. Gas cocks:
 - 1) Install before gas utilization equipment connected to system, at each branch main and at connection to meter.
 - 2) Design to operate safely under pressures indicated.
 - 3) Install ground joint unions at intervals to facilitate repairs.
 - 4) Cocks shall be of type and lubricant recommended by manufacturer for this class of service, and as approved by local gas company.
 - d. Pipe drainage:
 - 1) Drain horizontal piping to risers.
 - 2) Locate drains where required for system drainage.
 - 3) Install tee fitting with bottom outlet plugged or provide with threaded, capped nipple at bottom of risers or in accordance with applicable codes.
 - e. Make piping connections with shellacked joints or ground joint unions.
 - f. Provide vents from gas regulators, pressure reducing valves, and other vented devices to the outdoors and terminate in accordance with applicable codes.
 - g. Connect piping to pressure reducing valve outside each building as shown on drawings and schedule.
 - h. Provide flexible connections to vibration isolated equipment suitable for pressures, local and national codes and intended application.
 - i. Remove cutting and threading burrs.
 - j. Plug each gas outlet (including valves) with threaded plugs or caps immediately after installation and retain until the piping or equipment connections are completed.
 - k. Continuously ground gas piping electrically, bond tightly to the grounding connection.

- d) Coating: Paint.
- e) Fittings: Solvent welded socket type complying with ASTM D2467.
- f) Joints: Solvent welded with unions at valves, penetrations through structures and equipment connections for pipe 2 IN and less and flanges at those locations for pipe above 2 IN.

D. SPECIFICATION SCHEDULE - SYSTEM 4

1. General:
 - a. Piping symbol and service:
 - 1) LPA - Low Pressure Process Air.
 - b. Test requirements:
 - 1) Test medium: Air
 - 2) Pressure: 20 psig
 - 3) Duration: 2 HRS
 - 4) Leakage: 0 psi (zero)
 - c. Gaskets and O-rings:
 - 1) O-rings and flanged joints: Viton, 300 DegF.
 - d. Temperature:
 - 1) Normal: 170 DegF.
 - 2) Maximum: 300 DegF.
2. System components:
 - 1) Pipe size through 2 IN:
 - a) All process air piping:
 - (1) Material: Stainless steel 304L, Schedule 40.
 - (2) Reference: ASTM A778.
 - (3) Lining: None.
 - (4) Coating: None.
 - (5) Fittings: Seamless steel 304L meeting ASTM A774.
 - (6) Joints:
 - (a) Butt welded with unions at equipment and valves.
 - (b) Harnessed compression sleeve couplings where indicated on Drawings.
 - 2) Pipe size above 2 IN:
 - a) All process air piping:
 - (1) Material: Stainless steel 304L, Schedule 10.
 - (2) Reference: ASTM A778.
 - (3) Lining: None.
 - (4) Coating: None.
 - (5) Fittings: Seamless steel 304L meeting ASTM A774.
 - (6) Joints:
 - (a) Butt welded with flanges at equipment and valves.
 - (b) Harnessed compression sleeve couplings where indicated on Drawings.

B. SPECIFICATION SCHEDULE - SYSTEM 2

1. General:
 - a. Piping symbol and service:
 - 1) Interior Raw, Finished and Backwash Water Piping
 - 2) Waste Backwash Discharge Piping (Interior)
 - b. Test requirements:
 - 1) Test medium: Water
 - 2) Pressure: 150 psig.
 - 3) Duration: 2 HRS
 - 4) Leakage: 0 psi (zero)
 - c. Gaskets:
 - 1) Flanged, push-on, and mechanical joints (ductile iron): Rubber, AWWA/ANSI C111/A21.11.
2. System components:
 - a. Pipe size 3 IN through 48 IN:
 - 1) Exposed service:
 - a) Material:
 - (1) Flanged: Ductile iron, Class 53.
 - b) Reference: AWWA/ANSI C115/A21.15.
 - c) Lining: Cement.
 - d) Coating: Paint.
 - e) Fittings: Either AWWA/ANSI C110/A21.10 ductile or gray iron.
 - f) Joints: AWWA/ANSI C115/A21.15 flanged joints with flanges at valves and structure penetrations.

C. SPECIFICATION SCHEDULE - SYSTEM 3

1. General:
 - a. Piping symbol and service:
 - 1) Sodium Hypochlorite (including venting)
 - b. Test requirements pressure lines:
 - 1) Test medium: Water
 - 2) Pressure: 125 psig
 - 3) Duration: 2 HRS
 - 4) Leakage: 0 psi (zero)
 - c. Test requirements vacuum lines:
 - 1) Test medium: Air.
 - 2) Pressure: -27 IN HG.
 - 3) Duration: 6 HRS.
 - d. Gaskets and O-rings:
 - 1) Viton for POSA, POSC.
2. System components:
 - a. Pipe size 12 IN and smaller:
 - 1) Exposed service:
 - a) Material: CPVC, Schedule 80.
 - b) Reference: ASTM D1785.
 - c) Lining: None.

3.6 CLEANING, DISINFECTION AND PURGING

A. Cleaning:

1. Clean interior of piping systems thoroughly before installing.
2. Maintain pipe in clean condition during installation.
3. Before joining piping, thoroughly clean and wipe joint contact surfaces and then properly dress and make joint.
4. Immediately prior to pressure testing, clean and remove grease, metal cuttings, dirt, or other foreign materials which may have entered the system.
5. At completion of work and prior to Final Acceptance, thoroughly clean work installed under these Specifications.
 - a. Clean equipment, fixtures, pipe, valves, and fittings of grease, metal cuttings, and sludge which may have accumulated by operation of system, from testing, or from other causes.
 - b. Repair any stoppage or discoloration or other damage to parts of building, its finish, or furnishings, due to failure to properly clean piping system, without cost to Owner.
6. After erection of piping and tubing, but prior to installation of service outlet valves, blow natural gas systems clear of free moisture and foreign matter by means of air, nitrogen or carbon dioxide.
 - a. Oxygen shall never be used.
7. Clean chlorine piping in accordance with CI Pamphlet 6.

3.7 LOCATION OF BURIED OBSTACLES

- A. Furnish exact location and description of buried utilities encountered and thrust block placement.
- B. Reference items to definitive reference point locations such as found property corners, entrances to buildings, existing structure lines, fire hydrants and related fixed structures.
- C. Include such information as location, elevation, coverage, supports and additional pertinent information.
- D. Incorporate information on "As-Recorded" Drawings.

3.8 SCHEDULES

A. SPECIFICATION SCHEDULE – SYSTEM 1

1. General:
 - a. Piping symbol and service:
 - 1) Exterior underground utilities including water main, force main and sewer.
 - b. Test Requirements:
 - 1) See Division 33 specifications.
2. System Components:
 - a. See Division 33 specifications.

2. Hydrostatic pressure testing methodology:
 - a. General:
 - 1) All joints, including welds, are to be left exposed for examination during the test.
 - 2) Provide additional temporary supports for piping systems designed for vapor or gas to support the weight of the test water.
 - 3) Provide temporary restraints for expansion joints for additional pressure load under test.
 - 4) Isolate equipment in piping system with rated pressure lower than pipe test pressure.
 - 5) Do not paint or insulate exposed piping until successful performance of pressure test.
 - b. Soil, waste, drain and vent systems:
 - 1) Test at completion of installation of each stack or section of piping by filling system with water and checking joints and fittings for leaks.
 - 2) Eliminate leaks before proceeding with work or concealing piping.
 - 3) Minimum test heights shall be 10 FT above highest stack inlet.
 - c. Larger diameter (above 36 IN) gravity plant piping:
 - 1) Plug downstream end of segment to be tested.
 - a) Provide bracing as required.
 - 2) Fill segment and upstream structure to normal operating level as per hydraulic profile.
 - 3) Allow 24 HRS for absorption losses.
 - a) Refill to original level.
 - 4) Provide reservoir to maintain constant head over duration of test.
 - 5) Record reservoir water volume at beginning and end of test.
3. Air testing methodology:
 - a. General:
 - 1) Assure air is ambient temperature.
 - b. Low pressure air testing:
 - 1) Place plugs in line and inflate to 25 psig.
 - 2) Check pneumatic plugs for proper sealing.
 - 3) Introduce low pressure air into sealed line segment until air pressure reaches 4 psig greater than ground water that may be over the pipe.
 - a) Use test gage conforming to ASME B40.100 with 0 to 15 psi scale and accuracy of 1 percent of full range.
 - 4) Allow 2 minutes for air pressure to stabilize.
 - 5) After stabilization period (3.5 psig minimum pressure in pipe) discontinue air supply to line segment.
 - 6) Record pressure at beginning and end of test.
- C. Dielectric Testing Methods and Criteria:
 1. Provide electrical check between metallic non-ferrous pipe or appurtenances and ferrous elements of construction to assure discontinuity has been maintained.
 2. Wherever electrical contact is demonstrated by such test, locate the point or points of continuity and correct the condition.

7. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.

B. Pressure Testing:

1. Testing medium: Unless otherwise specified in the Piping Specification Schedules, utilize the following test media.
 - a. Process and plant air systems:

PIPE LINE SIZE	SPECIFIED TEST PRESSURE	TESTING MEDIUM
2 IN and smaller	75 psi or less	Air or water
2 IN and smaller	Greater than 75 psi	Water
Greater than 2 IN	3 psi or less	Air or water
Greater than 2 IN	Greater than 3 psi	Water

- b. Liquid systems:

PIPE LINE SIZE (DIA)	GRAVITY OR PUMPED	SPECIFIED TEST PRESSURE	TESTING MEDIUM
Up to and including 48 IN	Gravity	25 psig or less	Air or water
Above 48 IN	Gravity	25 psig or less	Water
All sizes	Pumped	250 psig or less	Water

- c. For low pressure (less than 25 psig) air testing, the acceptable time for loss of 1 psig of air pressure shall be:

PIPE SIZE (IN DIA)	TIME, MINUTES/100 FT
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0
42	7.3
48	7.6

methods not currently part of trade practice, utilize necessary special piping components.

- F. Once tie-in to each existing system is initiated, continue work continuously until tie-in is made and tested.

3.4 ACCESS PROVISIONS

- A. Provide access doors or panels in walls, floors, and ceilings to permit access to valves, piping and piping appurtenances requiring service.
- B. Size of access panels to allow inspection and removal of items served, minimum 10 x 14 IN size.
- C. Fabricate door and frame of minimum 14 GA, stretcher leveled stock, cadmium plated or galvanized after fabrication and fitted with screw driver lock of cam type.
- D. Provide with key locks, keyed alike, in public use areas.
- E. Furnish panels with prime coat of paint.
- F. Style and type as required for material in which door installed.
- G. Where door is installed in fire-rated construction, provide door bearing UL label required for condition.

3.5 FIELD QUALITY CONTROL

- A. Pipe Testing - General:
 - 1. Test piping systems as follows:
 - a. Test exposed, non-insulated piping systems upon completion of system.
 - b. Test exposed, insulated piping systems upon completion of system but prior to application of insulation.
 - c. Test concealed interior piping systems prior to concealment and, if system is insulated, prior to application of insulation.
 - d. Test buried piping (insulated and non-insulated) prior to backfilling and, if insulated, prior to application of insulation.
 - 2. Utilize pressures, media and pressure test durations as specified in Piping Specification Schedules.
 - 3. Isolate equipment which may be damaged by the specified pressure test conditions.
 - 4. Perform pressure test using calibrated pressure gages and calibrated volumetric measuring equipment to determine leakage rates.
 - a. Select each gage so that the specified test pressure falls within the upper half of the gage's range.
 - b. Notify the Engineer 24 HRS prior to each test.
 - 5. Completely assemble and test new piping systems prior to connection to existing pipe systems.
 - 6. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.

M. Equipment Pipe Connections:

1. Equipment - General:

- a. Exercise care in bolting flanged joints so that there is no restraint on the opposite end of pipe or fitting which would prevent uniform gasket pressure at connection or would cause unnecessary stresses to be transmitted to equipment flanges.
- b. Where push-on joints are used in conjunction with flanged joints, final positioning of push-on joints shall not be made until flange joints have been tightened without strain.
- c. Tighten flange bolts at uniform rate which will result in uniform gasket compression over entire area of joint.
 - 1) Provide tightening torque in accordance with manufacturer's recommendations.
- d. Support and match flange faces to uniform contact over their entire face area prior to installation of any bolt between the piping flange and equipment connecting flange.
- e. Permit piping connected to equipment to freely move in directions parallel to longitudinal centerline when and while bolts in connection flange are tightened.
- f. Align, level, and wedge equipment into place during fitting and alignment of connecting piping.
- g. Grout equipment into place prior to final bolting of piping but not before initial fitting and alignment.
- h. To provide maximum flexibility and ease of alignment, assemble connecting piping with gaskets in place and minimum of four (4) bolts per joint installed and tightened.
 - 1) Test alignment by loosening flange bolts to see if there is any change in relationship of piping flange with equipment connecting flange.
 - 2) Realign as necessary, install flange bolts and make equipment connection.
- i. Provide utility connections to equipment shown on Drawings, scheduled or specified.

N. Provide insulating components where dissimilar metals are joined together.

O. Instrument Connections: See Drawing details.

3.3 CONNECTIONS WITH EXISTING PIPING

- A. Where connection between new work and existing work is made, use suitable and proper fittings to suit conditions encountered.
- B. Perform connections with existing piping at time and under conditions which will least interfere with service to customers affected by such operation.
- C. Undertake connections in fashion which will disturb system as little as possible.
- D. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to adjacent property.
- E. Where connections to existing systems necessitate employment of past installation

- E. Pipe Support:
 - 1. Use methods of piping support as shown on Drawings and as required in Specification Section 40 05 07.
 - 2. Where pipes run parallel and at same elevation or grade, they may be grouped and supported from common trapeze-type hanger, provided hanger rods are increased in size as specified for total supported weight.
 - a. The pipe in the group requiring the least maximum distance between supports shall set the distance between trapeze hangers.
 - 3. Size pipe supports with consideration to specific gravity of liquid being piped.
- F. Locate and size sleeves and castings required for piping system.
 - 1. Arrange for chases, recesses, inserts or anchors at proper elevation and location.
- G. Use reducing fittings throughout piping systems.
 - 1. Bushings will not be allowed unless specifically approved.
- H. Equipment Drainage and Miscellaneous Piping:
 - 1. Provide drip pans and piping at equipment where condensation may occur.
 - 2. Hard pipe stuffing box leakage to nearest floor drain.
 - 3. Avoid piping over electrical components such as motor control centers, panelboards, etc.
 - a. If piping must be so routed, utilize 16 GA, 316 stainless steel drip pan under piping and over full length of electrical equipment.
 - b. Hard pipe drainage to nearest floor drain.
 - 4. Collect system condensate at drip pockets, traps and blow off valves.
 - 5. Provide drainage for process piping at locations shown on Drawings in accordance with drawing details.
 - 6. For applications defined above and for other miscellaneous piping which is not addressed by a specific piping service category in PART 1, provide 304 stainless steel piping and fittings.
 - a. Size to handle application with 3/4 IN being minimum size provided.
- I. Unions:
 - 1. Install in position which will permit valve or equipment to be removed without dismantling adjacent piping.
 - 2. Mechanical type couplings may serve as unions.
 - 3. Additional flange unions are not required at flanged connections.
- J. Install expansion devices as necessary to allow expansion/contraction movement.
- K. Provide full face gaskets on all systems.
- L. Anchorage and Blocking:
 - 1. Block, anchor, or harness exposed piping subjected to forces in which joints are installed to prevent separation of joints and transmission of stress into equipment or structural components not designed to resist those stresses.

3. Grade trench bottom and excavate for pipe bell and lay pipe on trench bottom.
4. Install gasket or joint material according to manufacturer's directions after joints have been thoroughly cleaned and examined.
5. Except for first two (2) joints, before making final connections of joints, install two (2) full sections of pipe with earth tamped alongside of pipe or final with bedding material placed.
6. Lay pipe in only suitable weather with good trench conditions.
 - a. Never lay pipe in water except where approved by Engineer.
7. Seal open end of line with watertight plug if pipe laying stopped.
8. Remove water in trench before removal of plug.

F. Lining Up Push-On Joint Piping:

1. Lay piping on route lines shown on Drawings.
2. Deflect from straight alignments or grades by vertical or horizontal curves or offsets.
3. Observe maximum deflection values stated in manufacturer's written literature.
4. Provide special bends when specified or where required alignment exceeds allowable deflections stipulated.
5. Install shorter lengths of pipe in such length and number that angular deflection of any joint, as represented by specified maximum deflection, is not exceeded.

G. Anchorage and Blocking:

1. Provide reaction blocking, anchors, joint harnesses, or other acceptable means for preventing movement of piping caused by forces in or on buried piping tees, wye branches, plugs, or bends.
2. Place concrete blocking so that it extends from fitting into solid undisturbed earth wall.
 - a. Concrete blocks shall not cover pipe joints.
3. Provide bearing area of concrete in accordance with drawing detail.

3.2 INTERIOR AND EXPOSED EXTERIOR PIPING INSTALLATION

- A. Install piping in vertical and horizontal alignment as shown on Drawings.
- B. Alignment of piping smaller than 4 IN may not be shown; however, install according to Drawing intent and with clearance and allowance for:
 1. Expansion and contraction.
 2. Operation and access to equipment, doors, windows, hoists, moving equipment.
 3. Headroom and walking space for working areas and aisles.
 4. System drainage and air removal.
- C. Enter and exit through structure walls, floor and ceilings using penetrations and seals as shown on the Drawings.
- D. Install vertical piping runs plumb and horizontal piping runs parallel with structure walls.

F. Dry Disconnect Couplings:

1. Adapters:
 - a. Male adapters: Size shown on Drawings.
 - b. Adapters:
 - 1) Female NPT end connection for sludge and flush applications.
 - 2) Male NPT end connection for chemical applications.
 - c. Construct adapters for sludge applications from cast iron or steel.
 - d. Construct adapters for chemical and PVC system applications 3 IN and below from polypropylene.
 - 1) Above 3 IN size, provide stainless steel units.
2. Couplers:
 - a. Built-in valve and spring loaded poppet which close automatically when disconnected.
 - b. Designed to remain with only one (1) arm locked in closed position.
 - c. Construct couplers for sludge applications fabricated from material utilized for adapters.
 - d. Construct couplers for chemical and PVC system applications 3 IN and less from polypropylene with stainless steel arms and pins.
 - 1) Above 3 IN, provide stainless steel units.
 - e. Gasket: Compatible with conveyed liquid.
3. Dust caps: For all adapters.

G. Valves:

1. See schematics and details for definition of manual valves used in each system under 4 IN in size.
 - a. See Drawings schedule for valve types 4 IN and above and for automatic valves used in each system.
2. See Specification Division 40.

PART 3 EXECUTION

3.1 EXTERIOR BURIED PIPING INSTALLATION

- A. Unless otherwise shown on the Drawings, provide a minimum of 5 FT and maximum of 10 FT earth cover over exterior buried piping systems and appurtenances conveying water, fluids, or solutions subject to freezing.
- B. Enter and exit through structure walls, floors, and ceilings by using penetrations and seals as shown on Drawings.
- C. When entering or leaving structures with buried mechanical joint piping, install joint within 2 FT of point where pipe enters or leaves structure.
 1. Install second joint not more than 6 FT nor less than 4 FT from first joint.
- D. Install expansion devices as necessary to allow expansion and contraction movement.
- E. Laying Pipe In Trench:
 1. Excavate and backfill trench in accordance with Specifications Section 31 23 10.
 2. Clean each pipe length thoroughly and inspect for compliance to specifications.

a. PROCO.

B. Submit request for substitution in accordance with Specification Section 01 60 00.

2.2 PIPING SPECIFICATION SCHEDULES

- A. Piping system materials, fittings and appurtenances are subject to requirements of specific piping specification schedules located at the end of PART 3 of this Section.

2.3 COMPONENTS AND ACCESSORIES

A. Insulating Components:

1. Dielectric flange kits:
 - a. Flat faced.
 - b. 1/8 IN thick dielectric gasket, phenolic, non-asbestos.
 - c. Suitable for 175 psi, 210 DegF.
 - d. 1/32 IN wall thickness bolt sleeves.
 - e. 1/8 IN thick phenolic insulating washers.
2. Dielectric unions:
 - a. Screwed end connections.
 - b. Rated at 175 psi, 210 DegF.
 - c. Provide dielectric gaskets suitable for continuous operation at union rated temperature and pressure.

B. Dirt Strainers:

1. Y-type.
2. Composition bronze.
3. Rated for test pressure and temperature of system in which they are installed.
4. 20 mesh Monel screen.
5. Threaded bronze plug in the blowoff outlet.
6. Threaded NPT end connections.

C. Strainers for Chemical Applications:

1. Y-type.
2. Strainers of same material, test pressure, and temperature rating as system in which strainer is placed.

D. Reducers:

1. Furnish appropriate size reducers and reducing fittings to mate pipe to equipment connections.
2. Connection size requirements may change from those shown on Drawings depending on equipment furnished.

E. Protective Coating and Lining:

1. Include pipe, fittings, and appurtenances where coatings, linings, paint, tests and other items are specified.
2. Field paint pipe in accordance with Specification Section 09 96 00

- B. Operation and Maintenance Manuals:
 - 1. See Specification Section 01 33 00 for requirements for:
 - a. The mechanics and administration of the submittal process.
 - b. The content of Operation and Maintenance Manuals.
- C. Miscellaneous Submittals:
 - 1. Qualifications of lab performing disinfection analysis on water systems.
 - 2. Test reports:
 - a. Copies of pressure test results on all piping systems.
 - b. Reports defining results of dielectric testing and corrective action taken.
 - c. Disinfection test report.
 - d. Notification of time and date of piping pressure tests a minimum of 24 hours prior to testing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect pipe coating during handling using methods recommended by manufacturer.
 - 1. Use of bare cables, chains, hooks, metal bars or narrow skids in contact with coated pipe is not permitted.
- B. Prevent damage to pipe during transit.
 - 1. Repair abrasions, scars, and blemishes.
 - 2. If repair of satisfactory quality cannot be achieved, replace damaged material immediately.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 - 1. Insulating unions:
 - a. "Dielectric" by Epco.
 - 2. Dirt strainers (Y type):
 - a. Mueller (#351).
 - b. Sarco.
 - c. Armstrong.
 - 3. Chemical strainers (Y type):
 - a. Chemtrol.
 - b. Asahi.
 - 4. Dry disconnect couplings:
 - a. Kamlock.
 - 5. Dielectric flange kit:
 - a. PSI.
 - b. Maloney.
 - c. Central Plastics.
 - 6. Pipe saddles (for gage installation):
 - a. Dresser Style 91 (steel and ductile iron systems).
 - b. Dresser Style 194 (nonmetallic systems).
 - 7. Expansion joint at FRP and poly tanks:

1.3 SYSTEM DESCRIPTION

A. Piping Systems Organization and Definition:

1. Piping services are grouped into designated systems according to the chemical and physical properties of the fluid conveyed, system pressure, piping size and system materials of construction.
2. See PIPING SPECIFICATION SCHEDULES in PART 3.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
 - c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
 - 1) Attach technical product data on gaskets, pipe, fittings, and other components.
3. Fabrication and/or layout drawings:
 - a. Exterior yard piping drawings (minimum scale 1 IN equals 10 FT) with information including:
 - 1) Dimensions of piping lengths.
 - 2) Invert or centerline elevations of piping crossings.
 - 3) Acknowledgement of bury depth requirements.
 - 4) Details of fittings, tapping locations, thrust blocks, restrained joint segments, harnessed joint segments, hydrants, and related appurtenances.
 - 5) Acknowledge designated valve or gate tag numbers, manhole numbers, instrument tag numbers, pipe and line numbers.
 - 6) Line slopes and vents.
 - b. Interior piping drawings (minimum scale 1/8 IN equals 1 FT) with information including:
 - 1) Dimensions of piping from column lines or wall surfaces.
 - 2) Centerline dimensions of process piping.
 - 3) Invert dimensions of drainage piping.
 - 4) Centerline elevation and size of intersecting ductwork, conduit/conduit racks, or other potential interferences requiring coordination.
 - 5) Location and type of pipe supports and anchors.
 - 6) Locations of valves and valve actuator type.
 - 7) Details of fittings, tapping locations, equipment connections, flexible expansion joints, connections to equipment, and related appurtenances.
 - 8) Acknowledgement of valve, equipment and instrument tag numbers.
 - 9) Provisions for expansion and contraction.
 - c. Schedule of interconnections to existing piping and method of connection.

- Sewer Pipe
15. C425, Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
 16. C443, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
 17. C564, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
 18. C700, Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated.
 19. D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 20. D2466, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

C. American Water Works Association (AWWA):

1. B300, Standard for Hypochlorites.
2. C200, Standard for Steel Water Pipe - 6 IN and Larger.
3. C207, Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 IN through 144 IN.
4. C208, Standard for Dimensions for Fabricated Steel Water Pipe Fittings.
5. C606, Standard for Grooved and Shouldered Joints.
6. C651, Standard for Disinfecting Water Mains.
7. C800, Standard for Underground Service Line Valves and Fittings.

D. American Water Works Association/American National Standards Institute (AWWA/ANSI):

1. C110/A21.10, Standard for Ductile-Iron and Gray-Iron Fittings.
2. C111/A21.11, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
3. C115/A21.15, Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
4. C151/A21.51, Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
5. C153/A21.53, Standard for Ductile-Iron Compact Fittings for Water Service.

E. Chlorine Institute, Inc. (CI):

1. Pamphlet 6, Piping Systems for Dry Chlorine.

F. Cast Iron Soil Pipe Institute (CISPI):

1. 301, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

G. International Plumbing Code (IPC).

H. Underwriters Laboratories, Inc. (UL).

I. Coordinate flange dimensions and drillings between piping, valves, and equipment.

SECTION 40 05 00 - COMMON WORK RESULTS FOR PROCESS INTERCONNECTIONS

PART I - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Process piping systems.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 01 - General Requirements.
3. Section 40 05 07 - Hangers and Supports for Process Piping
4. Section 40 05 51 - Common Requirements for Process Valves

1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers (ASME):

1. B16.3, Malleable Iron Threaded Fittings.
2. B16.9, Factory-Made Wrought Steel Butt-Welding Fittings.
3. B16.22, Wrought Copper and Bronze Solder - Joint Pressure Fittings.
4. B40.100, Pressure Gauges and Gauge Attachments.

B. ASTM International (ASTM):

1. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. A74, Standard Specification for Cast Iron Soil Pipe and Fittings.
3. A106, Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service.
4. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
5. A197, Standard Specification for Cupola Malleable Iron.
6. A234, Standard Specification for Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
7. A269, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
8. A536, Standard Specification for Ductile Iron Castings.
9. A760, Standard Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains.
10. A774, Standard Specification for As-Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Service at Low and Moderate Temperatures.
11. A778, Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products.
12. B88, Standard Specification for Seamless Copper Water Tube.
13. C14, Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
14. C76, Standard Specification for Reinforced Concrete Culvert, Storm Drain, and

DIVISION 40
PROCESS INTERCONNECTIONS

This Page Left Blank Intentionally

- B. Operate each wall switch and fan speed controller with circuit energized to verify proper operation.
- C. Test each receptacle to verify operation and proper polarity.
- D. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- E. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.5 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.6 CLEANING

- A. Clean exposed surfaces to remove, dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION 26 27 26

- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.3 INSTALLATION

- A. Coordinate locations and types of outlet boxes as provided under Section 26 05 33 as required for installation of wiring devices provided under this section.
 - 1. Mount device outlet boxes where indicated on the Drawings and at heights as scheduled in Specification Section 26 05 00.
 - 2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 - 3. Where multiple receptacles or wall switches are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
 - 4. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect/Engineer to obtain direction prior to proceeding with work.
- B. Install wiring devices in accordance with manufacturer's instructions.
- C. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- D. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- F. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- G. Install wall switches with OFF position down.
- H. Install vertically mounted receptacles with grounding pole on bottom and horizontally mounted receptacles with grounding pole on left.
- I. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- J. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- K. Identify wiring devices in accordance with Section 10 14 00.
- L. See Specification Section 26 05 33 for device outlet box requirements.
- M. Where more than one (1) receptacle is installed in a room, they shall be symmetrically arranged.
- N. Provide blank plates for empty outlets.

3.4 FIELD QUALITY CONTROL

- A. Inspect each wiring device for damage and defects.

- F. Exterior Locations Specific Requirements:
 - 1. Coverplate:
 - a. Extra-duty rated, weatherproof (NEMA 3R) while in use, gasketed, stainless steel hardware, copper-free aluminum, 3.2 IN minimum cover depth for #12 AWG cord.
- G. Corrosive and Dry Area Specific Requirements:
 - 1. Corrosion resistant nickel plated metal parts.
 - 2. Receptacle body color: Gray.
 - 3. Coverplate for use on metallic outlet boxes:
 - a. Cast iron alloy, stainless steel hardware, galvanized and factory painted finish.
 - b. Cast aluminum, stainless steel hardware, natural, lacquer or factory painted finish.
 - c. Single or multiple gang as required.
 - 4. Coverplate for use on non-metallic outlet boxes:
 - a. High impact thermoplastic or nylon, gray in color, stainless steel screws.
 - b. Single or multiple gang as required.
- H. Hazardous and Corrosive or Highly Corrosive and Dry, Wet or Damp Area Specific Requirements:
 - 1. Rated for Class I, Division 1 and 2, Groups C and D.
 - 2. Assembly consists of outlet box and a combination receptacle/switch and housing.
 - a. NEMA 3, 7 or 9 rated as required by NEMA 250.
 - 3. Outlet box (EDS Type):
 - a. High strength glass reinforced non-metallic compound.
 - b. Aluminum grounding grid imbedded into enclosure.
 - 4. Coverplate:
 - a. High strength glass reinforced non-metallic compound, gasketed and coated stainless steel hardware.
 - b. Operator type: Non-metallic, front mounted lever to operate snap switch.
 - 5. Standards: UL 894.
- I. Welding Receptacles: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- B. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- C. Verify that final surface finishes are complete, including painting.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.

5. Back and side wired.
 6. Rating: 20 A, 125 Vac.
 7. High impact nylon body.
 8. Receptacle body color:
 - a. Normal power: Ivory.
 - b. Generator or UPS power: Red.
 9. Duplex or simplex as indicated on the Drawings.
 10. Configuration: NEMA 5-20R.
 11. Standards: UL 498, UL 514A, NEMA WD 1, NEMA WD 6.
- B. Receptacle Type Specific Requirements:
1. Basic receptacles:
 - a. Weather-resistant when located in damp or wet areas as indicated on the Drawings.
 - 1) Identification: Letters "WR" on face of receptacle.
 2. Ground Fault Circuit Interrupter (GFCI):
 - a. Specification Grade.
 - b. Class A protection.
 - c. Feed through type.
 - d. Test and reset buttons.
 - e. Self-testing.
 - f. Visual indicator light.
 - g. Weather-resistant when located in damp or wet areas as indicated on the Drawings.
 - 1) Identification: Letters "WR" on face of receptacle.
 - h. Additional standards: UL 943.
- C. Dry Non-Architecturally Finished Areas Specific Requirements:
1. Coverplate for use on surface mounted outlet boxes:
 - a. Cast iron alloy, galvanized and factory painted finish.
 - b. Cast aluminum, natural, lacquer or factory painted finish.
 - c. Single or multiple gang as required.
 2. Wallplate for use on recessed outlet boxes:
 - a. High impact thermoplastic or nylon, color to match body.
 - b. Single or multiple gang as required.
- D. Damp Non-Architecturally Finished Areas Specific Requirements:
1. Coverplate:
 - a. Cast iron alloy, gasketed, self-closing cover, stainless steel hardware, galvanized and factory painted finish.
 - b. Cast aluminum, gasketed, self-closing cover, stainless steel hardware, natural, lacquer or factory painted finish.
 - c. Weatherproof when receptacle is covered.
 - d. Single or multiple gang as required.
- E. Wet Non-Architecturally Finished Areas Specific Requirements:
1. Coverplate:
 - a. Extra-duty rated, weatherproof (NEMA 3R) while in use, gasketed, stainless steel hardware, copper-free aluminum, 3.2 IN minimum cover depth for #12 AWG cords.

2. Wallplate for use on recessed outlet boxes:
 - a. High impact thermoplastic or nylon, color to match handle.
 - b. Single or multiple gang as required.
- C. Wet or Damp Non-architecturally Finished or Exterior Area Specific Requirements:
 1. Coverplate:
 - a. Cast iron alloy, gasketed, stainless steel hardware, galvanized and factory painted finish.
 - b. Cast aluminum, gasketed, stainless steel hardware, natural, lacquer, or factory painted finish.
 - c. Operator type:
 - 1) Front mounted lever type handle to operate snap switch.
 - 2) Push/pull operator to operate snap switch.
 - 3) Spring type door to cover snap switch.
 - d. Wet location rated.
 - e. Single or multiple gang as required.
- D. Corrosive and Dry Area Specific Requirements:
 1. Corrosion resistant nickel plated metal parts.
 2. Coverplate for use on metallic outlet boxes:
 - a. Cast iron alloy, stainless steel hardware, galvanized and factory painted finish.
 - b. Cast aluminum, stainless steel hardware, natural, lacquer, or factory painted finish.
 - c. Single or multiple gang as required.
 3. Coverplate for use on non-metallic outlet boxes:
 - a. High impact thermoplastic or nylon, color to match handle, stainless steel screws.
 - b. Single or multiple gang as required.
- E. Hazardous and Corrosive or Highly Corrosive and Dry, Wet or Damp Area Specific Requirements:
 1. Rated for Class I, Division 1 and 2, Groups C and D.
 2. Assembly consists of outlet box, snap switch and coverplate.
 - a. NEMA 4X, 7 or 9 rated as required by NEMA 250.
 3. Outlet box:
 - a. High strength glass reinforced non-metallic compound.
 - b. Aluminum grounding grid imbedded into enclosure.
 4. Snap switch (EFS Type):
 - a. Not enclosed in separate sealing chamber requiring external sealing fittings.
 5. Coverplate:
 - a. High strength glass reinforced non-metallic compound, gasketed and coated stainless steel hardware.
 - b. Operator type: Non-metallic, front mounted lever to operate snap switch.
 6. Standards: UL 894.

2.3 RECEPTACLES

- A. Basic Requirements Unless Modified in Specific Requirements Paragraph of Receptacles and Per Designated Areas:
 1. Industrial Specification Grade.
 2. Straight blade.
 3. Brass triple wipe line contacts.
 4. One-piece grounding system with double wipe brass grounding contacts and self-grounding strap with grounding terminal.

- b. Fabrication and/or Layout Drawings updated with as-built conditions.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store wiring devices and accessories in accordance with manufacturer's instructions

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

- 1. Wall switches and receptacles:
 - a. Appleton Electric Co.
 - b. Bryant Electric by Hubbell.
 - c. Cooper Wiring Devices by Eaton.
 - d. Crouse-Hinds by Eaton.
 - e. Kellems Wiring Devices by Hubbell.
 - f. Killark by Hubbell.
 - g. Leviton Manufacturing Company, Inc.
 - h. Pass & Seymour by Legrand.

- B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 WALL SWITCHES

- A. Basic requirements unless modified in specific requirements paragraph of switches per designated areas or types:

- 1. Industrial Specification Grade.
- 2. Quiet action, snap switch.
- 3. Self-grounding with grounding terminal.
- 4. Back and side wired.
- 5. Solid silver cadmium oxide contacts.
- 6. Rugged thermoplastic and/or nylon housing and one-piece switch arm.
- 7. Ratings: 20 A, 120/277 Vac.
- 8. Switch handle type: Toggle.
- 9. Switch handle color: Ivory.
- 10. Types as indicated on the Drawings:
 - a. Single-pole.
 - b. Double-pole.
 - c. 3-way.
 - d. 4-way.
 - e. Keyed.
 - f. Momentary contact.
 - g. Motion sensor light switch.
- 11. Standards: UL 20, UL 514A, NEMA WD 1, NEMA WD 6.

- B. Dry Non-Architecturally Finished Area Specific Requirements:

- 1. Coverplate for use on surface mounted outlet boxes:
 - a. Cast iron alloy, galvanized and factory painted finish.
 - b. Single or multiple gang as required.

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Material and installation requirements for:
 - a. Wall switches.
 - b. Receptacles.
 - c. Device wallplates and coverplates.
 - d. Occupancy sensors.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. Section 10 14 00 - Identification Devices.
 - 4. Section 26 05 00 - Electrical: Basic Requirements.
 - 5. Section 26 05 33 - Raceways and Boxes.

1.2 REFERENCES

- A. National Electrical Manufacturers Association (NEMA):
 - 1. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. WD 1, General Color Requirements for Wiring Devices.
 - 3. WD 6, Wiring Devices - Dimensional Requirements.
- B. Underwriters Laboratories, Inc. (UL):
 - a. 20, General-Use Snap Switches.
 - b. 498, Standard for Attachment Plugs and Receptacles.
 - c. 514A, Metallic Outlet Boxes.
 - d. 894, Standard for Switches for Use in Hazardous (Classified) Locations.
 - e. 943, Ground-Fault Circuit-Interruption.
- C. National Fire Protection Association (NFPA):
 - 1. 70, National Electrical Code (NEC); Most recent edition adopted by Owner, including all applicable amendments and supplements.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 - 2. Product technical data:
 - a. Provide submittal data for all products specified in PART 2 of this Specification Section.
 - b. See Specification Section 26 05 00 for additional requirements.
- B. Contract Closeout Information:
 - 1. Operation and Maintenance Data:
 - a. See Specification Section 01 70 00 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

This Page Intentionally Left blank

- b. Pull and junction box surface mounted in non-architecturally finished dry, wet, corrosive and highly corrosive areas.
 - 3. Permitted uses of non-metallic outlet boxes:
 - a. Housing of wiring devices surface mounted in non-architecturally finished highly corrosive areas.
 - b. Pull and junction box surface mounted in non-architecturally finished highly corrosive areas.
 - 4. Mount device outlet boxes where indicated on the Drawings and at heights as scheduled in Specification Section 26 05 00.
 - 5. Set device outlet boxes plumb and vertical to the floor.
 - 6. Outlet boxes recessed in walls:
 - a. Install with appropriate stud wall support brackets or adjustable bar hangers so that they are flush with the face of the wall.
 - b. Locate in un-grouted cell of concrete block with bottom edge of box flush with bottom edge of block and flush with the face of the block.
 - 7. Place barriers between switches in boxes with 277 V switches on opposite phases.
 - 8. Back-to-back are not permitted.
 - 9. When an outlet box is connected to a PVC coated conduit, the box shall also be PVC coated.
- C. Pull and Junction Boxes:
- 1. Install pull or junction boxes in conduit runs where indicated or required to facilitate pulling of wires or making connections.
 - a. Make covers of boxes accessible.
 - 2. Permitted uses of NEMA 1 enclosure:
 - a. Pull or junction box surface mounted above removable ceiling tiles of an architecturally finished area.
 - 3. Permitted uses of NEMA 4 enclosure:
 - a. Pull or junction box surface mounted in areas designated as wet.
 - 4. Permitted uses of NEMA 4X metallic enclosure:
 - a. Pull or junction box surface mounted in areas designated as wet and/or corrosive.
 - b. Surface mounted in exterior locations.
 - 5. Permitted uses of NEMA 4X non-metallic enclosure:
 - a. Pull or junction box surfaced mounted in areas designated as wet and/or highly corrosive.
 - 6. Permitted uses of NEMA 7 enclosure:
 - a. Pull or junction box surface mounted in areas designated as Class I hazardous.
 - 1) Provide PVC coating in corrosive and highly corrosive areas when PVC coated conduit is used.
 - 7. Permitted uses of NEMA 9 enclosure:
 - a. Pull or junction box surface mounted in areas designated as Class II hazardous.
 - 1) Provide PVC coating in corrosive and highly corrosive areas when PVC coated conduit is used.
 - 8. Permitted uses of NEMA 12 enclosure:
 - a. Pull or junction box surface mounted in areas designated as dry.

END OF SECTION 26 05 33

4. Conduit type shall be compatible with the support fastener material.
 - a. Zinc plated steel, steel protected with zinc phosphate and oil finish and malleable iron fasteners may be used with RGS.
 - b. Stainless steel system may be used with RGS and PVC-RGS and RAC.
 - c. PVC coated fasteners may be used with PVC-RGS and RAC and PVC-40 and PVC-80.
 - d. Nonmetallic fasteners may be used with PVC-40 and PVC-80.
- C. Conduit Support General Requirements:
 1. Maximum spacing between conduit supports per NFPA 70.
 2. Support conduit from the building structure.
 3. Do not support conduit from process, gas, air or water piping; or from other conduits.
 4. Provide hangers and brackets to limit the maximum uniform load on a single support to 25 LBS or to the maximum uniform load recommended by the manufacturer if the support is rated less than 25 LBS.
 - a. Do not exceed maximum concentrated load recommended by the manufacturer on any support.
 - b. Conduit hangers:
 - 1) Continuous threaded rods combined with struts or conduit clamps: Do not use perforated strap hangers and iron bailing wire.
 - c. Do not use suspended ceiling support systems to support raceways.
 - d. Hangers in metal roof decks:
 - 1) Utilize fender washers.
 - 2) Not extend above top of ribs.
 - 3) Not interfere with vapor barrier, insulation, or roofing.
 5. Conduit support system fasteners:
 - a. Use sleeve-type expansion anchors as fasteners in masonry wall construction.
 - b. Do not use concrete nails and powder-driven fasteners.

3.6 OUTLET, PULL AND JUNCTION BOX INSTALLATION

- A. General:
 1. Install products in accordance with manufacturer's instructions.
 2. See Specification Section 26 05 00 and the Drawings for area classifications.
 3. Fill unused punched-out, tapped, or threaded hub openings with insert plugs.
 4. Size boxes to accommodate quantity of conductors enclosed and quantity of conduits connected to the box.
 5. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- B. Outlet Boxes:
 1. Permitted uses of metallic outlet boxes:
 - a. Housing of wiring devices:
 - 1) Recessed in all stud framed walls and ceilings.
 - 2) Recessed in poured concrete, concrete block and brick walls of architecturally finished areas and exterior building walls.
 - b. Pull or junction box:
 - 1) Above gypsum wall board or acoustical tile ceilings.
 - 2) Above 10 FT in an architecturally finished area where there is no ceiling.
 2. Permitted uses of cast outlet boxes:
 - a. Housing of wiring devices surface mounted in non-architecturally finished dry, wet, corrosive, highly corrosive and hazardous areas.

- c. Insulated bushing and two (2) locknuts.
 - 3. In NEMA 12 rated enclosures:
 - a. Watertight, insulated and gasketed hub and locknut.
 - b. Use grounding type locknut or bushing when required by NFPA 70.
 - 4. In NEMA 4 and NEMA 4X rated enclosures:
 - a. Watertight, insulated and gasketed hub and locknut.
 - 5. In NEMA 7 and NEMA 9 rated enclosures:
 - a. Into an integral threaded hub.
 - 6. When stubbed up through the floor into floor mount equipment:
 - a. With an insulated grounding bushing on metallic conduits.
 - b. With end bells on nonmetallic conduits.
- H. Threadless couplings shall only be used to join new conduit to existing conduit when the existing conduit end is not threaded and it is not practical or possible to cut threads on the existing conduit with a pipe threader.

3.5 CONDUIT SUPPORT

- A. Permitted multi-conduit surface or trapeze type support system per area designations and conduit types:
 - 1. Dry or wet and/or hazardous areas:
 - a. Galvanized system consisting of: Galvanized steel channels and fittings, nuts and hardware and conduit clamps.
 - b. Aluminum system consisting of: Aluminum channels, fittings and conduit clamps with stainless steel nuts and hardware.
 - 2. Corrosive areas:
 - a. Aluminum system consisting of: Aluminum channels, fittings and conduit clamps with stainless steel nuts and hardware.
 - b. Stainless steel system consisting of: Stainless steel channels and fittings, nuts and hardware and conduit clamps.
 - 3. Conduit type shall be compatible with the support system material.
 - a. Galvanized steel system may be used with RGS.
 - b. Stainless steel system may be used with RGS and PVC-RGS and RAC.
 - c. PVC coated galvanized steel system may be used with PVC-RGS and RAC and PVC-40 and PVC-80.
 - d. Aluminum system may be used with RAC.
- B. Permitted single conduit support fasteners per area designations and conduit types:
 - 1. Architecturally finished areas:
 - a. Material: Zinc plated steel, or steel protected with zinc phosphate and oil finish.
 - b. Types of fasteners: Spring type hangers and clips, straps, hangers with bolts, clamps with bolts and bolt on beam clamps.
 - c. Provide anti-rattle conduit supports when conduits are routed through metal studs.
 - 2. Dry or wet and/or hazardous areas:
 - a. Material: Zinc plated steel, stainless steel and malleable iron.
 - b. Types of fasteners: Straps, hangers with bolts, clamps with bolts and bolt on beam clamps.
 - 3. Corrosive areas:
 - a. Material: Stainless steel and PVC coat malleable iron or steel.
 - b. Types of fasteners: Straps, hangers with bolts, clamps with bolts and bolt on beam clamps.

- H. NEMA 4X Rated Wireway:
 - 1. Surface mounted in areas designated as wet and or corrosive.
- I. NEMA 12 Rated Wireway:
 - 1. Surface mounted in areas designated as dry in architecturally and non-architecturally finished areas.
- J. Underground Conduit: See Specification Section 26 05 43.

3.4 CONDUIT FITTINGS AND ACCESSORIES

- A. Conduit Seals:
 - 1. Installed in conduit systems located in hazardous areas as required by the NFPA 70 or as identified on the Drawings.
 - 2. Filler plug and drain shall be accessible.
 - 3. Pour the conduit seals in a two-step process.
 - a. Pour the seal and leave cover off.
 - b. After seal is dry, inspect for proper sealing, install cover and mark (for example, paint or permanent marker) as complete.
- B. Rigid nonmetallic conduit and fittings shall be joined utilizing solvent cement.
 - 1. Immediately after installation of conduit and fitting, the fitting or conduit shall be rotated 1/4 turn to provide uniform contact.
- C. Install Expansion Fittings:
 - 1. Where conduits are exposed to the sun and conduit run is greater than 200 FT.
 - 2. Elsewhere as identified on the Drawings.
- D. Install Expansion/Deflection Fittings:
 - 1. Where conduits enter a structure.
 - a. Except electrical manholes and handholes.
 - b. Except where the ductbank is tied to the structure with rebar.
 - 2. Where conduits span structural expansions joints.
 - 3. Elsewhere as identified on the Drawings.
- E. Threaded connections shall be made wrench-tight.
- F. Conduit joints shall be watertight:
 - 1. Where subjected to possible submersion.
 - 2. In areas classified as wet.
 - 3. Underground.
- G. Terminate Conduits:
 - 1. In metallic outlet boxes:
 - a. RGS and RAC:
 - 1) Conduit hub and locknut.
 - 2) Insulated bushing and two locknuts.
 - 3) Use grounding type locknut or bushing when required by NFPA 70.
 - 2. In NEMA 1 rated enclosures:
 - a. RGS and RAC:
 - b. Conduit hub and locknut.

- E. Conduit shall not be routed on the exterior of structures except as specifically indicated on the Drawings.
- F. Where sufficient room exists within the housing of roof-mounted equipment, the conduit shall be stubbed up inside the housing.
- G. Provide all required openings in walls, floors, and ceilings for conduit penetration.
 - 1. See Specification Section 01 73 20.

3.3 RACEWAY APPLICATIONS

- A. Permitted Raceway Types per Wire or Cable Types:
 - 1. Power wire or cables: All raceway types.
 - 2. Control wire or cables: All raceway types.
 - 3. Instrumentation cables: Metallic raceway except nonmetallic may be used underground.
 - 4. Motor leads from a VFD: RGS, RAC or shielded VFD cables in all other raceways.
 - 5. Telecommunication cables: All raceway types.
- B. Permitted Raceway Types Per Area Designations:
 - 1. Dry areas:
 - a. RGS.
 - 2. Wet areas:
 - a. RGS.
 - 3. Corrosive areas (all Chlorine Rooms):
 - a. PVC-RGS
- C. FLEX conduits shall be installed for connections to light fixtures, HVAC equipment and other similar devices above the ceilings.
 - 1. The maximum length shall not exceed:
 - a. 6 FT to light fixtures.
 - b. 3 FT to all other equipment.
- D. FLEX-LT conduits shall be installed as the final conduit connection to light fixtures, dry type transformers, motors, electrically operated valves, instrumentation primary elements, and other electrical equipment that is liable to vibrate.
 - 1. The maximum length shall not exceed:
 - a. 6 FT to light fixtures.
 - b. 3 FT to motors.
 - c. 2 FT to all other equipment.
- E. HAZ-FLEX coupling shall be installed as the final conduit to motors, electrically operated valves, instrumentation primary elements and electrical equipment that is liable to vibrate.
 - 1. The maximum length shall not exceed:
 - a. 3 FT to motors.
 - b. 2 FT to all other equipment.
- F. NEMA 1 Rated Wireway:
 - 1. Surface mounted in electrical rooms.
 - 2. Surface mounted above removable ceilings tiles of an architecturally finished area.
- G. NEMA 3R Wiring Trough: Surface mounted in exterior locations.

- H. Where portions of a raceway are subject to different temperatures and where condensation is known to be a problem, as in cold storage areas of buildings or where passing from the interior to the exterior of a building, the raceway shall be sealed to prevent circulation of warm air to colder section of the raceway.
- I. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- J. Fill openings in walls, floors, and ceilings and finish flush with surface.
 - 1. See Specification Section 01 73 20.

3.2 RACEWAY ROUTING

- A. Raceways shall be routed in the field unless otherwise indicated.
 - 1. Conduit and fittings shall be installed, as required, for a complete system that has a neat appearance and is in compliance with all applicable codes.
 - 2. Run in straight lines parallel to or at right angles to building lines.
 - 3. Do not route conduits:
 - a. Through areas of high ambient temperature or radiant heat.
 - b. In suspended concrete slabs.
 - c. In concrete members including slabs, slabs on grade, beams, walls, and columns unless specifically located and detailed on structural Drawings.
 - 4. Locate sleeves or conduits penetrating floors, walls, and beams so as not to significantly impair the strength of the construction. Do not place conduit penetrations in columns.
 - 5. Conduit shall not interfere with, or prevent access to, piping, valves, ductwork, or other equipment for operation, maintenance and repair.
 - 6. Provide pull boxes or conduit bodies as needed so that there is a maximum of 360 degree of bends in the conduit run or in long straight runs to limit pulling tensions.
- B. All conduits within a structure shall be installed exposed except as follows:
 - 1. As indicated on the Drawings.
 - 2. Concealed above gypsum wall board or acoustical tile suspended ceilings.
 - 3. Concealed within stud frame, poured concrete, concrete block and brick walls of an architecturally finished area.
 - 4. Embedded in floor slabs or buried under floor slabs where shown on the Drawings or with the Engineer's permission.
 - 5. Conduits in architecturally finished areas shall be concealed.
- C. Maintain minimum spacing between parallel conduit and piping runs in accordance with the following when the runs are greater than 30 FT:
 - 1. Between instrumentation and telecommunication: 1 IN.
 - 2. Between instrumentation and 125 V, 48 V and 24 Vdc: 2 IN.
 - 3. Between instrumentation and 600 V and less AC power or control: 6 IN.
 - 4. Between telecommunication and 125 V, 48 V and 24 Vdc: 2 IN.
 - 5. Between telecommunication and 600 V and less AC power or control: 6 IN.
 - 6. Between 125 V, 48 V and 24 Vdc and 600 V and less AC power or control: 2 IN.
 - 7. Between process, gas, air and water pipes: 6 IN.
- D. Conduits shall be installed to eliminate moisture pockets.
 - 1. Where water cannot drain to openings, provide drain fittings in the low spots of the conduit run.

1. NFPA 70.
 2. Manufacturer instructions.
- B. Size of Raceways:
1. Raceway sizes are shown on the Drawings, if not shown on the Drawings, then size in accordance with NFPA 70.
 2. Unless specifically indicated otherwise, the minimum raceway size shall be:
 - a. Conduit: 3/4 IN.
 - b. Wireway: 2-1/2 IN x 2-1/2 IN.
- C. Field Bending and Cutting of Conduits:
1. Utilize tools and equipment recommended by the manufacturer of the conduit, designed for the purpose and the conduit material to make all field bends and cuts.
 2. Those installing PVC-coated conduit must be trained and certified by the conduit manufacturer. Installers must present a valid, unexpired "Certified Installer" card or certificate prior to installation.
 3. Do not reduce the internal diameter of the conduit when making conduit bends.
 4. Prepare tools and equipment to prevent damage to the PVC coating.
 5. All clamping, cutting, threading, bending, and assembly instructions listed in the manufacturer's installation guide for PVC-coated raceway and boxes shall be vigorously followed.
 6. Degrease threads after threading and apply a zinc rich paint.
 7. Debur interior and exterior after cutting.
- D. Male threads of conduit systems shall be coated with an electrically conductive anti-seize compound.
- E. The protective coating integrity of conduits, fittings, outlet, pull and junction boxes and accessories shall be maintained.
1. Repair galvanized components utilizing a zinc rich paint.
 2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
 3. Repair all nicks, cuts, and abrasions to the PVC-coating with proper PVC compounds and touch up paints provided by the manufacturer of conduit during installation
 4. Repair PVC coated components utilizing a patching compound, of the same material as the coating, provided by the manufacturer of the conduit; or a self-adhesive, highly conformable, cross-linked silicone composition strip, followed by a protective coating of vinyl tape.
 - a. Total nominal thickness: 40 mil.
 5. Repair surfaces which will be inaccessible after installation prior to installation.
- F. Remove moisture and debris from conduit before wire is pulled into place.
1. Pull mandrel with diameter nominally 1/4 IN smaller than the interior of the conduit, to remove obstructions.
 2. Swab conduit by pulling a clean, tight-fitting rag through the conduit.
 3. Tightly plug ends of conduit with tapered wood plugs or plastic inserts until wire is pulled.
- G. Only nylon or polyethylene rope shall be used to pull wire and cable in conduit systems.

5. Non-hinged cover held closed with captivated cover screws threaded into sealed wells or hinged cover held closed with stainless steel screws and clamps.
6. Flat door with oil resistant gasket.

G. Miscellaneous Accessories:

1. Rigid handles for covers larger than 9 square foot or heavier than 25 LBS.
2. Split covers when heavier than 25 LBS.
3. Weldnuts for mounting optional panels and terminal kits.
4. Terminal blocks: Screw-post barrier-type, rated 600 volt and 20 ampere minimum.

H. Standards: NEMA 250, UL 50.

2.10 FIBER SPLICE AND PULL BOXES.

A. Interior Wall Mount Fiber Splice Box

1. 12 Port Panel: L-Com Model FE-WM12PP with optional patch panel and splice kit
2. 24 Port Panel: L-Com Model FE-WM24PP with optional patch panel and splice kit
3. Contractor to ensure compatibility with existing fiber network, new fiber cables and fiber patch cables provided by city.

B. Exterior Fiber Pull Box

1. All exterior fiber pull boxes shall be NEMA 4X Rated. Refer to requirements for NEMA 4X Pull and Junction Boxes within this specification.

2.11 SUPPORT SYSTEMS

A. Multi-conduit Surface or Trapeze Type Support and Pull or Junction Box Supports:

1. Material requirements.
 - a. Galvanized steel: ASTM A123/A123M or ASTM A153/A153M.
 - b. Stainless steel: AISI Type 316.
 - c. PVC coat galvanized steel: ASTM A123/A123M or ASTM A153/A153M and 20 mil PVC coating.

B. Single Conduit and Outlet Box Support Fasteners:

1. Material requirements:
 - a. Zinc plated steel.
 - b. Stainless steel.
 - c. Malleable iron.
 - d. PVC coat malleable iron or steel: 20 mil PVC coating.
 - e. Steel protected with zinc phosphate and oil finish.

2.12 OPENINGS AND PENETRATIONS IN WALLS AND FLOORS

A. Sleeves, smoke and fire stop fitting through walls and floors:

1. See Specification Section 01 73 20.

PART 3 EXECUTION

3.1 RACEWAY INSTALLATION - GENERAL

A. Shall be in accordance with the requirements of:

D. See Specification Section 26 27 26 for wiring devices, wallplates and coverplates.

2.9 PULL AND JUNCTION BOXES

A. NEMA 1 Rated:

1. Body and cover: 14 GA minimum, galvanized steel or 14 GA minimum, steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
2. With or without concentric knockouts on four (4) sides.
3. Flat cover fastened with screws.

B. NEMA 4 Rated:

1. Body and cover: 14 gauge steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
2. Seams continuously welded and ground smooth.
3. No knockouts.
4. External mounting flanges.
5. Hinged or non-hinged cover held closed with stainless steel screws and clamps.
6. Cover with oil resistant gasket.

C. NEMA 4X Rated (metallic):

1. Body and cover: 14 gauge Type 304 or 316 stainless steel.
2. Seams continuously welded and ground smooth.
3. No knockouts.
4. External mounting flanges.
5. Hinged door and stainless steel screws and clamps.
6. Door with oil-resistant gasket.

D. NEMA 4X Rated (Non-metallic):

1. Body and cover: Ultraviolet light protected fiberglass-reinforced polyester boxes.
2. No knockouts.
3. External mounting flanges.
4. Hinged door with quick release latches and padlocking hasp.
5. Door with oil resistant gasket.

E. NEMA 7 Rated:

1. Cast gray iron alloy or copper-free aluminum with manufacturer's standard finish.
2. Drilled and tapped openings or tapered threaded hub.
3. Cover bolted-down with stainless steel bolts or threaded cover with neoprene gasket.
4. External mounting flanges.
5. Grounding lug.
6. Accessories: 40 mil PVC exterior coating and 2 mil urethane interior coating.

F. NEMA 12 Rated:

1. Body and cover:
 - a. 14 gauge steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
 - b. Type 5052 H-32 aluminum, unpainted.
2. Seams continuously welded and ground smooth.
3. No knockouts.
4. External mounting flanges.

F. Weather and Corrosion Protection Tape:

1. PVC based tape, 10 mils thick.
2. Protection against moisture, acids, alkalis, salts and sewage and suitable for direct bury.
3. Used with appropriate pipe primer.

G. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.

2.7 ALL RACEWAY AND FITTINGS

A. Mark Products:

1. Identify the nominal trade size on the product.
2. Stamp with the name or trademark of the manufacturer.

2.8 OUTLET BOXES

A. Metallic Outlet Boxes:

1. Hot-dip galvanized steel.
2. Conduit knockouts and grounding pigtail.
3. Styles:
 - a. 2 IN x 3 IN rectangle.
 - b. 4 IN square.
 - c. 4 IN octagon.
 - d. Masonry/tile.
4. Accessories:
 - a. Flat blank cover plates.
 - b. Barriers.
 - c. Extension, plaster or tile rings.
 - d. Box supporting brackets in stud walls.
 - e. Adjustable bar hangers.
5. Standards: NEMA/ANSI OS 1, UL 514A.

B. Cast Outlet Boxes:

1. Zinc plated cast iron or die-cast copper free aluminum with manufacturer's standard finish.
2. Threaded hubs and grounding screw.
3. Styles:
 - a. "FS" or "FD".
 - b. "Bell".
 - c. Single or multiple gang and tandem.
 - d. "EDS" or "EFS" for hazardous locations.
4. Accessories: 40 mil PVC exterior coating and 2 mil urethane interior coating.
5. Standards: UL 514A, UL 1203.

C. Nonmetallic Outlet Boxes:

1. Polyvinyl-chloride (PVC) plastic compound.
2. Rated for direct sunlight exposure.
3. Fire retardant and low smoke emission.
4. Suitable for use with 90 DegC wire.
5. Styles:
 - a. "FS" or "FD".
 - b. Single or multiple gang.
6. Standards: UL 514A, NEMA TC 3.

- 3) Zinc-plated steel or malleable iron unions and nipples.
 - d. Corrosive areas:
 - 1) Stainless steel braided covering over flexible stainless steel core.
 - 2) Stainless steel end fittings.
 - 3) Aluminum unions and nipples.
 - 11. Service entrance head:
 - a. Malleable iron, galvanized steel or copper free aluminum.
 - b. Insulated knockout cover for use with a variety of sizes and number of conductors.
 - 12. Expansion couplings:
 - a. 2 IN nominal straight-line conduit movement in either direction.
 - b. Galvanized steel with insulated bushing.
 - c. Gasketed for wet locations.
 - d. Internally or externally grounded.
 - 13. Expansion/deflection couplings:
 - a. 3/4 IN nominal straight-line conduit movement in either direction.
 - b. 30-degree nominal deflection from the normal in all directions.
 - c. Metallic hubs, neoprene outer jacket and stainless steel jacket clamps.
 - d. Internally or externally grounded.
 - e. Watertight, raintight and concrete tight.
 - 14. Standards: UL 467, UL 514B, UL 1203.
- B. Fittings for Use with PVC-RGS:
- 1. The same material and construction as those fittings listed under paragraph "Fittings for Use with RGS and RAC" and coated as defined under paragraph "PVC Coated Rigid Steel Conduit (PVC-RGS)."
- C. Fittings for Use with FLEX:
- 1. Connector:
 - a. Zinc plated malleable iron.
 - b. Squeeze or clamp-type.
 - 2. Standard: UL 514B.
- D. Fittings for Use with FLEX-LT:
- 1. Connector:
 - a. Straight or angle type.
 - b. Metal construction, insulated and gasketed.
 - c. Composed of locknut, grounding ferrule and gland compression nut.
 - d. Liquid tight.
 - 2. Standards: UL 467, UL 514B.
- E. Fittings for Use with Rigid Nonmetallic PVC Conduit:
- 1. Coupling, adapters and conduit bodies:
 - a. Same material, thickness, and construction as the conduits with which they are used.
 - b. Homogeneous plastic free from visible cracks, holes or foreign inclusions.
 - c. Bore smooth and free of blisters, nicks or other imperfections which could damage the conductor.
 - 2. Solvent cement for welding fittings shall be supplied by the same manufacturer as the conduit and fittings.
 - 3. Standards: ASTM D2564, NEMA TC 3, UL 651, UL 514B.

- D. Watertight (NEMA 4X rated) Wireway:
 - 1. 14 gauge Type 304 or 316 stainless steel bodies and covers without knockouts and 10 gauge stainless steel flanges.
 - 2. Cover: Fully gasketed and held in place with captive clamp type latches.
 - 3. Flanges: Fully gasketed and bolted.
- E. Dust Tight (NEMA 12 rated) Wireway:
 - 1. 14 gauge steel bodies and covers without knockouts and 10 gauge steel flanges.
 - 2. Cover: Fully gasketed and held in place with captive clamp type latches.
 - 3. Flanges: Fully gasketed and bolted.

2.6 CONDUIT FITTINGS AND ACCESSORIES

- A. Fittings for Use with RGS and RAC:
 - 1. General:
 - a. In hazardous locations listed for use in Class I, Groups C and D locations.
 - 2. Locknuts:
 - a. Threaded steel or malleable iron.
 - b. Gasketed or non-gasketed.
 - c. Grounding or non-grounding type.
 - 3. Bushings:
 - a. Threaded, insulated metallic.
 - b. Grounding or non-grounding type.
 - 4. Hubs: Threaded, insulated and gasketed metallic for raintight connection.
 - 5. Couplings:
 - a. Threaded straight type: Same material and finish as the conduit with which they are used on.
 - b. Threadless type: Gland compression or self-threading type, concrete tight.
 - 6. Unions: Threaded galvanized steel or zinc plated malleable iron.
 - 7. Conduit bodies (ells and tees):
 - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
 - b. Standard and mogul size.
 - c. Cover:
 - 1) Clip-on type with stainless steel screws.
 - 2) Gasketed or non-gasketed galvanized steel, zinc plated cast iron or cast copper free aluminum.
 - 8. Conduit bodies (round):
 - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
 - b. Cover: Threaded screw on type, gasketed, galvanized steel, zinc plated cast iron or cast copper free aluminum.
 - 9. Sealing fittings:
 - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
 - b. Standard and mogul size.
 - c. With or without drain and breather.
 - d. Fiber and sealing compound: UL listed for use with the sealing fitting.
 - 10. Hazardous location flexible coupling (HAZ-FLEX):
 - a. Liquid tight and arc resistant.
 - b. Electrically conductive so no bonding jumper is required.
 - c. Dry and wet areas:
 - 1) Bronze braided covering over flexible brass core.
 - 2) Bronze end fittings.

- C. Rigid Aluminum Conduit (RAC):
 - 1. AA Type 6063 aluminum alloy, T-1 temper.
 - 2. Maximum copper content of 0.10 percent.
 - 3. Extruded, seamless.
 - 4. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.5, UL 6.

2.3 RIGID NONMETALLIC CONDUIT

- A. Schedules 40 (PVC-40) and 80 (PVC-80):
 - 1. Polyvinyl-chloride (PVC) plastic compound which includes inert modifiers to improve weatherability and heat distribution.
 - 2. Rated for direct sunlight exposure.
 - 3. Fire retardant and low smoke emission.
 - 4. Shall be suitable for use with 90 degrees Celsius wire and shall be marked "maximum 90 degrees Celsius."
 - 5. Standards: NFPA 70 Type PVC, NEMA TC 2, UL 651.

2.4 FLEXIBLE CONDUIT

- A. Flexible Galvanized Steel Conduit (FLEX):
 - 1. Formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
 - 2. Standard: NFPA 70 Type FMC, UL 1.
- B. PVC-Coated Flexible Galvanized Steel (liquid-tight) Conduit (FLEX-LT):
 - 1. Core formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
 - 2. Extruded PVC outer jacket positively locked to the steel core.
 - 3. Liquid and vaportight.
 - 4. Standard: NFPA 70 Type LFMC, UL 360.

2.5 WIREWAY

- A. General:
 - 1. Suitable for lay-in conductors.
 - 2. Designed for continuous grounding.
 - 3. Covers:
 - a. Hinged or removable in accessible areas.
 - b. Non-removable when passing through partitions.
 - 4. Finish: Rust inhibiting primer and manufacturer's standard paint inside and out except for stainless steel type.
 - 5. Standards: UL 870, NEMA 250.
- B. General Purpose (NEMA 1 rated) Wireway:
 - 1. 14 or 16 gage steel without knockouts.
 - 2. Cover: Solid, non-gasketed and held in place by captive screws.
- C. Rain Tight (NEMA 3R) Wiring Trough:
 - 1. 14 or 16 gauge galvanized steel without knockouts.
 - 2. Cover: Non-gasketed and held in place by captive screws.

- d. Minerallac Company.
- e. CADDY by Pentair.
- f. Superstrut by Thomas & Betts.
- 8. Outlet, pull and junction boxes:
 - a. Appleton by Emerson Electric Co.
 - b. Crouse-Hinds by Eaton.
 - c. Killark by Hubbell.
 - d. O-Z/Gedney by Emerson Electric Co.
 - e. Steel City by Thomas & Betts.
 - f. Racor by Hubbell.
 - g. Bell by Hubbell.
 - h. Hoffman Engineering.
 - i. Wiegmann by Hubbell.
 - j. B-Line by Eaton.
 - k. Adalet.
 - l. RITTAL North America LLC.
 - m. Stahlin by Robroy Enclosures.
- 9. Fiber splice and pull boxes.
 - a. Interior splice boxes: L-Com, Inc.
 - b. Exterior pull boxes: Nvent/Hoffman

B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 RIGID METALLIC CONDUITS

- A. Rigid Galvanized Steel Conduit (RGS):
 - 1. Mild steel with continuous welded seam.
 - 2. Metallic zinc applied by hot-dip galvanizing or electro-galvanizing.
 - 3. Threads galvanized after cutting.
 - 4. Internal coating: Baked lacquer, varnish or enamel for a smooth surface.
 - 5. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.1, UL 6.
- B. PVC-Coated Rigid Steel Conduit (PVC-RGS):
 - 1. Those installing PVC-coated conduit must be trained and certified by the conduit manufacturer. Installers must present a valid, unexpired "Certified Installer" card or certificate prior to installation.
 - 2. Nominal 40 mil Polyvinyl Chloride Exterior Coating:
 - a. Coating: Bonded to hot-dipped galvanized rigid steel conduit conforming to NEMA/ANSI C80.1.
 - b. The bond between the PVC coating and the conduit surface: Greater than the tensile strength of the coating.
 - 3. Nominal 2 mil, minimum, urethane interior coating.
 - 4. Urethane coating on threads.
 - 5. Conduit: Epoxy prime coated prior to application of PVC and urethane coatings.
 - 6. Female Ends:
 - a. Have a plastic sleeve extending a minimum of 1 pipe diameter or 2 IN, whichever is less beyond the opening.
 - b. The inside diameter of the sleeve shall be the same as the outside diameter of the conduit to be used with it.
 - 7. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.1, UL 6, NEMA RN 1.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Rigid metallic conduits:
 - a. Allied Tube and Conduit Corporation.
 - a. Triangle PWC Inc.
 - b. Western Tube and Conduit Corporation.
 - c. Wheatland Tube Company.
 - d. EASCO Aluminum.
 - e. Indalex.
 - f. VAW of American, Inc.
2. PVC coated rigid metal conduits:
 - a. Ocal by Thomas & Betts.
 - b. Robroy Industries.
 - c. Calbond.
 - d. Plasti-Bond
3. Rigid non-metallic conduit:
 - a. Prime Conduit.
 - b. Cantex, Inc.
 - c. Osburn Associates, Inc.
 - d. National Pipe and Plastics, Inc.
 - e. Allied Tube and Conduit Corporation.
4. Flexible conduit:
 - a. AFC Cable Systems.
 - b. Anamet, Inc.
 - c. Electri-Flex Company.
 - d. International Metal Hose Company.
 - e. Southwire Company, LLC.
 - f. Triangle PWC Inc.
 - g. LTV Steel Company.
5. Wireway:
 - a. Hoffman Engineering Company.
 - b. Wiegmann by Hubbell.
 - c. Square D.
6. Conduit fittings and accessories:
 - a. Appleton by Emerson Electric Co.
 - b. Carlon by Thomas & Betts.
 - c. Cantex, Inc.
 - d. Crouse-Hinds by Eaton.
 - e. Killark by Hubbell.
 - f. Osburn Associates, Inc.
 - g. O-Z/Gedney by Emerson Electric Co.
 - h. Raco by Hubbell.
 - i. Steel City by Thomas & Betts.
 - j. Thomas & Betts.
7. Support systems:
 - a. Unistrut by Atkore International, Inc.
 - b. B-Line by Eaton.
 - c. Kindorf by Thomas & Betts.

- b. 6, Standard for Electrical Rigid Metal Conduit - Steel.
- c. 50, Enclosures for Electrical Equipment, Non-Environmental Considerations.
- d. 360, Standard for Liquid-Tight Flexible Metal Conduit.
- e. 467, Grounding and Bonding Equipment.
- f. 514A, Metallic Outlet Boxes.
- g. 514B, Conduit, Tubing, and Cable Fittings.
- h. 651, Standard for Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.
- i. 870, Standard for Wireways, Auxiliary Gutters, and Associated Fittings.
- j. 1203, Standard for Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate size of raceways, boxes and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased to accommodate for voltage drop.
- B. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
- C. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction prior to proceeding with work.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 - 2. Product technical data:
 - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
 - 1) Conduit fittings.
 - 2) Support systems.
 - b. Submittal data sheets shall be the most recent revision available from the product manufacturer and shall be readily available for download from the product manufacturer's website.
 - c. See Specification Section 26 05 00 for additional requirements.
 - 3. Fabrication and/or layout Drawings:
 - a. Identify dimensional size of pull and junction boxes to be used.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Product Record Documents: Record actual routing of underground circuits.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store raceways and boxes in accordance with manufacturer's instructions.

SECTION 26 05 33 - RACEWAYS AND BOXES

PART I GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
 - a. Conduits.
 - b. Conduit fittings.
 - c. Conduit supports.
 - d. Wireways.
 - e. Outlet boxes.
 - f. Pull and junction boxes.
 - g. Fiber splice and pull boxes.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Procurement and Contracting Requirements.
2. Division 01 - General Requirements.
3. Section 26 05 00 - Electrical - Basic Requirements.
 1. Section 26 05 19 - Wire and Cable - 600 Volt and Below.
 2. Section 26 27 26 - Wiring Devices.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Aluminum Association (AA).
2. American Iron and Steel Institute (AISI).
3. ASTM International (ASTM):
 - a. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - b. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - c. D2564, Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
4. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - b. RN 1, Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit (IMC).
 - c. TC 2, Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - d. TC 3, Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
5. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
 - a. C80.1, Electric Rigid Steel Conduit (ERSC).
 - b. C80.5, Electrical Rigid Metal Conduit - Aluminum (ERMC-A).
 - c. OS 1, Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
6. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC); Most recent edition adopted by Owner, including all applicable amendments and supplements.
7. Underwriters Laboratories, Inc. (UL):
 - a. 1, Standard for Flexible Metal Conduit.

- C. Replace equipment and systems found inoperative or defective and re-test.
- D. The protective coating integrity of support structures and equipment enclosures shall be maintained.
 - 1. Repair galvanized components utilizing a zinc rich paint.
 - 2. Repair painted components utilizing touch up paint provided by or approved by manufacturer.
 - 3. Repair PVC coated components utilizing a patch compound, of the same material as the coating, provided by the manufacturer of the component.
 - 4. Repair surfaces which will be inaccessible after installation prior to installation.
 - 5. Replace nameplates damaged during installation.
- E. Both a Tier 1 (Optical Loss Test Set, OLTS) and Tier 2 (Optical Time Domain Reflectometer, OTDR) Fiber Certification is required for new fiber runs to confirm fiber performance end to end. Results (including OTDR graphical representations) to be provided to Owner in electronic PDF format, clearly identifying fiber runs and output from certification tests.

END OF SECTION 26 05 19

- c. Control panels and motor control centers: Terminal block or strip provided within the equipment or field installed within the equipment by the Contractor.
- 4. Non-insulated compression and mechanical screw type connectors shall be insulated with tape or hot or cold shrink type insulation to the insulation level of the conductors.
- 5. Ethernet Cables
 - a. All copper Ethernet cables to be terminated in punch down female jacks rated to match the cable rating or utilize factory terminated patch cables. No crimped-on network cables will be permitted.

O. Insulating Tape Usage:

- 1. For insulating connections of No. 8 AWG wire and smaller: 7 mil vinyl tape.
- 2. For insulating splices and taps of No. 6 AWG wire or larger: 10 mil vinyl tape.
- 3. For insulating connections made in cold weather or in outdoor locations: 8.5 mil, all weather vinyl tape.

P. Color Coding Tape Usage: For color coding of conductors.

Q. Fiber Optic Cable:

- 1. Unless indicated otherwise, install all fiber optic cable in conduit.
 - a. In cable trays, the cable(s) shall be installed in an interdict that is placed in the tray for protection of the cable.
- 2. Splicing:
 - a. Optical fibers shall not be spliced.
- 3. Utilize dust tight wall-mounted interconnect center to provide the following:
 - a. Interconnect fiber optic cable to jumper cable assemblies for connection to the opto-electronic interface.
- 4. Where exposed to contact with electric light or power conductors, the noncurrent carrying metallic members (if applicable) of optical fiber cables entering buildings shall be grounded as close to the point of entrance as practicable in accordance with NFPA 70.
- 5. Install cables in accordance with the requirements of NFPA 70.

R. VFD Cable:

- 1. Always use a dedicated ground from the motor back to the VFD output ground terminal. Use only the dedicated grounding lug.
- 2. Use one conduit run from the motor to drive. Ensure conduit is isolated from ground throughout the run and grounded only at the motor and drive end.
- 3. Use separate conduits for input power & motor power (input power ground terminated only on the input lugs ground terminal).
- 4. When safety switches, contactors, connection boxes, etc. are installed in the motor cable run make sure the motor cable shielding runs consistently without breaks from the drive to the motor.
- 5. Keep the unshielded portion of the cables as short as possible.
- 6. When using Shielded VFD cable, terminate cable shields per cable manufacturer's instructions.

3.4 FIELD QUALITY CONTROL

A. Acceptance Testing: See Specification Section 26 08 13.

B. Correct deficiencies and replace damaged or defective conductors and cables.

3. Control circuits shall be isolated from feeder and branch power and instrumentation circuits but combining of control circuits is permitted.
 - a. The combinations shall comply with the following:
 - 1) 12 Vdc, 24 Vdc and 48 Vdc may be combined.
 - 2) 125 Vdc shall be isolated from all other AC and DC circuits.
 - 3) AC control circuits shall be isolated from all DC circuits.
 4. Instrumentation circuits shall be isolated from feeder and branch power and control circuits but combining of instrumentation circuits is permitted.
 - a. The combinations shall comply with the following:
 - 1) Analog signal circuits may be combined.
 - 2) Digital signal circuits may be combined but isolated from analog signal circuits.
 5. Multiple branch circuits for similar loads may be combined in common raceway.
 - a. Do not combine control device circuits with lighting or receptacle circuits.
 - b. Contractor is responsible for making the required adjustments in conductor and raceway size, in accordance with all requirements of the NFPA 70, including but not limited to:
 - 1) Up sizing conductor size for required ampacity de-ratings for the number of current carrying conductors in the raceway.
 - 2) The neutral conductors may not be shared.
 - 3) Up sizing raceway size for the size and quantity of conductors.
- M. Ground the drain wire of shielded instrumentation cables at one (1) end only.
1. The preferred grounding location is at the load (e.g., control panel), not at the source (e.g., field mounted instrument).
- N. Splices and terminations for the following circuit types shall be made in the indicated enclosure type using the indicated method.
1. Feeder and branch power circuits:
 - a. Device outlet boxes:
 - 1) Twist/screw on type connectors.
 - b. Junction and pull boxes and wireways:
 - 1) Twist/screw on type connectors for use on No. 8 and smaller wire.
 - 2) Compression, mechanical screw or terminal block or terminal strip type connectors for use on No. 6 AWG and larger wire.
 - c. Motor terminal boxes:
 - 1) Twist/screw on type connectors for use on No. 10 AWG and smaller wire.
 - 2) Insulated mechanical screw type connectors for use on No. 8 AWG and larger wire.
 - d. Manholes or handholes:
 - 1) Twist/screw on type connectors pre-filled with epoxy for use on No. 8 AWG and smaller wire.
 - 2) Watertight compression or mechanical screw type connectors for use on No. 6 AWG and larger wire.
 2. Control circuits:
 - a. Junction and pull boxes: Terminal block type connector.
 - b. Manholes or handholes: Twist/screw on type connectors pre-filled with epoxy.
 - c. Control panels and motor control centers: Terminal block or strips provided within the equipment or field installed within the equipment by the Contractor.
 3. Instrumentation circuits can be spliced where field conditions dictate and written permission is obtained from the Engineer.
 - a. Maintain electrical continuity of the shield when splicing twisted shielded conductors.
 - b. Junction and pull boxes: Terminal block type connector.

- D. Install products in accordance with manufacturer's instructions.
- E. Install all wiring in raceway unless otherwise indicated on the Drawings.
 - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 - 2. Pull all conductors and cables together into raceway at same time.
 - 3. Do not damage conductors and cables or exceed manufacturer-s recommended maximum pulling tension and sidewall pressure.
 - 4. Use suitable wire pulling lubricant where necessary, except where manufacturer recommends use of no pulling lubricant.
- F. Parallel Conductors: Install conductors of the same length and terminate in the same manner.
- G. Terminate cables using suitable fittings.
 - 1. Install conductors with a minimum of 12 inches of slack at each outlet.
 - 2. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
 - 3. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- H. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.
 - 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- I. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
 - 1. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
 - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
 - 2. Wet Locations: Use heat shrink tubing.
- J. Insulate ends of spare conductors using vinyl insulating electrical tape.
- K. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.
- L. Feeder, branch, control and instrumentation circuits shall not be combined in a raceway, cable tray, junction or pull box, except as permitted in the following:
 - 1. Where specifically indicated on the Drawings.
 - 2. Where field conditions dictate and written permission is obtained from the Engineer.

1. Feeder and branch power conductors shall not be smaller than No. 12 AWG unless otherwise indicated on the Drawings.
2. Control conductors shall not be smaller than No. 14 AWG unless otherwise indicated on the Drawings.
3. Instrumentation conductors shall not be smaller than No. 18 AWG unless otherwise indicated on the Drawings.
4. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

C. Color Code All Wiring as Follows:

1. Building wire:

	240 V, 208 V, 240/120 V, 208/120 V	480 V, 480/277 V
Phase 1	Black	Brown
Phase 2	Red *	Orange
Phase 3	Blue	Yellow
Neutral	White	White or Gray
Ground	Green	Green

* Orange when it is a high leg of a 120/240 V Delta system.

- a. Conductors No. 6 AWG and smaller: Insulated phase, neutral and ground conductors shall be identified by a continuous colored outer finish along its entire length.
- b. Conductors larger than No. 6 AWG:
 - 1) Insulated phase and neutral conductors shall be identified by one of the following methods:
 - a) Continuous colored outer finish along its entire length.
 - b) 3 IN of colored tape applied at the termination.
 - 2) Insulated grounding conductor shall be identified by one of the following methods:
 - a) Continuous green outer finish along its entire length.
 - b) Stripping the insulation from the entire exposed length.
 - c) Using green tape to cover the entire exposed length.
 - 3) The color coding shall be applied at all accessible locations, including but not limited to: Junction and pull boxes, wireways, manholes and handholes.
2. Power cables ICEA S-58-679, Method 4 with:
 - a. Phase and neutral conductors identified with 3 IN of colored tape, per the Table herein, applied at the terminations.
 - b. Ground conductor: Bare.
3. Shielded VFD cable ICEA S-58-679, Method 4 with:
 - a. Phase conductors identified with 3 IN of colored tape, per the Table herein, applied at the terminations.
 - b. Ground conductor: Green color insulation or bare.
4. Control cables ICEA S-58-679, Method 1, Table E-2:
 - a. When a bare ground is not provided, one of the colored insulated conductors shall be re-identified by stripping the insulation from the entire exposed length or using green tape to cover the entire exposed length.
 - b. When used in power applications the colored insulated conductors used as phase and neutral conductors may have to be re-identified with 3 IN of colored tape, per the Table herein, applied at the terminations.

- a. Insulating tape: Black.
 - b. Color coding tape: Fade-resistant color as specified herein.
- 7. Comply with UL 510.
- J. Pulling Lubricant:
 - 1. Cable manufacturer's standard containing no petroleum or other products which will deteriorate insulation.
 - 2. Listed suitable for use at the installation temperature.
- K. Heat Shrink tubing: Heavy-wall, splint-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
- L. Cable Ties: Materials and tensile strength rating suitable for application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

- A. Permitted Usage of Insulation Types:
 - 1. Type XHHW-2:
 - a. Building wire and power and control cable in architectural and non-architectural finished areas.
 - b. Building wire and power and control cable in conduit in outdoor areas and below grade.
 - c. Building wire and power and control cable in cable tray in outdoor areas.
 - d. Shielded VFD cables.
 - 2. Type THHN/THWN and THHN/THWN-2:
 - a. Building wire and power and control cable No. 8 AWG and smaller in architectural and non-architectural finished areas.
 - 3. Type SIS and MTW:
 - a. For the wiring of control equipment within control panels and field wiring of control equipment within switchgear, switchboards, motor control centers.
- B. Conductor Size Limitations:

- 3) Cable jacket shall be factory marked at regular intervals indicating verifying organization and performance level.
 - 4) Rated CMP per NFPA 70.
 - c. Conform to NFPA 262 and NFPA 70 Type ITC.
- G. Fiber Optic and Ethernet Cables:
1. Design and fabrication - Fiber Optic Cable:
 - a. As indicated on the drawings.
 2. Design and Fabrication - Fiber Optic Patch Cables:
 - a. Contractor to coordinate with the City of Ct. Charles for the selection of fiber optic patch cables.
 - b. Contractor shall supply all patch cables unless otherwise indicated on the Drawings.
 3. Design and Fabrication: Copper Ethernet Cable:
 - a. All Ethernet cables shall be CAT6A unless otherwise indicated on the Drawings.
 - b. Contractor shall supply all copper Ethernet patch cables unless otherwise indicated on the Drawings.
- H. Wire Connectors:
1. Connectors for Grounding and Bonding: Comply with Section 26 05 26 in addition to the requirements listed herein.
 2. Twist/screw on type:
 - a. Insulated pressure or spring type solderless connector for copper conductors sized 8 AWG and smaller.
 - b. 600 V rated.
 - c. Ground conductors: Conform to UL 486C and/or UL 467 when required by local codes.
 - d. Phase and neutral conductors: Conform to UL 486C.
 - e. Rated 221 degrees F for standard applications and 302 degrees F for high temperature applications.
 - f. Pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 3. Compression and mechanical screw type:
 - a. Use mechanical connectors or compression connectors for Copper Conductors Size 6 AWG and Larger.
 - 1) Exception: Use waterproof mechanical or compression connectors for all splices in exterior below grade enclosures.
 - b. 600 V rated.
 - c. Ground conductors: Conform to UL 467.
 - d. Phase and neutral conductors: Conform to UL 486A-486B.
 4. Terminal block type:
 - a. High density, screw-post barrier-type with white center marker strip.
 - b. 600 V and ampere rating as required, for power circuits.
 - c. 600 V, 20 ampere rated for control circuits.
 - d. 300 V, 15 ampere rated for instrumentation circuits.
 - e. Conform to NEMA ICS 4 and UL 486A-486B.
- I. Insulating and Color Coding Tape:
1. Pressure sensitive vinyl.
 2. Premium grade.
 3. Heat, cold, moisture, and sunlight resistant.
 4. Thickness, depending on use conditions: 7, 8.5, or 10 mil.
 5. For cold weather or outdoor location, tape must also be all-weather.
 6. Color:

4. Conform to NEMA/ICEA WC 57/S-73-532 and UL 44 and UL 1277 for type XHHW-2 insulation with an overall PVC jacket.
 5. Number of conductors as required, provided with or without bare ground conductor of the same AWG size.
 - a. When a bare ground conductor is not provided, an additional insulated conductor shall be provided and used as the ground conductor (e.g., 6/c No. 14 w/g and 7/c No. 14 are equal).
 6. Individual conductor color coding:
 - a. ICEA S-58-679, Method 1, Table E-2.
 - b. See PART 3 of this Specification Section for additional requirements.
 7. Conform to NFPA 70 Type TC.
- D. Electrical Equipment Control Wire:
1. Conductor shall be copper with 600 V rated insulation.
 2. Conductors shall be stranded.
 3. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
 4. Conform to UL 44 for Type SIS insulation.
 5. Conform to UL 83 for Type MTW insulation.
- E. Shielded VFD Cable:
1. Conductor shall be copper, stranded with 600 V rated insulation.
 2. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
 3. Cables No. 12 through 750 kcmil:
 - a. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 type XHHW-2 insulation.
 - b. Shielding: Continuous corrugated copper-free aluminum sheath covered with a PVC jacket or 5 mil copper tape, longitudinally applied with a minimum overlap of 15 percent.
 - c. Number of conductors: 3 PH and 3 equally spaced ground conductors.
 4. Individual conductor color coding:
 - a. ICEA S-58-679, Method 4.
 - b. See PART 3 of this Specification Section for additional requirements.
 5. When installed exposed outdoors, UL listed and marked as sunlight resistant.
 6. For continuously corrugated cable, use manufacturer approved fittings.
 7. Conform to NFPA 70, Type TC.
- F. Instrumentation Cable:
1. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
 2. Analog cable:
 - a. Tinned copper conductors.
 - b. 300 V or 600 V PVC insulation with PVC jacket.
 - c. Twisted with 100 percent foil shield coverage with drain wire.
 - d. Six (6) twists per foot minimum.
 - e. Individual conductor color coding: ICEA S-58-679, Method 1, Table E-2.
 - f. Conform to UL 2250, UL 1581 and NFPA 70 Type ITC.
 3. Digital cable:
 - a. As recommended by equipment (e.g., PLC, RTU) manufacturer.
 - b. Horizontal voice and data cable:
 - 1) Category 6 per TIA/EIA/ANSI 568.
 - 2) Cable shall be label-verified.

- 1) Alphawire.
- 2) Belden Inc.
- 3) General Cable.
4. Wire connectors:
 - a. Burndy Corporation.
 - b. Buchanan.
 - c. Ideal.
 - d. Ilsco.
 - e. 3M Co.
 - f. Teledyne Penn Union.
 - g. Thomas and Betts.
 - h. Phoenix Contact.
5. Insulating and color coding tape:
 - a. 3M Co.
 - b. Plymouth Bishop Tapes.
 - c. Red Seal Electric Co.

B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 MANUFACTURED UNITS

A. Building Wire:

1. Conductor shall be copper with 600 V rated insulation.
2. Conductors shall be stranded, except for conductors used in lighting and receptacle circuits which may be stranded or solid.
3. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
4. Conform to NEMA/ICEA WC 70/S-95-658 and UL 83 for type THHN/THWN and THHN/THWN-2 insulation.
5. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 for type XHHW-2 insulation.

B. Power Cable:

1. Conductor shall be copper with 600 V rated insulation.
2. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
3. Conform to NEMA/ICEA WC 70/S-95-658 and UL 83 and UL 1277 for type THHN/THWN insulation with an overall PVC jacket.
4. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 and UL 1277 for type XHHW-2 insulation with an overall PVC jacket.
5. Number of conductors as required, including a bare ground conductor.
6. Individual conductor color coding:
 - a. ICEA S-58-679, Method 4.
 - b. See PART 3 of this Specification Section for additional requirements.
7. Conform to NFPA 70 Type TC.

C. Control Cable:

1. Conductor shall be copper with 600 V rated insulation.
2. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
3. Conform to NEMA/ICEA WC 57/S-73-532 and UL 83 and UL 1277 for type THHN/THWN insulation with an overall PVC jacket.

1.5 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Product technical data:
 - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
 - 1) Wire connectors.
 - 2) Insulating tape.
 - 3) Cable lubricant.
 - b. Submittal data sheets shall be the most recent revision available from the product manufacturer and shall be readily available for download from the product manufacturer's website.
 - c. See Specification Section 26 05 00 for additional requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution Requirements: Requirements for submittals.
- B. Product Record Documents: Record actual installation circuiting arrangements. Record actual routing of underground circuits.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 1. Building wire, power and control cable:
 - a. Aetna Insulated Wire.
 - b. Alphawire.
 - c. Cerrowire.
 - d. Encore Wire Corporation.
 - e. General Cable.
 - f. Okonite Company.
 - g. Southwire Company.
 - h. ServiceWire Company
 2. Shielded VFD cable:
 - a. Belden Inc.
 - b. Okonite Company.
 - c. Olfex Wire and Cable, Inc.
 - d. Priority Wire and Cable (Prysmian).
 - e. Rockbestos-Surprenant Cable Corp.
 - f. Southwire Company.
 3. Instrumentation cable:
 - a. Analog cable:

- d. 486A-486B, Standard for Safety Wire Connectors and Soldering Lugs for use with Copper Conductors.
- e. 486C, Standard for Safety Splicing Wire Connections.
- f. 486D, Standard for Sealed Wire Connector Systems.
- g. 510, Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
- h. 1277, Standard for Safety Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.
- i. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.
- j. 2250, Standard for Safety Instrumentation Tray Cable.

1.3 DEFINITIONS

- A. Cable: Multi-conductor, insulated, with outer sheath containing either building wire or instrumentation wire.
- B. Instrumentation Cable:
 - 1. Multiple conductor, insulated, twisted or untwisted, with outer sheath.
 - 2. The following are specific types of instrumentation cables:
 - a. Analog signal cable:
 - 1) Used for the transmission of low current (e.g., 4-20mA DC) or low voltage (e.g., 0-10 Vdc) signals, using No. 16 AWG and smaller conductors.
 - 2) Commonly used types are defined in the following:
 - a) TSP: Twisted shielded pair.
 - b) TST: Twisted shielded triad.
 - b. Digital signal cable: Used for the transmission of digital signals between computers, PLC's, RTU's, etc.
- C. Power Cable: Multi-conductor, insulated, with outer sheath containing building wire, No. 8 AWG and larger.
- D. Shielded VFD Cable: Multi-conductor, insulated, with shield, drain wire and building wires, No. 12 and larger.
- E. Control Cable: Multi-conductor, insulated, with outer sheath containing building wires, No. 14, No. 12 or No. 10 AWG.
- F. Building Wire: Single conductor, insulated, with or without outer jacket depending upon type.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate size of raceways, boxes and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased to accommodate for voltage drop.
- B. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
- C. Notify Engineer of any conflicts with or deviations from the contract documents. Obtain direction prior to proceeding with work.

SECTION 26 05 19 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
 - a. Building wire.
 - b. Power cable.
 - c. Control cable.
 - a. Shielded VFD cable.
 - b. Instrumentation cable.
 - a. Fiber optic cable.
 - b. Ethernet cable.
 - c. Wire connectors.
 - d. Insulating tape.
 - e. Pulling lubricant.
 - f. Heat shrink tubing.
 - g. Cable ties.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Procurement and Contracting Requirements.
2. Division 01 - General Requirements.
3. Section 26 05 00 - Electrical - Basic Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Insulated Cable Engineers Association (ICEA):
 - a. S-58-679, Standard for Control Cable Conductor Identification.
2. National Electrical Manufacturers Association (NEMA):
 - a. ICS 4, Industrial Control and Systems: Terminal Blocks.
3. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):
 - a. WC 57/S-73-532, Standard for Control Cables.
 - b. WC 70/S-95-658, Non-Shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
4. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC); Most recent edition adopted by Owner, including all applicable amendments and supplements.
 - b. 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
5. Telecommunications Industry Association/Electronic Industries Alliance/American National Standards Institute (TIA/EIA/ANSI):
 - a. 568, Commercial Building Telecommunications Cabling Standard.
6. Underwriters Laboratories, Inc. (UL):
 - a. 44, Standard for Safety Thermoset-Insulated Wires and Cables.
 - b. 83, Standard for Safety Thermoplastic-Insulated Wires and Cables.
 - c. 467, Standard for Safety Grounding and Bonding Equipment.

This Page Intentionally Left Blank

- D. Remove abandoned wiring to source of supply.
- E. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- G. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- H. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- I. Repair adjacent construction and finishes damaged during demolition and extension work.
- J. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- K. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.
- L. Cap abandoned empty conduit at both ends. Pull strings shall be used in all abandoned conduit. Refer to requirements for pull strings in Specification Section 26 05 33.
- M. Disconnect abandoned wiring from source of supply.
- N. Repair adjacent construction and finishes damaged during demolition and extension work.

3.4 CLEANING AND REPAIR

- A. Clean and repair existing equipment to be reinstalled.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION 26 05 05

- D. Identify salvage items in cooperation with Owner.

PART 2 - PRODUCTS

1.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 – administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition Drawings are based on the information available to the engineer and is only included for the convenience of the contractor. The Owner and Engineer assume no responsibility in respect to the accuracy of the information shown on the demolition drawings. Contractor shall field verify as required.
- D. Report discrepancies to Owner and Engineer before disturbing existing installation.
- E. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages (if required) with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations
- D. All power and process outages are at the convenience of the Owner. Requests shall be made 48 hours in advance at a minimum.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Perform work on energized equipment or circuits with experienced and trained personnel.
- B. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
 - 1. PCB-containing electrical equipment, including transformers, capacitors, and switches.
 - 2. PCB- and DEHP-containing lighting ballasts.
 - 3. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.
- C. Remove, relocate, and extend existing installations to accommodate new construction.

1. Shall be flexible, reinforced braided PVC tubing rated for 200 psi maximum continuous duty and terminated to half unions with stainless steel hose clamps. The tubing shall be NSF listed.

S. CALIBRATION CYLINDER

1. Shall be in the inlet side of the system to permit metering pump output volume calibration.
2. Valves shall permit the cylinder to be filled by gravity or by by-passing the chemical metering pump output into the cylinder.
3. The PVC cylinder shall be manufactured by Griffco Valve Inc. with PVC end caps.
4. An outlet vent shall be provided with ¼" ID tubing barb connection.
5. Size: 250 mL
6. Provide one calibration column per pump

T. PRESSURE GAUGE with GUARD

1. Shall be in the discharge side of the system to indicate system pressure.
2. The liquid filled gauge shall be stainless steel and include a blow-out plug manufactured by McDaniel.
3. The gauge shall be bottom mounted to the guard with ¼" NPT stainless steel threads.
4. The temperature compensated oil filled gauge guard shall be PVC.
5. Size: 0 – 100 PSI

U. Finishes: Furnish finishes per manufacturer's standard.

2.2 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Provide shop inspection and testing of completed assembly.
- C. Owner Inspection: Make completed chemical feed equipment available for inspection at manufacturer's factory prior to packaging for shipment. Owner inspections will be at the Owner's discretion, and will be paid for by the Owner and coordinated by the Contractor. Notify Owner at least seven days before inspection is allowed.
- D. Owner Witnessing: Allow witnessing of factory inspections and test at manufacturer's test facility. Owner witnessing will be at the Owner's discretion, and will be paid for by the Owner and coordinated by the Contractor. Notify Owner at least seven days before inspections and tests are scheduled.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that designated areas, clearances, structural requirements, piping, utility connections, and electronic signals are ready to receive equipment.

1. Single pump systems and dual pump systems shall be constructed using a Polyethylene structure. The skid shall permit the installation of any Blue-White Industries Chem-Pro series diaphragm metering pumps or Flex-Pro Proseries-M peristaltic metering pumps.
2. There shall be two side walls for support and a pump mounting base.
3. Four 316 stainless steel skid mounting pads shall be provided which can be positioned to enable wall mounting the skid. Each mounting pad shall be secured to two mounting holes in the skid structure by 18-8 stainless steel hardware.
4. Two 316 stainless steel pump mounting brackets with four mounting slots shall be provided. Pump mounting brackets shall be secured to a HDPE plate. The HDPE plate shall be mounted to the skid structure by 18-8 stainless steel hardware.
5. Custom engineered universal mounting brackets shall secure each of the ball valves to the skid structure. Valve mounting brackets shall be PA12. Valve mounting brackets shall be secured by threaded inserts in the skid structure by 18-8 stainless steel hardware.
6. Single skid piping shall be ½" diameter schedule 80 PVC. Dual skid piping shall be 1 ½" PVC on the inlet side and ½" PVC on the outlet side.
7. Vented ball valves shall be PVC with PTFE shaft bearings and seals.
8. Unions shall be schedule 80 PVC.
9. Seals may be specified as either FKM or EPDM.
10. Two chemical inlet ports shall be provided.
11. System shall have standard manufacturer's warranty.

N. FLOW METER

1. Provide one (1) Sonic-Pro MS6 Chemical Feed Flow Meter for each of the DuPage Water Commission (DWC) sites (two total).

O. FLOW INDICATOR

1. Shall be in the discharge side of the piping system to provide a visual indication of fluid movement through the system.
2. The flow indicator body shall be machined from clear cast acrylic with a ceramic ball indicator and PVDF ball stop.
3. The flow indicator shall be secured to the piping system with PVC connectors and Polypropylene half unions.

P. CHECK VALVE

1. Shall be located on the discharge side of the piping system to prevent the back flow of fluid through the system.
2. The check valve shall be PVC with a 1.0 – 1.5 PSI cracking pressure.
3. The maximum inlet working pressure shall be 150 PSI.

Q. PRESSURE RELIEF VALVE

1. located in the discharge side of the piping system to prevent excessive pressure in the system. Fluid shall be returned to the inlet side of the system if the pre-set maximum system pressure is exceeded.
2. The valve shall be PVC with a PTFE diaphragm seal manufactured by Griffco Valve Inc.
3. The pressure adjustment screw and lock nut shall be polypropylene.
4. Infinite adjustment increments from 10 to 150 psi shall be possible.
5. An outlet safety vent port shall be provided with 1/8" F/NPT connection

R. PUMP CONNECTIONS

16. Provide for alternate control methods including: Dispensing Mode, Cycle Adjust Mode, and Time-Of-Day Mode.
17. Provide a user selectable 4-20mA and 0-1000Hz output signal which are scalable and proportional to pump output volume.
18. Provide four contact closure alarm outputs. Three rated at 1A-115VAC, 0.8A-30VDC and one rated at 6A-250VAC, 5A-30VDC. Each alarm output shall be assignable to monitor any of the following pump functions: TFD system, FVS system, motor run/stop, motor failed to respond to commands, motor is running in reverse, general alarm (TFD, FVS, and/or motor over current), input signal failure, output signal failure, remote/local control status, revolution counter (tube life) set-point, or monitor which of the nine different pump operating modes is currently active.
19. Provide a six-digit password protected configuration menu.
20. Provide a flow verification system with programmable alarm delay time from 1-1000 seconds. FVS system shall monitor the FVS flow sensor while pump is running only. System shall not monitor pump while not running. (Flow sensor provided separately)
21. Provide a roller revolution counter display (tube life indicator) with user programmable alarm set-point value from 1 to 999,999,999 revolutions which can be assigned to any one of the 4 contact closure alarm outputs.
22. Provide a user programmable maximum RPM (revolutions per minute) set-point value from 0.1 to 100.0 RPM in 0.1 increments.
23. Provide a user adjustable response delay time from 0 to 999.9 seconds for the remote start/stop input and the four contact closure alarm outputs to facilitate closed-loop applications.
24. Provide a power interruption pump restart option which is user programmable to either automatically restart or require a user re-start if AC mains power is interrupted.

K. Safety:

1. The pump shall be certified to NSF Standard 61 Drinking Water System Components, UL standard 778 motor operated pump and CSA standard C22.2 process control equipment.
2. Manufactured to ISO 9001:2015 Quality Management System requirements and processes.
3. Tube Failure Detection (TFD) system sensors shall be wholly located in the pump head. TFD system will stop the pump within three seconds of leak detection. To prevent false alarms due to rain, wash-down, condensation, etc., tube failure detection system shall not trigger with water contact. Process fluid waste ports or leak drains shall not be provided.
4. Pump head cover shall include an imbedded magnetic safety interlock which will stop the pump when removed. Pump rotor speed shall be limited to 6 RPM when cover is removed.
5. Secondary user confirmation input required for motor reversal, tube life revolution count reset, and factory default configuration reset.

L. Materials:

1. All materials shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.
2. All wetted surfaces of feed pumps and all sealing gaskets shall be suitable for continuous exposure to chemical service shown on the pump schedule.
3. All wetted surfaces shall be of materials suitable for contact with potable water and shall not leach out any organic or inorganic constituent that is not permitted by local or federal regulations.

M. SKID SYSTEM

5. The pump output shall be capable of being remotely control via TTL/Cmos digital high-speed pulse type input and an AC sine wave type pulse input in the range of 0 to 1,000 Hz. The frequency resolution shall be 1 Hz and capable of adjusting the pump motor speed from 0% to 100.0% motor speed in 0.1% increments. Four values shall be user configurable to define the low and high points on the output slope; a low input value, the required pump percentage of motor speed at the low input value, a high input value, the required pump percentage of motor speed at the high input value.
6. The pump output shall be capable of being remotely control via pulse triggered batching. The pump shall accept a TTL/Cmos digital pulse type input and a contact closure type pulse input in the range of 1 to 9999 pulses per batch. The batch time shall be adjustable from 1 to 999999.9 seconds. The pump motor speed during the batch shall be adjustable from 0% to 100.0% motor speed in 0.1% increments.
7. The pump shall include an internal cycle timer capable of automatically cycling the pump on and off. The pumping total cycle time shall be adjustable from 1 to 999999.9 seconds. The pumping on time during the cycle shall be adjustable from 1 to 999999.9 seconds. The pump motor speed during the cycle shall be adjustable from 0% to 100.0% motor speed in 0.1% increments.
8. The pump shall be capable of dispensing upon demand. The dispensing shall be manually triggered by pressing the front panel start button or by inputting a contact closure. The dispensing volume shall be adjustable from 1 to 999999.9 milliliters. The pump motor speed during the dispensing cycle shall be adjustable from 0% to 100.0% motor speed in 0.1% increments.
9. The pump shall be capable of automatically calculating the pump motor speed required to achieve a part per million dosing output that is proportional to a fixed system flow rate. The pump shall permit the user to input the dispensing chemical percentage concentration from 0% to 100.0% in 0.1% increments. The pump shall permit the user to input the dispensing chemical specific gravity from 0.1 to 9.9 in 0.1 increments. The pump shall permit the user to input the fixed system flow rate from 1.0 to 9999.9 liters per minute in 0.1 liters per minute increments. The pump shall permit the user to input the required dosing parts per million (PPM) from 0.1 to 100.0 in 0.1 increments.
10. The pump shall be capable of automatically calculating the pump motor speed required to achieve a part per million dosing output that is proportional to a variable system flow rate. The pump shall permit the user to input the dispensing chemical percentage concentration from 0% to 100.0% in 0.1% increments. The pump shall permit the user to input the dispensing chemical specific gravity from 0.1 to 9.9 in 0.1 increments. The pump shall permit the user to input a K-factor in pulses per liter from a sensor in the water system that outputs a high-speed digital pulse from 0 to 1000 Hz that is proportional to the system water flow velocity. The pump shall permit the user to input the required dosing parts per million (PPM) from 0.1 to 100.0 in 0.1 increments.
11. Provide an 11-button front panel user touchpad control for stop/start, configuration menu access and navigation, operating mode selection, auto priming, display options selection, tube life data, and reverse direction.
12. Provide a multi-color VGA graphic LCD display for menu driven configuration settings, pump output value, service alerts, tube failure detection (TFD) system and flow verification system (FVS) alarms status, remote input signal values, tubing life timer value. Display color shall be green when indicating normal operation, blue when in stand-by, and red to indicate an alarm condition exists.
13. Provide for remote stop/start pump via 6-30 VDC powered loop or non-powered contact closure loop.
14. Provide for remote priming via non-powered contact closure loop.
15. Provide for secondary start/stop input via non-powered contact closure.

H. Enclosure

1. Bottom housing shall be pressure cast aluminum with acidic liquid iron phosphate three-stage clean and coat pretreatment and exterior grade corrosion resistant polyester polyurethane powder coat.
2. Top housing shall be structural foam molded Noryl engineered thermoplastic.
3. Pressure cast aluminum with acidic liquid iron phosphate three-stage clean and coat pretreatment and exterior grade corrosion resistant polyester polyurethane powder coat.
4. Rated NEMA 4X (IP66).
5. Provided with 316SS shelf level mounting brackets and hardware.
6. M12 receptacles shall be located at the rear of the pump for input and output signals.
7. RJ45 receptacle shall be located at the rear of the pump for use with EtherNet/IP and Modbus TCP/IP
8. One M12 receptacle shall be located at the rear of the pump for use with Profibus
9. A wiring compartment shall be provided for connection of input/output signal wires and alarm output loads to un-pluggable type terminal block connectors. Terminal board shall be positively secured to the rear of the pump housing by two polymeric screws and fully enclosed by the wiring compartment cover. The terminal board shall not be disturbed by the removal of the wiring compartment cover. Ribbon cables shall not be used in the wiring compartment. Conduit hubs, liquid-tight connectors, connector through holes and tapped holes shall be sized in U.S. inches.

I. Motor:

1. Reversible, brushless DC gear motor rated for continuous duty.
2. Motor shall include overload protection.
3. The maximum gear motor RPM shall be 125 RPM.

J. Control Circuitry:

1. All control circuitry shall be integral to the pump and capable of adjusting the pump motor speed from 0.001% to 100.0% in 0.001% increments less than 1% motor speed, in 0.01% increments between 1% and 10% motor speed, and in 0.1% increments greater than 10% motor speed (10,000:1 turndown ratio).
2. The pump output shall be capable of being manually controlled via front panel user touchpad controls. The pump motor speed shall be adjustable from 0.001% to 100.0% in 0.001% increments less than 1% motor speed, in 0.01% increments between 1% and 10% motor speed, and in 0.1% increments greater than 10% motor speed.
3. The pump output shall be capable of being remotely control via 4-20mA analog input. The input resolution shall be 0.01 of input value and capable of adjusting the pump motor speed from 0% to 100.0% motor speed in 0.1% increments. Four values shall be user configurable to define the low and high points on the output slope; a low input value, the required pump percentage of motor speed at the low input value, a high input value, the required pump percentage of motor speed at the high input value.
4. The pump output shall be capable of being remotely control via 0-10 VDC input. The input resolution shall be 0.01 of input value and capable of adjusting the pump motor speed from 0% to 100.0% motor speed in 0.1% increments. Four values shall be user configurable to define the low and high points on the output slope; a low input value, the required pump percentage of motor speed at the low input value, a high input value, the required pump percentage of motor speed at the high input value.

8. Pump shall be warranted by the standard manufacturer's warranty. Warranty shall include chemical damage to the pump head.
9. Capable of self-priming at the rated maximum pressure of up to 50 PSI.
10. Repeatability: +/- 0.5 percent.
11. Accuracy: +/- 0.5 percent of full scale.
12. Pump shall have standard manufacturer's warranty that includes chemical damage to the pump head and roller assembly caused by a ruptured pump tube assembly.

E. Pump head:

1. Shall be a single, unbroken track with a clear removable cover.
2. Tube failure detection sensors shall be constructed of two Hastelloy C pins that are located at the bottom of the pump head. The Hastelloy C pins shall act as electrical contacts. When both Hastelloy C pins are immersed in a conductive fluid, a circuit shall be completed between the pins and indicate a tube failure has occurred. Tube failure detection system shall not trigger with water contact from rain or condensation. Float type switches shall not be used. Process fluid waste ports or leak drains shall not be provided.
3. Squeeze rollers with encapsulated ball bearings shall be directly coupled to a one-piece thermoplastic rotor. Four Kynar (PVDF) or Nylon rollers shall be provided; two squeeze rollers for tubing compression shall be located 180 degrees apart and two guide rollers that do not compress the tubing shall be located 180 degrees apart. The roller diameters and occlusion gap shall be factory set to provide the optimum tubing compression; field adjustment shall not be required. Spring-loaded or hinged rollers shall not be used.
4. Rotor assembly shall be installed on a D-shaped, chrome plated motor shaft and removable without tools.
5. For tubing installation and removal, rotor assembly shall be rotated by the motor drive at 6 RPM maximum when the pump head cover is removed. Hand cranking of the rotor assembly shall not be required.
6. Pump head and tubing compression surface shall be corrosion resistant Valox thermoplastic.
7. The pump head cover shall be clear, polycarbonate thermoplastic with an integral ball bearing fitted to support the overhung load on the motor shaft. Cover shall include an imbedded magnetic safety interlock which will limit the motor rotation speed to 6 RPM when removed.
8. Cover shall be positively secured to the pump head using a minimum of four thumb screws. Tools shall not be required to remove the pump head cover.

F. Pump Tube Assembly:

1. To ensure pump performance and accuracy, only tubing provided by the manufacturer is acceptable.
2. Pump tube shall be assembled to connection fittings of PVDF material.
3. Connection fittings shall be permanently clamped to the tubing with stainless steel clamps. To prevent tubing misalignment and ensure accuracy, fittings shall insert into keyed slots located in the pump head and secured in place by the pump head cover.
4. Connection fittings shall be 1/2 IN M/NPT.
5. Tube sizes and connections shall be measured in inches.

G. Drive System:

1. Shall be factory installed and totally enclosed in a NEMA 4X, (IP66) wash-down enclosure. Capable of operating on any input power from 110VAC to 240VAC, 50/60 Hz single phase supply without user configuration or selection switches.

C. Components:

1. Skid-Mounted System:

- a. Each chemical feed system shall be completely assembled, mounted, calibrated, tested, and delivered to the site on a single (Well Sites) or duplex (DWC Sites) wall mount skid. Components to be mounted on the skid are as indicated on the Drawings and shall include the metering pumps, calibration column, piping, valves, piping accessories (pulsation dampeners, strainers, etc.), and wiring integral to the skid. The chemical feed system supplier shall be responsible for providing all equipment, valves and piping within the skid boundary.
- b. All components of the skid-mounted system (pumps, piping and controls) shall be tested prior to shipment as described in Part 1.3.F.3.

2. Calibration Chamber:

- a. Provide one, clear plastic calibration chamber with vent for use in calibrating the metering pumps per skid.
- b. The chamber shall be sized as noted below.
- c. The scale shall give direct readings in GPH without the need for calculations.
- d. The calibration chamber shall be piped and valved so that each pump shall be able to utilize the calibration chamber without interfering with the operation of the other pumps.
- e. The top of the chamber shall have a fitting to allow for piping to a common vent.

3. Piping, Valves, and Appurtenances:

- a. All pipe, molded fittings, valve end connectors and fabricated piping components shall be made of Schedule 80 PVC. Cement shall be as recommended by the pipe manufacturer for the services outlined in this Section.
- b. Tru-union type Isolation valves shall be Asahi Type 21 ball valves and provided for isolation of major equipment. Seals shall be compatible with the chemical being pumped.

4. Back Pressure and Pressure Relief Valves:

- a. Provide one type of each valve for each metering pump.
- b. Valves shall be spring-loaded, diaphragm-type, with materials of construction compatible with chemical service.

5. Metering Pumps:

- a. Pump construction and features vary as a function of the pump flow output range. See table within paragraph 2.1.B.1 above for pump flow range requirements, and see paragraphs below for pump specific design features.
- b. The pump shall be designed for leak-proof operation and trouble-free performance.
- c. Reference Section 43 05 20 - Common Work Results for Liquid Handling Equipment for additional pump specification requirements.

D. Metering Pump:

1. Shall be a positive displacement, peristaltic type tubing pump with a brushless variable speed motor, non-spring-loaded roller assembly located in the pump head, integral tube failure detection system, tube life roller revolution counter with user alarm set-point and flexible tubing with attached connection fittings.
2. Flex-Pro M-3 model shall be capable of output volumes from 0.0002 to 33.3 gallons per hour.
3. There shall be no valves, diaphragms, springs, or dynamic seals in the fluid path. Process fluid shall contact the pump tubing assembly and connection fittings only.
4. Pump shall be capable of 24-hour continuous duty, self-priming and operating in either direction of flow at the rated maximum pressure of up to 125 PSI (8.6 bar).
5. Pump shall be capable of running dry without damage.
6. Pump shall be capable of operating in either direction without output variation.
7. Suction lift shall be 30 feet of water.

1. The feed systems shall be specially designed, constructed and installed for the service intended and shall comply with the conditions listed in the schedule below. The VENDOR shall submit compatibility data from the manufacturer being supplied to confirm the materials of construction.

a. Well Chemical Back-up System (CFWS-1-M Systems)

System Tag No.		CMP-501	CMP-601	CMP-701
Qty.		1	1	1
Service (Chemical)		Sodium Hypochlorite	Sodium Hypochlorite	Sodium Hypochlorite
Chemical Conc.	%	12.5	12.5	12.5
Specific Gravity		9.96	9.96	9.96
Feed Rate	GPH	0-6.50	0-6.50	0-6.50
Pressure at Injection Point	PSIG	66	59	53
Drive Type	Solenoid / Motor	Motor	Motor	Motor
Speed Control	Manual / 4-20mA	Manual	Manual	Manual
Electrical Requirement	V / ph / Hz	120V/1ph/60Hz	120V/1ph/60Hz	120V/1ph/60Hz
Control Panel	None / On Skid / Remote	None	None	None
No. of Discharge Points	#	One	One	One

b. DWC Chemical Back-up System (CFWS-2-M Systems)

System Tag No.		CMP-DWCA1, DWCA2	CMP-DWCB1, DWCB2
Qty.		2	2
Service (Chemical)		Sodium Hypochlorite	Sodium Hypochlorite
Chemical Conc.	%	12.5	12.5
Specific Gravity		9.96	9.96
Feed Rate	GPH	0-6.50	0-6.50
Pressure at Injection Point	PSIG	78	51
Drive Type	Solenoid / Motor	Motor	Motor
Speed Control	Manual / 4-20mA	4-20mA	4-20mA
Electrical Requirement	V / ph / Hz	120V/1ph/60Hz	120V/1ph/60Hz
Control Panel	None / On Skid / Remote	None	None
No. of Discharge Points	#	One	One

This Page Intentionally Left Blank

F. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
2. Make final adjustments to equipment under direction of manufacturer's representative.

G. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

3.5 DEMONSTRATION

- A. Demonstrate equipment startup, shutdown, routine maintenance, alarm condition responses, and emergency repair procedures to Owner's personnel.

END OF SECTION 43 32 69

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Disconnect electrical systems scheduled for removal.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction.
- D. Remove, relocate, and extend existing installations as necessary to accommodate new construction.

3.3 INSTALLATION

- A. According to manufacturer instructions.
- B. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.
- C. The equipment shall be installed per the Contract Documents and manufacturer's recommendations.
- D. Provide a manufacturer's certificate showing the equipment has been satisfactorily calibrated and tested.
- E. An authorized manufacturer's representative shall inspect the installation of all work furnished under this Section and shall provide a certificate of proper installation.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Field Testing:
 - 1. Test for proper alignment.
 - 2. Demonstrate operation without undue noise, vibration, or overheating.
 - 3. Engineer will witness field testing.
- D. Control System: Energize system equipment and test operation of hardware and process control logic under supervision of manufacturer's representative and in presence of Engineer.
- E. Manufacturer Services: The manufacturer or manufacturer's representative shall provide the services of an experienced, authorized representative the equipment specified herein who shall be present at the jobsite and/or classroom designated by the Owner for the minimum man-days listed for the services shown below:
 - 1. One man-day per site for inspection, start-up, functional testing and certificate of proper installation.
 - 2. One man-day per site for training and commissioning.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.8 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish manufacturer's standard warranty for the sodium hypochlorite chemical feed pumps and a standard manufacturer's warranty for all other sodium hypochlorite chemical feed system components described in this Specifications Section.

PART 2 PRODUCTS

2.1 CHEMICAL FEED SKID

- A. Manufacturers:
 - 1. The skid system shall be ProSeries, Chem-Feed® model CFWS-1/2-M wall-mounted manufactured in the U.S.A. by Blue-White Industries.
 - 1. Substitutions: None permitted.
- B. Description: The Chemical Feed System will be capable of automatic metering, dilution, mixing, activation, and feeding of 12.5% sodium hypochlorite.

- B. Product Data: Submit manufacturer information, including system materials and component equipment.
- C. Shop Drawings:
 - 1. Submit detailed wiring and control diagrams.
 - 2. Indicate fasteners, anchors, and fabrication details.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer Instructions: Submit detailed instructions regarding installation requirements, including storage and handling procedures, special field procedures, anchoring, and layout.
- F. Source Quality-Control Submittals: Indicate results of factory tests and inspections.
 - 1. All equipment provided under this section shall be obtained from a single supplier or manufacturer who shall assume full responsibility for the completeness and proper installation of the Sodium hypochlorite Chemical Feed System.
 - 2. To insure quality and unit responsibility, the Sodium hypochlorite Chemical Feed System must be assembled and tested by the manufacturer at its facility and be a standard regularly marketed product of that manufacturer. The manufacturer must have a physical plant, technical and design staff and fabricating personnel to complete the work specified. Skids assembled by a second party fabricator, integrator or contractor shall not be acceptable.
 - 3. Prior to shipment the Sodium hypochlorite Chemical Feed System shall be inspected for quality of construction verifying all fasteners and fittings are tight, all wires are secure and connection whisker-free. The Sodium hypochlorite Chemical Feed System shall be tested under pressure for a minimum of one hour at 100 psi. If leaks are found they shall be fixed and a new test shall be conducted for an additional hour at 100 psi until the Sodium hypochlorite Chemical Feed System is verified to be leak free.
- G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- H. Manufacturer Reports: Certify that equipment has been installed according to manufacturer instructions.
- I. Qualifications Statements:
 - 1. Submit qualifications for manufacturer and installer.
 - 2. Submit manufacturer's approval of installer.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations and final orientation of equipment and accessories.

1.5 QUALITY ASSURANCE

- A. Perform Work according to manufacturer's standards.
- B. Maintain a copy of each standard affecting Work of this Section on Site.

SECTION 43 32 69 – CHEMICAL FEED SKID - CHLORINE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sodium Hypochlorite feed system.
2. Skid mounted system.
3. Calibration chamber.
4. Pulsation dampeners.
5. Back pressure and pressure relief valves.
6. Enclosure heater.
7. Metering pump.
8. Pumphead.
9. Pump tube assembly.
10. Drive system.
11. Enclosure.
12. Control circuitry.
13. Safety.
14. Operation, Materials and Finishes.

B. Related Requirements:

1. Section 40 05 06 - Couplings, Adapters and Specials for Process Piping.
2. Section 40 05 51 - Common Requirements for Process Valves.
3. Section 40 05 93 - Common Motor Requirements for Process Equipment.
4. Section 40 05 31 - Thermoplastic Process Pipe.
5. Section 40 63 43 - Programmable Logic Controllers.
6. Section 43 05 20 - Common Work Results for Liquid Handling Equipment.

1.2 REFERENCE STANDARDS

- A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
- B. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.
- C. All materials, installation and workmanship shall comply with the applicable requirements and standards addressed within the following references:
1. American National Standard Institute (ANSI).
 2. Occupational Safety and Health Administration (OSHA).
 3. National Electrical Manufacturers Association (NEMA).
 4. National Electrical Code (NEC).
 5. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.3 SUBMITTALS

- A. Section 01 33 00 Submittal Procedures: Requirements for submittals.

3. Engineer will witness field testing.
 4. Start control system by energizing system equipment and testing operation of hardware and process control logic under supervision of manufacturer's representative and in presence of Engineer.
 5. Field-test each pump system after installation in order to demonstrate:
 - a. Satisfactory operation without excessive noise and vibration over flow rate range; if pump driven by variable-frequency drive, test at 100-rpm increments.
 - b. Required head, flow rate, and efficiency at design point.
 6. Certify in writing that pump system has been satisfactorily tested.
- D. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than 8 hours on Site for installation, inspection, startup, field testing, and instructing Owner's personnel in maintenance of equipment.
- E. Equipment Acceptance:
1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
 2. Make final adjustments to equipment under direction of manufacturer's representative.
- F. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

3.5 DEMONSTRATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate equipment startup, shutdown, routine maintenance, alarm condition responses, and emergency repair procedures to Owner's personnel.

END OF SECTION 43 05 20

- C. Provide temporary wiring and connections to maintain existing systems in service during construction.
- D. Remove, relocate, and extend existing installations as necessary to accommodate new construction.

3.3 INSTALLATION

- A. According to manufacturer instructions.
- B. Ensure that equipment is secure in position.
- C. Equipment Bases and Supports:
 - 1. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 4 inches beyond supported equipment base plate, as indicated on Drawings.
 - 2. Install anchor bolts and accessories for mounting and anchoring equipment.
 - 3. Supports:
 - a. Construct supports of steel members.
 - b. Brace and fasten with flanges bolted to equipment structure.
 - c. Provide flexible connections as required to isolate equipment from piping.
- D. Provide rigid anchors for pipes after vibration isolation components are installed.
- E. Gages:
 - 1. Except for sample pumps and sump pumps, provide pressure gages at pump discharge piping and compound gages on pump suction piping.
 - 2. If subject to shock or vibrations, wall-mount gages or attach gages to galvanized channel floor stands and connect with flexible connectors.
- F. Lubricants: Provide necessary oil and grease for initial operation.
- G. Coat materials and equipment as specified in Section 09 96 00 – High Performance Industrial Coatings.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Testing:
 - 1. Test for proper alignment and freedom from binding, scraping, shaft runout, or other defects.
 - 2. Where specified by individual Specification Section, field test equipment to demonstrate operation without undue noise, vibration, or overheating.

1. Perform tests using complete pump system to be furnished, including Project motor and variable-frequency drive, if specified.
 2. For pumps with motors rated less than 100 hp, manufacturer's certified test motor is acceptable.
- D. NPSH:
1. Perform test of NPSH required as required by specific pump Section.
- E. Do not ship equipment until test data have been accepted by Architect/Engineer.
- F. Owner Inspection:
1. Make completed pumping system available for inspection at manufacturer's factory prior to packaging for shipment.
 2. Owner inspection will be at the Owner's discretion and will be paid for by the Owner and coordinated by the Contractor.
 3. Notify Owner at least seven days before inspection is allowed.
- G. Owner Witnessing:
1. Allow witnessing of factory inspections and test at manufacturer's test facility.
 2. Owner witnessing will be at the Owner's discretion and will be paid for by the Owner and coordinated by the Contractor.
 3. Notify Owner at least seven days before inspections and tests are scheduled.
- H. Certificate of Compliance:
1. If fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 2. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that designated areas, clearances, structural requirements, piping, utility connections, and electronic signals are ready to receive equipment.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Disconnect electrical systems scheduled for removal.

2. Buried or Concealed: Cast iron pipe with cleanouts.
3. Route drainage piping to nearest sink or floor drain.

2.4 PIPING CONNECTIONS

A. Flanges:

1. Comply with ASME B16.5.

B. Fasteners:

1. As specified in Section 05 50 00 - Metal Fabrications.

C. Screwed Fittings: Comply with ASME B1.20.1.

2.5 SHAFT COUPLING GUARDS

A. Comply with OSHA requirements.

2.6 FINISHES

A. As specified in Section 09 96 00 – High Performance Industrial Coatings.

2.7 ACCESSORIES

A. Nameplates:

1. As specified in Section 10 14 00 - Identification Devices.
2. Identify individual pumps with a stainless-steel nameplate, indicating assigned equipment number, serial number, rated head and flow rate, impeller size, speed, and manufacturer's name and model number.

2.8 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Performance Testing (Positive-Displacement Pumps):

1. Operate pump at least 30 minutes for each specified speed and capacity to demonstrate compliance with specified requirements and to establish that pumping unit is free from overheating and excess vibration.
2. Test pump at maximum rated speed and at minimum, rated, and maximum flow rates, and measure respective head and ampere draw.

C. Drive Units:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish standard manufacturer's warranty for pumping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

- A. Provide pumping systems designed and constructed for continuous service within specified range of operation, without overheating, cavitation, or excessive vibration.

2.2 LUBRICATION

- A. Water-Lubricated Pumps: Provide flow meter and differential pressure switch to de-energize pumping unit in low-water-flow conditions.
- B. Ball Bearings and Roller Bearing: Lubricate materials as recommended by pump manufacturer.
- C. Lubrication Equipment: Provide pumps, piping, tankage, and filters as required to supply lubrication to pumping units.

2.3 PUMP PIPING, FITTINGS, AND VALVES

- A. For piping, fittings, and valves furnished with pumps, comply with relevant Section referenced in this Section under "Related Requirements" Paragraph.
- B. Drainage Piping:
 1. Exposed Galvanized Steel Piping:
 - a. Support as required.
 - b. Provide cleanout plugs.
 - c. Coated as specified in Section 09 96 00 - High Performance Industrial Coatings.

G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

H. Qualifications Statements:

1. Submit qualifications for manufacturer.
2. Submit manufacturer's approval of installer.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance materials.

B. Spare Parts:

1. Furnish one set of manufacturer's recommended spare parts.

C. Tools: Furnish special tools and other devices required for Owner to maintain and calibrate pumping systems.

1.6 QUALITY ASSURANCE

A. Materials in Contact with Potable Water: Certified to NSF Standards 61 and 372.

B. Perform Work according to manufacturer's standards.

C. Maintain a copy of each standard affecting Work of this Section on Site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store materials according to manufacturer instructions.

D. Protection:

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 - 1. Submit manufacturer information for:
 - a. Drive assemblies, pumps, tanks, mixers, panels, and other major components.
 - b. Schematics, diagrams, panel layouts, ladder diagrams, and sequence of operation.
 - c. Electric motors and variable-frequency drives.
- C. Shop Drawings:
 - 1. Indicate assembly, foundation, and installation with location including critical dimensions, sizes, and support locations.
 - 2. Characteristic Pump Curves: Plot against flow rate and indicate total dynamic head, pump efficiency, brake horsepower, net positive suction head, power input to motor, and overall efficiency.
 - 3. For variable-frequency-driven pumps, indicate characteristic curves for range of speeds in 5 Hz increments.
 - 4. Submit pump name, identification tag number, and Specification Section number.
 - 5. Submit elevation of local control panel, indicating panel-mounted devices, power single-line diagram, and input/output list.
 - 6. Submit electrical schematic diagram and wiring diagram of field connections.
- D. Manufacturer's Certificate:
 - 1. Certify that pumping systems meet or exceed specified requirements.
 - 2. Pumping Systems Rated Greater than 3 hp:
 - a. Certify that pumping system has been installed satisfactorily and is ready for operation.
 - b. Indicate date of field tests and furnish test data.
- E. Test and Evaluation Reports:
 - 1. Performance Data Curves:
 - a. Indicate head, flow rate, power demand, net positive suction head (NPSH) required, and pump efficiency over entire operating range of pump.
 - b. Indicate head, power demand, overall efficiency at design, and maximum and minimum flow rates.
 - c. For variable-frequency-driven pumps, indicate performance at intervals of 100 rpm from minimum to maximum speed.
 - 2. NPSH:
 - a. Indicate test results of NPSH required, as required by specific pump Section.
 - b. Otherwise, submit manufacturer's NPSH calculation.
- F. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

SECTION 43 05 20 - COMMON WORK RESULTS FOR LIQUID HANDLING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Lubrication.
2. Pump piping, fittings, and valves.
3. Piping connections.
4. Shaft coupling guards.
5. Accessories.

B. Related Requirements:

1. Section 09 96 00 - High Performance Industrial Coatings.
2. Section 10 14 00 - Identification Devices.
3. Section 40 05 06 - Couplings, Adapters and Specials for Process Piping.
4. Section 40 05 51 - Common Requirements for Process Valves.

1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B1.20.1 - Pipe Threads, General Purpose (Inch).
2. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
3. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.

B. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

C. Occupational Safety and Health Administration (OSHA):

1. 29 CFR 1910 - Occupational Safety and Health Standards.

1.3 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with location and placement of utilities and piping.

DIVISION 43
PROCESS GAS AND LIQUID HANDLING

- a) Run (discrete output)
- b) Available (discrete input)
- c) Fault (discrete input)
- d) Flow (analog input)
- 2) FE/FIT-DWCB
 - a) Chlorine Feed Flow (analog input)

3.11 CONTROL LOOP DESCRIPTIONS

A. General Requirements

1. Maintain existing control loops to remain.
 - a. Correct non-functioning or malfunctioning control loops.
2. Remove control loops for equipment that has been removed.
3. Control loops for equipment that has been replaced shall have those control loops updated or recreated as appropriate.
4. New indicated functions shall be added.
5. Add new control loops as appropriate and as described in these specifications.
 - a. New Alarms indicated on the P&IDs or as specified by equipment manufacturers shall be added to the SCADA alarm screens as appropriate.
6. The control loop descriptions are not intended to be an inclusive listing of all elements and appurtenances required to execute loop functions but are rather intended to supplement and complement the drawings and other specification sections. The control loop descriptions shall not be considered equal to a bill of materials.
7. Provide instrumentation hardware and software as necessary to perform control functions specified herein and shown on drawings.

B. DWC Site A PLC New Control Loops

1. Monitor, control, and display status and alarm conditions of Chemical Metering Pumps CMP-DWCA1 & CMP-DWCA2
 - a. See Section 3.10 for I/O requirements.
2. Monitor, control, and display status and alarm conditions of Chlorine Flow Meter FE/FIT-DWCA
 - a. See Section 3.10 for I/O requirements.

C. DWC Site B PLC New Control Loops

1. Monitor, control, and display status and alarm conditions of Chemical Metering Pumps CMP-DWCB1 & CMP-DWCB2
 - a. See Section 3.10 for I/O requirements.
2. Monitor, control, and display status and alarm conditions of Chlorine Flow Meter FE/FIT-DWCB
 - a. See Section 3.10 for I/O requirements.

3.12 MAINTENANCE

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.

END OF SECTION 40 63 43

- b. Additional hardware components necessary for panel modifications, along with installation of all components, wiring, and termination shall be by the Contractor/Integrator.

- 1) General Operator Interface Screens (all existing plant operations and new operations) shall be available. The Microcomputer/PLC/Touch Screen system shall include software required for standalone operation should communication be lost to the main SCADA server.
- 2) Local Control Screen shall be available.
- 3) Screens shall include all status and alarms indicated on the P&IDs and/or available on manufacturer equipment. The status and alarms shall be by system, and shown graphically.
- 4) All PLC screens shall be duplicated on all other plant PLCs and on supervisor and operator computers.

2. PLC Input/Output Schedule:

- a. The following new and rehabilitated equipment shall be integrated:

- 1) CMP-DWCA1 & CMP-DWCA2
 - a) Run (discrete output)
 - b) Available (discrete input)
 - c) Fault (discrete input)
 - d) Flow (analog input)
- 2) FE/FIT-DWCA
 - a) Chlorine Feed Flow (analog input)

B. DuPage Water Commission Site B PLC

1. General Information:

- a. The PLC is an existing Allen Bradley CompactLogix PLC located in the DWC Site B Control Room.
- b. Additional hardware components necessary for the panel modifications, along with installation of all components, wiring, and termination shall be by the Contractor/Integrator.
 - 1) General Operator Interface Screens (all existing plant operations and new operations) shall be available. The Microcomputer/PLC/Touch Screen system shall include software required for standalone operation should communication be lost to the main SCADA server.
 - 2) Local Control Screen shall be available.
 - 3) Screens shall include all status and alarms indicated on the P&IDs and/or available on manufacturer equipment. The status and alarms shall be by system, and shown graphically.
 - 4) All PLC screens shall be duplicated on all other plant PLCs and on supervisor and operator computers.

2. PLC Input/Output Schedule:

- a. The following new and rehabilitated equipment shall be integrated:

- 1) CMP-DWCB1 & CMP-DWCB2

- L. The system integrator shall include all necessary intrinsically safe barriers and all other equipment required for instrumentation in classified spaces.
- M. The control loop descriptions are not intended to be an inclusive listing of all elements and appurtenances required to execute loop functions, but are rather intended to supplement and complement the drawings and other specification sections. The control loop descriptions shall not be considered equal to a bill of materials.
- N. The System Integrator shall furnish all labor, materials, and components, and shall provide all design, assembly, testing, and start-up services required to provide a complete and operational programmable controller system (hereinafter referred to as PLC) as specified and shown on the Drawings. The system may include, but is not necessarily limited to the following:
 - 1. PLC processors, chassis, I/O modules, power supplies and software
 - 2. PLC communications systems including, but not limited to, remote I/O racks, between processors, laptops, Operator Interface Terminals (OIT), existing PLC's, and peripheral devices.
 - 3. PLC system detailed design, assembly, installation, testing, and start-up services
 - 4. SCADA hardware and communications.

3.8 SYSTEM OVERVIEW

- A. Control Screens:
 - 1. Add system status and setpoints for all new equipment to the SCADA system as a whole, including, but not limited to, control setpoints, flow rates, flow totals (day) and indication of alerts or alarms. Coordinate with operations staff for exact location and character of desired interfaces for new equipment.
 - 2. Add subscreens for the revised PLC as appropriate, including the new well pump, generator and ATS, power monitor, etc.

3.9 CONTROL SCREENS

- A. Main Screen:
 - 1. Add system status and set-points for the new and rehabilitated equipment to the SCADA system as a whole, including display of sensor data from all locations, control set points, flow rates, and indication of alerts or alarms. Coordinate with operations staff for exact location and character of desired interfaces for new equipment.
- B. Add sub-screens for the PLC as appropriate. The functions required are described in the following sections.

3.10 I/O LIST

- A. DuPage Water Commission Site A PLC
 - 1. General Information:
 - a. The PLC is an existing Allen Bradley CompactLogix PLC located in the DWC Site A Control Room.

3.4 MAINTENANCE

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Furnish service and maintenance of programmable controllers for one year from date of Substantial Completion.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Perform operational testing on control systems to verify proper operation and field wiring connections.
- D. Manufacturer's Field Services: Prepare and start up programmable controller.

3.6 DEMONSTRATION AND TRAINING

- A. Furnish eight (8) hours of instruction to be conducted at the project site with manufacturer and Owner's representatives.

3.7 SYSTEM RESPONSIBILITIES

- A. The System Integrator shall be responsible for coordinating SCADA communications with Owner's systems.
- B. The System Integrator shall furnish and install any required PLCs, expansion boards, racks, analog or discrete input or output modules, relays, or power supplies required.
- C. The System Integrator shall furnish and install any required expansion boards, racks, analog or discrete input or output modules required if there are insufficient existing spares.
- D. The System Integrator shall be responsible for adding control of the new systems and integrating with existing equipment and packaged control systems.
- E. The System Integrator shall be responsible for thoroughly checking the existing control system prior to modifying the system to identify and correct conflicts and verify functionality.
- F. The System Integrator shall furnish, install and configure primary elements.
- G. The System Integrator shall coordinate required interface screens with Engineer, Operations Staff, and Equipment Manufacturers to provide desired functionality.
- H. The System Integrator shall provide instrumentation hardware and software as necessary to perform control functions specified herein and shown on drawings.
- I. The System Integrator will be responsible for integration of this system and control logic into the SCADA system.
- J. The System Integrator shall modify existing SCADA screens and add screens to the existing interface as required to provide desired functionality.
- K. The System Integrator shall furnish, install and program new graphical interface terminals.

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Disconnect and remove abandoned programmable controller components.
- C. Extend existing programmable controller installations using materials and methods compatible with existing installations, or as specified.
- D. Clean, reprogram and repair existing programmable controllers to remain or to be reinstalled.

3.2 INSTALLATION

- A. Do not install products until major construction is complete and building interior is enclosed and heated.
- B. Connect input and output devices as indicated on the Drawings.
- C. Use bottom entry for all conduit entry to instruments and junction boxes.
- D. Install electrical components per Division 26.
- E. Panel-Mounted Instruments:
 - 1. Mount and wire so removal or replacement may be accomplished without interruption of service to adjacent devices.
 - 2. Locate all devices mounted inside enclosures so terminals and adjustment devices are readily accessible without use of special tools and with terminal markings clearly visible.
 - 3. Install engraved plastic nameplates according to Section 10 14 00 - Identification Devices.
 - 4. Ground and bond programmable controllers according to Section 26 05 26 - Grounding and Bonding for Electrical Systems.

FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Perform operational testing on control systems to verify proper operation and field wiring connections.
- D. Manufacturer's Field Services: Prepare and start up programmable controller.

3.3 DEMONSTRATION AND TRAINING

- A. Furnish minimum of 8 hours of instruction each for two persons, to be conducted at Project Site with manufacturer's representative. Correct and/or modify OIT and software as requested to accommodate owner preferences.

- d. Example screen configurations with required navigation standards. Integrator to match existing screen layout and navigation standards.
 - e. Layer 1, Layer 2, and Layer 3 network diagrams of existing SCADA environment.
 - C. Service Conditions: Conform to NEMA ICS 3 and the following:
 - 1. Temperature: 50-95F.
 - 2. Humidity: 95%.
 - 3. Altitude: 765.
 - D. Programming Language: Conform to Rockwell RSLogix5000/Studio5000 based on version in use.
 - E. Programming Software: Existing SCADA software is Rockwell Factory Talk View SE.
 - F. Historian Software: Existing SCADA Enterprise Historian software is Rockwell FactoryTalk Historian Site Edition. Review existing licensing and notify Engineer if additional licensing to accommodate new I/O points is required. All new analog values created by this project will need to be added to the historian, in addition to digital tags indicated by owner's preference. All licenses provided should be registered to the Village of Oak Brook.
 - G. Portal Software: Existing Portal software in use is Rockwell FactoryTalk VantagePoint. Existing licensing is user-based and no additional licenses are needed to be purchased for this project.
 - H. Operations Management and Reporting Software: Existing Operations Management software is Operator 10. Update or add reports and interface to incorporate new equipment and processes to owner's preference.
 - I. Networking Connections: Ethernet over fiber (Dual LC connectors), Ethernet over Copper. All Copper Ethernet cables to be terminated in punch down female jacks rated to match the cable rating or utilize factory terminated patch cables. No crimped-on network cables will be permitted.
 - J. Spare Input/Output Capacity: maintain 15 percent spare capacity. Do not deplete spare I/O
 - K. Input Voltage: 24 volts, DC.
 - L. Enclosure Type: NEMA 4.
- 2.3 SOURCE QUALITY CONTROL
- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.
 - B. Testing: Test programmable controller according to NEMA IEC 2.2.

PART 3 - EXECUTION

3.1 PREPARATION

1.6 QUALIFICATIONS

- A. See Section 40 63 00 – Instrumentation for Process Control Basic Requirements
- B. Integrator/Supplier:
 - Concentric Integration
 - 8678 Ridgefield Road
 - Crystal Lake, Illinois 60012
 - (815) 788-3600

1.7 AMBIENT CONDITIONS

- A. Conform to specified service conditions during and after installation of programmable controllers.
- B. Maintain area free of dirt and dust during and after installation of products.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- 1. Create programming as required to integrate the new equipment and in accordance with customary control, Process and Instrumentation Diagrams, Manufacturer's requirements and control loop descriptions.
- 2. I/O cards, protocol converters, switches, punch down patch panels, etc. required to integrate signals shall be provided by the Integrator.
- 3. Provide all screens, controls and functions at the OIT panel, and at operator stations, as well as at Public Works. The Station shall be able to be operated remotely from Public Works as well as the local operator stations and panels.

2.2 PROGRAMMABLE CONTROLLER

- A. PLC Control Panel Component Manufacturers:
 - 1. All new control panel processors shall be Allen Bradley 1769-L33ER processors.
 - 2. Ethernet Switches: Stratix 5200
 - 3. OIT: Allen Bradley PanelView Plus 7 15"
 - 4. I/O adapters: Compatible 1769 Compact I/O modules as manufactured by Allen Bradley
 - 5. Cat 6 Patch Panels: Panduit CDPP8RG (RJ45)
 - 6. Protocol Converters: Red Lion, Serial Ports and Ethernet Ports as required, RS-485, Modbus/RTU, Modbus/TCP inputs, Ethernet/IP Output.
 - 7. Intrinsic Barriers, Signal Isolators, etc: PR Electronics
- B. Description: Controller conforming to NEMA IA 2.2, and with required memory and functional capacity to perform specified sequence of operation with scheduled input and output points.
 - 1. The following information will be furnished to the Integrator:
 - a. Master I/O list.
 - b. Master Network IP Address List.
 - c. As-built Drawings of Existing PLC Control Panels.

SECTION 40 63 43 - PROGRAMMABLE LOGIC CONTROLLERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Programmable controllers and accessories.
- B. Related Requirements:
 - 1. Section 10 14 00 - Identification Devices.
 - 2. Division 40 - Process Interconnections.
 - 3. Section 40 63 00 – Instrumentation for Process Control, Basic Requirements
 - 4. Section 40 63 10 – Process Instrumentation and Control Equipment
 - 5. Division 43 - Process Gas and Liquid Handling.

1.2 REFERENCE STANDARDS

- A. National Electrical Manufacturers Association:
 - 1. NEMA IA 2.2 - Programmable Controllers - Equipment Requirements and Tests.
 - 2. NEMA IA 2.3 - Programmable Controllers - Programming Languages.
 - 3. NEMA ICS 3 - Industrial Control and Systems: Factory Built Assemblies.
 - 4. NEMA ICS 6 - Industrial Control and Systems: Enclosures.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit catalog data for each component specified showing electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate electrical characteristics and connection requirements, including layout of completed assemblies, interconnecting cabling, VLAN and IP addressing information, dimensions, weights, and external power requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Section 40 63 00 – Instrumentation for Process Control Basic Requirements

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Spare Parts: Furnish one spare circuit card for each unique circuit card type installed.

AUTO	AUTO	Blue
MANUAL	MANUAL	White
REMOTE	REMOTE	Yellow
REQUIRED	REQUIRED	Yellow

C. Standard Handswitch Colors and Inscriptions

1. Unless otherwise noted in the individual Loop Specifications, the following color code and inscriptions shall be followed for all pushbuttons/selector switches:

Tag	Inscription(s)	Color
00A	ON/OFF/AUTO	Black
00	ON	Black
	OFF	Black
RESET	RESET	Red

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Standardization - All instruments shall be of the latest and most modern design and shall have the overall accuracy specified herein or equal to that of the specified components.
- B. Install all equipment per the manufacturers recommendations, this includes all components indicated in the manufacturer's documentation, as directed by the Engineer.
- C. The Integrator shall study the existing site conditions prior to bid.
- D. The integrator shall provide a detailed programming submittal of the Operator interface units and PLC. In addition to the specified and customary submittal information all group, point displays, alarm lists, communication diagrams and other descriptive and training diagrams shall be included for Engineer review and later inclusion into the system O&M manual.
- E. The integrator shall field calibrate all new and existing panel instruments at the device and loop test through to the local panel.
- F. The Contractor shall coordinate, apply for and provide the telephone lines for the telemetry and communication system, if applicable.
- G. The control system shall have a performance requirement meeting the referenced standard and customary practice values in the industry and per the project requirements.

END OF SECTION 40 63 10

1. Controller interface cable.

B. PLC and computer final programs

1. USB Removable Storage.
2. Secure website delivery (DropBox, OneDrive).

2.6 CONTROL PANEL CONSTRUCTION:

A. Control Panel Identification and Labeling

1. Identification shall be provided for all equipment.
 - a. Nameplates shall be provided for all front of panel instruments, and other devices as shown on the Drawings.
 - b. Nameplates shall be 1/8" thick, laminated plastic, such as Gravoply, with black surface and white core unless otherwise indicated on the Drawings.
 - c. Nameplate front surface edges shall be beveled to frame the nameplate with a border.
 - d. Nameplates shall be mounted immediately below the component it identifies, or as shown on the Drawings.
 - e. Nameplates shall be fastened to the control panel with adhesive double-backed tape.
 - f. The overall size of the nameplates shall be as indicated on the Drawings.
 - g. The lettering shall be my machine - engraving through the facing to the core. Lettering shall be block type and square cut.
 - h. The height of the nameplate lettering shall be 3/16-inch. Legends shall be as shown on the drawings.
2. Equipment labels shall also be provided for all internally mounted devices, including the front of panel mounted items.
 - a. The labels shall be printed mylar film tape or equal.
 - b. The labels shall identify instruments by instrument tag number and other devices by device number or if none by name.
 - c. Devices labeled shall include as a minimum; relay, hand switches, indicating lights, terminal blocks.
 - d. The label shall not be affixed to the device itself. The label shall be easily seen and not located beneath wire bundles.
 - e. Each front of panel device will have a label affixed to the interior of the front panel face.
 - f. Provide inside the panel a label list for each circuit breaker assembly to identify each item tag and service.
3. Pushbuttons, selector switches, and indicating light escutcheons shall be the manufacturer's standard, with legends, as specified on the Drawings.
4. Wires and terminal block points shall be identified as described elsewhere in the specifications.

B. Standard Light Colors and Inscriptions

1. Unless otherwise noted in the individual Loop Specifications, the following color code and inscriptions shall be followed for the lenses and legend plates of all indicated lights:

Tag	Inscription(s)	Color
ON	ON	Red
OFF	OFF	Green

2. Units shall have standard size aluminum legend plates with black engraved markings, as indicated. Operators shall be black knob type. Units shall have the number of positions and contact arrangements and spring return function (if any) as required.
3. Units shall be single-hole mounting, accommodating panel thicknesses from 1/16-inch minimum to 1/4-inch maximum.
4. Units with up to four selection positions shall be Allen-Bradley 800T Series, or approved substitute.
5. The selector switches required are noted in the system description, drawings and as functionally required. Tag numbers per the specified method.
6. The pushbutton switches required are noted in the system description, drawings and as functionally required. Tag numbers per the specified method.

2.4 COMPONENT DESCRIPTIONS - INTERNAL PANEL

A. Relay - 120V AC Logic

1. Contact arrangements shall be 3 pole, and shall be rated for not less than 10 amperes at 120vac. Relays shall have plain plastic dust covers, test buttons, coil light, and mounting sockets with screw terminals.
2. Relays shall be UL recognized. Units shall be IDEC or equal.
3. Relays shall be capable of using a time cube for on or off delay operation as required.

B. Intrinsically Safe Relay

1. Solid-state relays for intrinsically - safe relaying shall be Phoenix Contact or approved substitute (hazardous location applications).

C. Solid State Relay

1. Solid-state relays for equipment isolation shall be Phoenix Contact, either AC or DC control relays as required, or approved substitute.

D. Electrical Transient Protection

1. All instrument and control equipment mounted outside of protective structures (field mounted equipment) shall be equipped with suitable surge-arresting devices to protect the equipment from damage due to electrical transients induced in the interconnecting lines from lightning discharges or nearby electrical devices.

E. Signal Isolator

1. The unit shall produce an output signal linearly proportional to the input signal.
2. Isolation between input, output, and power shall be provided. The signal levels shall be 4-20 mA_{dc} or 1-5 v_{dc}.
3. Plug-in type units are not acceptable.
4. Units shall be AGM type PTA, model #4000 or approved substitute.

F. Miscellaneous Internal Components - Refer to the control panel requirements.

2.5 EXPENDABLES, TEST EQUIPMENT, AND SPARE PARTS

A. Provide the following test equipment:

14. The PLC shall have spare analog and discrete I/O points and modules. Spare slots shall be provided. Do not deplete all spares for integration of new work. Maintain minimum 5% available spares.
15. The PLC shall determine the automatic mode starts and stops for the motors based upon internal inter-locking and safety logic using the required inputs. Prevent restart, fail to start timers, time delay timers and other functions shall be provided for the equipment and others as applicable.
16. The PLC shall be programmed to accumulate run times and number of starts for the motors.
17. The system logic for pump control functions shall include customary control practices for any pump. As a minimum, the logic shall include the following:
 - a. A pump run-fail timer circuit.
 - b. A thermal overload remote contact for use with the run-fail for pump fail alarm.
 - c. A prevent restart time circuit.
 - d. Auxiliary contacts for the logic and direct signaling to the panel status lights and run time indicators.
 - e. Control mode logic for the manual and automatic functions interlocks.
 - f. Other pump functions as determined are necessary.
 - g. The above shall apply for adjustable speed drives as well as motor starters.
18. The control system shall also provide continuous measurement, indication and automatic control of the process as described in this specification. The process control points shall be fully adjustable over the entire range from the panel front.

2.2 PRODUCT QUALITY

- A. The specified components have been selected for their form, fit and function for the project design.
- B. For the purpose of standardization and responsibility all instrumentation specified shall be provided by one Integrator.
- C. The Integrator shall be experienced with the method of documentation specified.

2.3 COMPONENT DESCRIPTIONS - PANEL FRONT DEVICES

A. Indicating Light

1. Units shall be heavy-duty industrial indicating lights rated for 120-volt, oil-tight service. Units shall be single-hole mounting, accommodating panel thicknesses from 1/16-inch minimum to 1/4-inch maximum.
2. Units shall have single lens with color as specified.
3. Units shall be LED lamp type
4. Units shall be Allen-Bradley 800T Series, or approved substitute.

B. Selector Switch, Pushbuttons

1. Units shall be heavy-duty, oil-tight, industrial type selector switches with contacts rated for 120V ac service at 10 amperes continuous.

A. The Integrator shall provide a schedule for the project and indicate activities supporting the following system project milestones.

1. Inspection and review of existing sites and listing of modifications including the plan for changes.
2. Pre-submittal review submittal
3. Programming and MMI review submittal
4. Delivery of Panels; provide breakdown of deliverable elements
5. Operations testing; provide breakdown of deliverable elements
6. Acceptance testing; provide breakdown of deliverable elements
7. Site training
8. Remote monitoring
9. O&M manuals

PART 2 - PRODUCTS

2.1 FUNCTIONAL REQUIREMENTS

A. Control System Overview:

1. The control system architecture, hierarchy and functional operation is shown on the drawings for the process.
2. The control system shall provide manual control and status indication of the various motor drives and pumping as specified herein and as shown on the drawings.
3. The control system shall also provide continuous measurement, indication and automatic control of operations. Custom alarm point and status graphics shall be designed and submitted for approval.
4. The system logic for the motor control functions shall include customary control practices for pump control for the type of equipment specified. This includes moisture and temperature sense monitoring and alarms.
5. The panels have a loop power supply, transient protection, and a UPS for sustained power. UPS shall be integrated such that if UPS power output fails, a UPS bypass circuit shall close to provide power directly to the systems and provide primary power when it is available.
6. The signal processing shall be such that analog field signals shall be 4-20 mA dc. These current analog signals shall have loop resistors installed at the terminal blocks for individual 1-5 vdc signaling to each component in the loop as required.
7. The system modifications and panel additions shall allow for future expansion and the installation of future equipment. The panel construction shall take this into account and indicate the future space and electrical power and support materials in the required submittal information.
8. Control relays shall be 3-pole such that one contact each is available for future use.
9. The PLC and controllers shall be totally isolated from external field signals.
10. All field transmitters shall have separable-unit transient surge protectors, for power line protection and signal line protection. The communication equipment and/or Ethernet switches shall also have the same types of protection in the panel.
11. Power supplies, surge protection and isolation are to be provided for the PLC systems. Emergency stop and reset logic for the motors are to be provided as indicated.
12. Refer to the scope and component specifications sections for additional requirements.
13. The panel and systems shall resume automatic operation upon resumption of prime power.

7. The Engineer may reject requests for substitution for items specified as no substitution permitted without review.
8. The substitute supplier shall prepare a submittal describing the implementation and coordination of work for this site and its integration and working arrangements with the related systems. This shall include documentation modifications and software licensing.

B. After Award of Contract:

1. Substitutions required for compliance with final interpretations of code requirements or insurance regulations.
2. Unavailability of specified products, through no fault of the contractor. Unavailability shall mean that the product is no longer available in the marketplace.
3. Subsequent information discloses inability of specified product to perform properly or to fit in a designated space.
4. All requirements of pre-award substitute procedures.

1.13 REPEAT SUBMITTAL REVIEWS AND RETEST WITNESSING

- A. Submittals will receive up to two reviews by the Engineer without cost to the Instrumentation Subcontractor. If a given submittal fails to reach the completed status on the second submittal, the Instrumentation Subcontractor will have the costs associated with further reviews by the Engineer deducted from the Contract amount. These costs will be computed based on \$175 per hour for Engineer review time.
- B. Submittals returned as incomplete or not in compliance have the specified format shall be considered having been reviewed.
- C. If a test or a portion of a test requiring witnessing fails to the point where it needs to be rerun at a later date, the Instrumentation Subcontractor will have the cost associated with the additional test witnessing by the Engineer and Owner deducted from the Contract amount. These costs will be computed, based on actual costs incurred by the same number of Engineer and Owner personnel as originally witnessed the test, as follows:
 1. Retest Witnessing \$175.00 per hour
 2. Travel Mileage charge

COORDINATION MEETINGS

- D. Coordination meetings shall be held at the Engineer's office periodically during the course of the project. The Engineer will summarize resolutions reached in each coordination meeting will be scheduled within 30 days after award of the Contract. The Integrator shall provide for his attendance and attendance of any involved subcontractors at monthly meetings for the duration of the project. Specific dates will be established in the Engineer-approved schedule.
- E. See also additional requirements under Section 01 30 00.

1.14 MILESTONE ACTIVITIES

- B. The Integrator shall obtain the required information on those primary elements, valves, valve actuators, motor controls and other control equipment or devices that are required to be interfaced with, but that are not provided under this section.
- C. The Integrator shall coordinate his work to ensure that:
 - 1. All components provided under this section are properly installed.
 - 2. The proper type, size, and number of control wires with their conduits are provided and installed.
 - 3. Proper electric power circuits are provided for all components and systems.
- D. All conduits are provided and installed under the Electrical work. With the exception of certain specified special control cables, all wiring is provided and installed under Electrical work.

1.11 ACCEPTABLE SYSTEM SUPPLIERS

Concentric Integration
8678 Ridgefield Road
Crystal Lake, Illinois 60012
(815) 788-3600

1.12 SUBSTITUTIONS

- A. Substitution Procedures:
 - 1. Bidders may, until noon, two weeks prior to the bid date, submit written request to the Engineer for substitution of products, systems or instruments in lieu of those specified in the Contract Documents.
 - 2. All substitutions shall be clearly identified, described and in accordance with provisions of Contract Documents.
 - 3. Consideration of products or methods of documentation or performance of the submittal requirements other than that specified requires conformance with the substitution procedure as defined herein.
 - 4. Whenever, in the Contract Documents, a product, system or software is referred to by trade name or by the name of a patentee, manufacturer, or by reference to catalog, it shall be understood as specifying the standard for the design, efficiency, durability and performance of the product or system.
 - 5. Whenever a substitute is submitted for acceptance, the final decision as to whether or not such substitution is closely equivalent to specified product or system and meets design concept shall be made by the Engineer. The Engineer shall base his decision upon his review of the substitution submittal requirements and his past and current experience with the substitute products or suppliers.
 - 6. A submittal shall be provided for review of the types and quality of the work. In addition to providing company, personnel and past project experience profiles, a submittal sample shall be provided. The substitute's submittal shall exactly follow the format of the specified documentation, with sample drawings, data sheets etc. to demonstrate conformity and experience. Incomplete or items not per the specifications shall disqualify the substitute. Similar projects shall have reference provided including the type of PLC system, references for remote maintenance monitoring, references for the specified software projects.

1. Factory Tests:

- a. Before shipment all field equipment, panels and panel assemblies shall be tested for proper operation at the Suppliers factory.
- b. A factory acceptance test shall be required for this project.
- c. Results of the factory tests shall be recorded and submitted for approval before shipment of any panel or panel assembly to the plant.
- d. Engineer may waive the Factory Test requirement at his discretion.

2. Operational Acceptance Tests:

- a. The objective of these tests is to demonstrate that the system of Process Instrumentation and Control is READY for final operation.
- b. The system shall be checked for proper installation, adjusted, and calibrated on a loop-by-loop basis to verify that it is ready to function as specified.
- c. All system elements shall be checked to verify that they have been installed properly and that all terminations have been made correctly.
- d. All discrete elements and systems shall have their set points adjusted and shall be checked for proper operation (e.g., interlock functions, contact closure on rising/falling P.V., etc.)
- e. All continuous elements and systems shall have three-point calibrations performed. All controller tuning constants shall be adjusted to preliminary settings.

3. Functional Acceptance Tests:

- a. The operational acceptance tests shall be completed before starting the Functional acceptance tests.
- b. The actual testing program shall be conducted in accordance with prior approved procedures and shall be documented as required hereinafter.
- c. A witnessed, Functional acceptance test shall be performed on the complete system of Instrumentation and Controls. Each function shall be demonstrated to the satisfaction of the Engineer on a paragraph-by-paragraph and loop-by-loop basis.
- d. Each test shall be witnessed and signed off by the System Supplier and the Engineer upon satisfactory completion.
- e. The Integrator shall notify the Engineer at least 2 weeks before the date of the Functional acceptance test.
- f. Test Procedure Development and Test Documentation: The Integrator shall perform testing procedures as approved by the Engineer.
- g. The Contractor shall include in the submittal, the test procedures proposed.

1.9 TRAINING FOR COMPLETE SYSTEM

- A. Factory training shall be provided for the Owner/Engineer on the system for two days delivered in four separate, half-day sessions, including all materials.
- B. Provide site training during the startup.

1.10 RESPONSIBILITY FOR COMPLETE SYSTEM

- A. The Integrator shall provide and be ultimately responsible for the supply, installation, certification, adjustment, and startup of a complete, coordinated system that shall reliably perform the specified functions.

- 5. The test and calibration record forms shall be submitted for approval. All the forms for the components shall be filled-out and provided in the submittal.
- D. The Integrator shall submit shop drawings to the Engineer in accordance with the requirements of the General Conditions.
- E. All submittals shall be complete, neat, orderly and indexed. All components shall be referenced by the instrument loop tag designations shown.
- F. At or before the time of shipment the Integrator shall provide four sets of "as-built" shop drawings to the Owner. Upon receipt of field-marked drawings the Integrator shall provide a final editable (source files) of revised "as-installed" shop drawings to the Owner.

1.6 OPERATION AND MAINTENANCE (O&M) MANUALS

- A. Furnish four copies to the Owner of a reviewed and approved, complete system manual.
- B. The O&M manual shall exactly follow the format of the submittal manual and include the shop drawings and other documentation as specified.
- C. The O&M manual shall in addition contain an indexed section to house the calibration and loop testing documentation that shall be provided for the project.
- D. Installation, operation, and maintenance requirements for each component of equipment in accordance with the General Conditions.
- E. The manuals shall be furnished at least 15 calendar days before the scheduled delivery of equipment.
- F. It is the intent of this project to assemble comprehensive manuals for all new and existing equipment.

1.7 MANUFACTURER'S SERVICES

- A. The Integrator has calibration and commissioning responsibility for the instrumentation and control system and shall perform the work with their staff.
- B. The Engineer may direct the Integrator to engage the manufacturer's services at the Contractor's cost if the Engineer determines that the component has not met its performance requirements.

1.8 TESTING

- A. The Integrator shall fully test all components and systems.
- B. The Integrator shall coordinate testing with all other associated subcontractors and suppliers.
- C. As a minimum, the testing shall include the following:

- b. Panel elementary diagrams of pre-wired panels. Diagrams shall be similar to the loop diagrams except for power and utility functions. The drawings shall include all auxiliary devices such as relays, alarms, fuses, lights, fans, heaters, etc.
 - c. Interconnecting wiring diagrams, showing all component and panel terminal board identification numbers and external wire numbers. This diagram shall include all intermediate terminations between field elements and panels (e.g., terminal junction boxes, motor control centers, etc.). This diagram shall be coordinated with the Electrical Contractor and shall bear his mark showing that this has been done. Diagrams, device designations, and symbols shall be in accordance with NEMA ICS 1-101. The drawings shall contain the drawing number and terminal numbers of the interfaced equipment provided by others.
 - d. Panel mechanical drawings shall show top, front, side, back, sections. The instrument arrangement drawing shall be scaled. Internal and subpanel equipment layout shall be provided. Include material lists, legends, scales. All drawings shall be scaled. A separate cutout detail drawing shall be provided.
 - e. Instrument installation detail drawings shall be provided for field process installed devices. Custom drawings shall be provided for each installation. Copies of the manufacturer's product literature shall not be acceptable. These shall be submitted for approval.
 - f. Functional loop diagrams shall detail the loop diagrams on the P&ID's and shall be in the detail shown on the ISA standard for same.
 - g. Block diagrams of the communication and control diagrams shall be complete and include all modem, baud rate, line type and other similar information to fully describe the panel signaling.
 - h. Graphic display drawings.
 - i. Points I/O list with columns for tag, type, service, and readouts. Readouts shall indicate the display type and number.
 - j. Network Diagrams in Visio and Portable Document Format (PDF), including Layer 1 (Physical), Layer 2 (VLAN), and Layer 3 (IP) along with a spreadsheet showing all static IP address assignments for all IP devices on the control network.
3. Written descriptions and other documentation:
- a. An overview written description of the system shall be provided. It shall describe the system control functions, power conditions (loss, restart). PLC communications and operation shall be indicated. A sequence of operation shall be provided.
 - b. The controller documentation shall be provided as described in the component section.
 - c. Sizing/Selection Calculations: Complete sizing/selection of the panel heating and cooling shall be submitted along with the proposed device sizes to accomplish the functions. Panels shall be constructed such that temperatures are within component manufacturer's recommended parameters at the maximum duty conditions expected and conditions of installation.
4. Application data sheets shall be provided for every component furnished. The format shall follow the ISA standard forms and shall be customized for this project to include the actual setup, configuration, calibration and any or all other features required to exactly document the component for this application. The data sheet shall include a service category and function including the device type. The information shall be supplied in sufficient detail to order spare parts; quantity used; manufacturers catalog, style, or part number; and tag or other cross reference to permit easy correlation and drawings. Catalog information shall be submitted to all equipment, and the literature shall be annotated to indicate the equipment being provided, with all other non-applicable items crossed out.

- 9) Software program documentation
 - a) Controller program documentation
 - b) PLC program documentation – writing sequence of operation and computer generated ladder diagrams
 - c) Application software program documentation
 - (1) overview, point, group displays
 - (2) graphics
 - (3) alarm and event reports
 - (4) maintenance program
 - d) Components (A thru end)
 - (1) With alpha numbered tab for each component, each section to include a System Supplier produced application data sheet and manufacturer's literature annotated for this application.
 - (2) One section for each component code and one each for spares, test equipment, expendables.
 - e) Identification listings
 - (1) panel nameplate list, legend
 - (2) annunciator legends
 - (3) field device tag legends
 - (4) alarm auto-dialer legends
 - f) Factory simulation test
 - g) Test procedures
 - h) Calibration and test records
 - i) Training materials
 - j) Maintenance and engineers' terminal configurations
 - k) O&M manual outline.

C. Documentation requirements:

1. Bill of Material with complete description of items supplied in sufficient detail to order spare parts; quantity used; manufacturer's catalog, style, or part number; and tag or other cross reference to permit easy correlation with material appearance in specification and drawings. Catalog information shall be submitted for all equipment, regardless of whether or not it is of the same manufacture as that listed in the Specifications. The list shall be in spreadsheet format with file provided.
2. Drawings: Provide the following:
 - a. Loop diagrams, which shall consist of an individual wiring diagram for each analog or discrete loop signal showing all terminal numbers, the location of the DC power supply, the location of any booster relays or common dropping resistors, etc. The loop diagrams shall meet the minimum requirements of ISA S5.4 plus the following requirements: each loop diagram shall be divided into three areas for identification of element locations: panel face, back-of-panel, and field, respectively. On each diagram present a tabular summary of:
 - 1) the output capability of the transmitting instruments,
 - 2) the input impedance of each receiving instrument,
 - 3) an estimate of the loop wiring impedance based on the wire sizes and lengths shown,
 - 4) the total loop impedance, and
 - 5) reserve output capacity. Loop diagrams shall be on individual 8-1/2-inch by 11-inch.

- D. The Integrator and Electrical Contractor shall document all signal interfaces on his drawings including wire & terminal numbers between components furnished in other sections.
- E. The Electrical Contractor and Integrator shall coordinate to assure that all communications functions, relays, switches, input/output signals and interlocks are provided in the MCCs, VFDs, and other SCADA connected equipment and coordinated with the PLC control panels as indicated in the drawings and/or required to complete the installation and desired function.

1.4 REFERENCES

A. Reference Standards:

1. NEMA: National Electrical Manufacturer's Association.
2. ISA: Instrument Society of America
3. UL: Listing of control panels
4. ISO requirements.

1.5 SUBMITTAL AND SHOP DRAWINGS

- A. Following contract award but before any components are fabricated and/or integrated into assemblies, or shipped to the site, the Integrator shall furnish to the Engineer and receive his review of full details, description of operation, shop drawings, catalog cuts, loop drawings, Layer 1, 2, and 3 network diagrams, interconnecting wiring diagrams, and such other descriptive matter and documentation as described herein to fully describe the equipment and to demonstrate its conformity to these Specifications.
- B. System Manual: A 3-ring binder shall be provided indexed as follows to organize the required submittal and shop drawing information. Include electronic copy of complete manual on USB removable storage.
 1. All equipment descriptive documentation shall be typed and the drawings shall be AUTOCAD produced. Network Diagrams shall be prepared using Visio.
 2. The manual shall consist of view-type 3-ring binders, locking ring K-M type L25. Numbered and alpha indexes shall be AICO type goldline, minimum 1 set each binder. Depending upon the amount of material a second binder volume may be necessary.
 3. The format and content of each section is described in detail in this section.
 4. System Manual organization:
 - a. Backbone and cover project identification.
 - b. Numbered indexes as follows:
 - 1) Introduction; general project and contractor references
 - 2) Contents
 - 3) Component listing (bill of material)
 - 4) System description (10 pages) with PLC system block diagrams including software functions
 - 5) Instrument loop functional diagrams
 - 6) Shop drawings - drawing list and mechanical diagrams
 - 7) Shop drawings - drawing list and electrical diagrams block diagrams, loop wiring, interconnecting wiring and panel power & utility wiring.
 - 8) Shop drawings - drawing list and installation details

- H. The Integrator shall make necessary programming changes to the Owner's system PLCs and SCADA communication equipment.
- I. The Integrator shall schedule and sequence his work such that the associated systems are off line for as short a period as possible. Ideally the work should be scheduled during out of service periods of the construction.
- J. The control panels shall communicate any equipment alarms and status to Owner's SCADA.
- K. The control panels communicate with the local sensors and local control equipment by hardwiring.
- L. Local control equipment consists of the following:
 - 1. Primary Elements and Transmitters
 - 2. Electric Valve Actuators
 - 3. VFDs and Motor Starters
 - 4. Equipment Manufacturer Control Panels
- M. System Spare Parts
 - 1. Furnish spare parts as specified in this product section.
 - 2. Other equipment as specified or as recommended by the manufacturer.
- N. Documentation
 - 1. Identification labeling of all new and existing instrumentation. The System Supplier shall furnish engraved nameplates and stainless steel service tags for all process transmitters as shown on the P&IDs. This includes hand control stations, local panels and measurement devices, existing and new. Legending shall include process service, ranges, and tag number as described in this specification.
 - 2. Update existing CAD files and provide Visio (network diagrams), Autocad files for all drawings and organize in the form and format as specified. The documentation shall be complete and comprehensive for the plant and shall incorporate all existing manuals into a single manual.
 - 3. Complete site system test of all components and software, including Owner/Engineer training.
 - 4. Markup one set of the plan's drawings to indicate all as-built changes.

1.3 DIVISION OF WORK

- A. The integrator shall have the overall control system responsibility and shall provide all materials and work necessary to satisfy all requirements of this section.
- B. The installation and wiring between components and the provision of required miscellaneous installation supplies, fittings, etc. to provide a complete system shall be by the Electrical Contractor. The Electrical Contractor shall also mount the field instruments and control panels and install and terminate all field wiring and between the field components and panels.
- C. The Contractor shall coordinate the detailed interfaces including wire and terminal numbers between components furnished in other sections and shall coordinate the work activities between these sections and the Integrator.

SECTION 40 63 10 - PROCESS INSTRUMENTATION AND CONTROL EQUIPMENT

1.1 PART 1 GENERAL

A. SUMMARY

1. Section Includes:
 - a. Major instruments
 - b. Controls
 - c. Control panels

B. Related Divisions

1. Division 0 – Procurement and Contracting Requirements
2. Division 1 – General Requirements
3. Division 26 – Electrical
4. Division 40 – Process Interconnections

1.2 SYSTEM DESCRIPTION

- A. The work performed by the integrator includes the detailed system engineering, submittal and shop drawing documentation, program documentation, control panel modifications, installation inspection, programming, testing, calibrating, startup of system, owner training, and O&M manual and record drawing documentation.
- B. The work also includes the very careful review and coordination of interfaces of the existing equipment modifications at this and other sites. All equipment, hardware and software interfacing components not specified but required to make a working system shall be provided by the Integrator. Modifications shall be performed without interruption of other operations except as approved by the Engineer.
- C. The plans and specifications are not intended to include all details of a complete equipment installation for the purpose specified. The System Supplier shall be responsible for all details, which may be necessary to properly install, adjust, and place in successful and continuous operation the complete installation.
- D. The integrator shall prepare for and attend a series of pre-submittal and pre-programming meetings with the Engineer and Owner at the owner's location to detail the control system functions.
- E. The Integrator shall furnish all control panel components needed to modify existing panels. The instrumentation and any new Control Panels shall be installed by the Electrical Contractor.
- F. The Integrator shall supply all required software and programming for the control panels and SCADA integration.
- G. The Integrator shall integrate all systems and establish communications with SCADA.

This Page Intentionally Left Blank

1. Mount and wire so removal or replacement may be accomplished without interruption of service to adjacent devices.
2. Locate all devices mounted inside enclosures so terminals and adjustment devices are readily accessible without use of special tools and with terminal markings clearly visible.

D. See Section 26 05 00.

3.2 FIELD QUALITY CONTROL

A. See Section 01 70 00.

B. Maintain accurate daily log of all startup activities, calibration functions, and final setpoint adjustments.

1. Documentation requirements include the utilization of the forms located at the end of this section.
 - a. Loop Checkout Sheet.
 - b. Instrument Certification Sheet.
 - c. Final Control Element Certification Sheet.

C. Instrumentation Calibration:

1. Verify that all instruments and control devices are calibrated to provide the performance required by the Contract Documents.
2. Calibrate all field-mounted instruments, other than local pressure and temperature gages, after the device is mounted in place to assure proper installed operation.
3. Calibrate in accordance with the manufacturer's specifications.
4. Bench calibrate pressure and temperature gages. Field mount gage within 1 week of calibration.
5. Replace any instrument which cannot be properly adjusted.

D. Loop checkout requirements are as follows:

1. Check control signal generation, transmission, reception and response for all control loops under simulated operating conditions by imposing a signal on the loop at the instrument connections. Use actual signals where available. Closely observe controllers, recorders, alarm and trip units, remote setpoints, ratio systems, and other control components. Make corrections as required. Following any corrections, retest the loop as before.
2. Check all interlocks to the maximum extent possible.
3. In addition to any other as-recorded documents, record all setpoint and calibration changes on all affected Contract Documents and turn over to the Owner.

E. Provide verification of system assembly, power, ground, and I/O tests.

F. Verify existence and measure adequacy of all grounds required for instrumentation and controls.

END OF SECTION 40 63 00

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not remove shipping blocks, plugs, caps, and desiccant dryers installed to protect the instrumentation during shipment until the instruments are installed and permanent connections are made.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN REQUIREMENTS

A. System Operating Criteria:

1. Stability: After controls have taken corrective action, as result of a change in the controlled variable or a change in setpoint, oscillation of final control element shall not exceed two cycles per minute or a magnitude of movement of 0.5 percent full travel.
2. Response: Any change in setpoint or change in controlled variable shall produce a corresponding corrective change in position of final control element and become stabilized within 30 seconds.
3. Agreement: Setpoint indication of controlled variable and measured indication of controlled variable shall agree within 3 percent of full scale over a 6:1 operating range.
4. Repeatability: For any repeated magnitude of control signal, from either an increasing or decreasing direction, the final control element shall take a repeated position within 0.5 percent of full travel regardless of force required to position final element.
5. Sensitivity: Controls shall respond to setpoint deviations and measured variable deviations within 1.0 percent of full scale.
6. Performance: All instruments and control devices shall perform in accordance with manufacturer's specifications.

2.2 ACCESSORIES

A. Provide instruments with manufacturer's identification nameplate showing:

1. Manufacturer's model number.
2. Manufacturer's serial number.
3. Range.
 - a. Utilize the same units of measurement as are utilized in the Contract Documents.
4. Power supply requirement.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use bottom entry for all conduit entry to instruments and junction boxes.
- B. Install electrical components per Division 26.
- C. Panel-Mounted Instruments:

- a. Diagrams shall provide the following minimum information:
 - 1) Terminal block identification (includes terminals on remote equipment furnished by Others).
 - 2) Wire size.
 - 3) Wire type.
 - 4) Wire color.
 - 5) Wire shielding and insulation type.
 - 6) Conductor quantities and associated conduit size.
 - 7) Ground points.
 - 8) Interconnection requirements to existing systems or equipment furnished by Others.
 - b. Diagrams shall be provided on Drawings of sufficient size so as to minimize the number of drawings.
 - 1) Maximum drawing size 24 x 36 IN
 - 2) Minimum drawing size: 11 x 17 IN
7. Electrical schematic control diagrams. Diagrams shall include:
- a. Terminal identification.
 - b. Unique identification of all control devices and contacts.
 - 1) Utilize Owner's device identification numbers where applicable.
 - c. Wire identification.
 - d. Equipment identification.
 - e. Indication of remote and local devices and wiring.
 - f. Overcurrent protection indication.
 - g. Voltage.
 - h. All control logic.
 - i. Logic diagrams per ISA S5.2.
8. Panel fabrication drawings.
9. Scaled floor plan layouts of control room.
10. PLC equipment drawings.
11. Graphic layouts.
12. Graphic component construction.
13. Nameplate layout drawings.
14. Certifications:
- a. Documentation verifying that calibration equipment is certified with NIST traceability.
 - b. Approvals from independent testing laboratories or approval agencies, such as UL, FM or CSA. Certification documentation is required for all equipment for which the specifications require independent agency approval.
15. Testing reports:
- a. Source quality control reports.
- B. Operation and Maintenance Manuals:
1. See Section 01 70 00.
 2. Warranties: Provide copies of warranties and list of factory authorized service agents.

4. Loop diagrams per ISA S5.4.
 - a. Each loop diagram on a separate sheet.
 - b. Each sheet shall contain the following minimum information.
 - 1) All loop devices clearly identified.
 - 2) Identification of the loop and each loop component, including connections to such things as recorders and computers. Numbering and tagging must agree with the P&ID.
 - 3) All interconnections with identifying numbers for:
 - a) Electrical cables.
 - b) Conductor pairs.
 - 4) Identification of connections including:
 - a) Junction boxes.
 - b) Terminals.
 - c) Bulkheads.
 - d) Ports.
 - e) Computer input/output connections.
 - f) Grounding systems.
 - 5) Signal levels and ranges.
 - 6) Device location.
 - 7) Energy sources designating voltage, pressure, and other applicable requirements.
 - 8) Enough process lines and equipment to clearly show the process side of the loop and provide clarity of control action. This includes:
 - a) What is being measured.
 - b) What is being controlled.
 - c) Other information required to complete the process loop.
 - 9) Reference to supplementary records and drawings to show inter-relation to other control loops.
 - 10) Controller action.
 - 11) Control valve action upon electronic, hydraulic, or pneumatic failure.
5. Process connected instrument installation details containing the following minimum information:
 - a. Bill of materials providing as a minimum the following information:
 - 1) Tube material and size.
 - 2) Connection size.
 - 3) Fitting size, material, and rating.
 - 4) Valve type and material.
 - 5) Instrument description.
 - 6) Pipe stand size and material.
 - b. Required elevations and dimensions.
6. Comprehensive set of point-to-point wiring diagrams showing all interconnections between packaged systems or equipment control panels, motor control centers, instrumentation and all other electrical equipment as required to depict a complete and functional plant-wide electrical control system. Instrumentation wiring already shown on loop diagrams need not be included on point-to-point wiring diagrams.

2. The instrument and control system consist of all primary elements, transmitters, switches, controllers, computers, recorders, indicators, panels, signal converters, signal boosters, amplifiers, special power supplies, special grounding or isolation, auxiliaries, software, and other devices required to provide complete control of the facility as specified in the Contract Documents.
- B. Integration of equipment by Ethernet is preferred if available.
- C. Unless otherwise required for instrument compatibility, electric control signals shall be 4 to 20 mA, 24 V DC.
- D. All signals shall be directly linearly proportional to measured variable unless specifically noted otherwise.
- E. Single Integration Subcontractor:
1. Furnish and coordinate control system through a single Integration subcontractor. The Integration subcontractor shall be responsible for functional operations of all systems, performance of control system engineering, supervision of installation, final connections, calibrations, preparation of drawings and operation and maintenance manuals, startup, training, demonstration of substantial completion and all other aspects of the control system.
 2. Ensure coordination of instrumentation with other work to ensure that necessary wiring, conduits, contacts, relays, converters, and incidentals are provided in order to transmit, receive, and control necessary signals to other control elements, to control panels, and to receiving stations.
 3. Prior to shop drawing preparation, the Integration Subcontractor shall inspect the Owner's existing equipment and as-constructed electrical documentation so as to be able to fully coordinate the interface of new and existing instrumentation and controls. All costs associated with this work shall be incorporated into the original bid.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Section 01 33 00.
2. Submittals shall be original printed material or clear unblemished photocopies of original printed material. Facsimile information is not acceptable.
3. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Equipment catalog cut sheets.
 - c. Instrument data sheets:
 - 1) ISA S20 or approved equal.
 - 2) Separate data sheet for each instrument.
 - d. Materials of construction.
 - e. Minimum and maximum flow ranges.
 - f. Pressure loss curves.
 - g. Physical limits of components including temperature and pressure limits.
 - h. Size and weight.
 - i. Electrical power requirements and wiring diagrams.
 - j. NEMA rating of housings.
 - k. Submittals shall be marked with arrows to show exact features to be provided.

2) Subject to compliance with the provisions and conditions of the Contract Documents, the following Integrators are acceptable:

- a) Concentric Integration
8430 West Bryn Mawr Ave
Suite 400
Chicago IL 60631
815-788-3600
Michael Klein mklein@goconcentric.com

3) No Substitutions.

D. Integrator scope of supply/work:

1. The City utilizes the following software packages. The Integrator shall integrate the new work into the City's existing SCADA and reporting packages:
 - a. FactoryTalk View Studio SE for FT View Enterprise ESD
 - b. FactoryTalk VantagePoint 10 concurrent users for FT View Enterprise ESD
 - c. FactoryTalk Historian SE 5K tags MED
 - d. FactoryTalk View SE Unlimited Display Server, 10 R/W clients, 1 ViewPoint client ESD
2. The following will be furnished to the successful Contractor upon Award:
 - a. Spreadsheet containing software license numbers and key codes.
 - b. Spreadsheet containing City Network IP addresses
 - c. System diagrams of the City's SCADA
 - d. Example screen templates in hard copy and Visio which the Integrator shall use to develop new screens.
 - e. As-constructed drawings of the existing plant control panels to remain (New panels shall be constructed to be substantially similar to the existing panels.)
3. The Integrator shall furnish, install and configure all control panel components required to integrate new instrumentation including meters, transducers, sensor transmitters and floats.
4. The instrumentation and Control Panels provided by equipment manufacturers shall be physically installed by the Electrical Contractor and integrated to SCADA by the Integrator.
5. The Integrator shall integrate all systems and establish communications with SCADA.
6. The Integrator shall modify the City's Historian package such that trends are developed for process variable per City's direction.
7. The Integrator shall make necessary programming changes to the Owner's system PLCs and SCADA interface computers.
8. SCADA Screens shall be accessible at the operator station, as well as the Main Treatment Plant and Public Works offices. The City Fiber network shall be used to transmit this data

1.3 SYSTEM DESCRIPTION

A. Control System Requirements:

1. This Specification Section provides the general requirements for the instrument and control system.

SECTION 40 63 00 - INSTRUMENTATION FOR PROCESS CONTROL: BASIC REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Basic requirements for complete instrumentation system for process control.
2. Integration of new equipment, control panels and instrumentation.
3. Integration of all control panels and instrumentation supplied by equipment manufacturers.
4. Supply and integration of all necessary hardware, software, accessories and programming to provide a fully functional system as described in the plans and specifications.
5. Supply and integration of all primary elements and instruments required for process control in accordance with the plans and specifications.

B. Related Sections include but are not necessarily limited to:

1. Division 0 and Division 1 requirements.
2. Division 26 requirements
3. Section 40 63 43 - Programmable Logic Controllers

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. International Society for Measurement and Control (ISA):
 - a. S5.2, Binary Logic Diagrams for Process Operations.
 - b. S5.3, Graphic Symbols for Distributed Control/Shared Display Instrumentation, Logic and Computer Systems.
 - c. S5.4, Standard Instrument Loop Diagrams.
 - d. S20, Standard Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
2. National Institute of Standards and Technology (NIST).

B. Miscellaneous:

1. Comply with electrical classifications and NEMA enclosure types shown on Drawings.

C. Qualifications:

1. Integrator:
 - a. Experience.
 - 1) Have satisfactorily provided a control system or SCADA system for projects of similar magnitude and function.

- B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Inspect and test according to NETA ATS, except Section 4.
- D. Perform inspections and tests listed in NETA ATS, Section 7.15.

END OF SECTION 40 05 93

4. Insulated non-drive end bearings, at a minimum, on all motors with horizontal shaft 100 HP and larger.
 5. An insulated bearing carrier on the non-drive end for vertical shaft motors 100 HP and larger.
 6. Shaft grounding ring on all motors:
 - a. Factory installed, maintenance free, circumferential, bearing protection ring with conductive microfiber shaft contacting material.
 - b. Electro Static Technology AEGIS SGR Bearing Protection Ring or approved equal.
- G. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated.

2.2 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Testing: Test motors according to NEMA MG 1, including winding resistance, no-load speed and current, locked rotor current, insulation high-potential test, and mechanical alignment tests.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Disconnect and remove abandoned motors.
- C. Clean and repair existing motors to remain or those to be reinstalled.

3.2 INSTALLATION

- A. Maintain access to existing motors and other installations remaining active and requiring access. Modify installation or provide access panel.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Install engraved plastic nameplates according to Section 10 14 00 - Identification Devices.
- D. Ground and bond motors according to Section 26 05 26 - Grounding and Bonding Electrical Systems.

3.3 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS FOR MOTORS FURNISHED WITH EQUIPMENT

- A. Furnish materials according to manufacturer's standards.
- B. Motors 3/4 HP and Larger: Three-phase motor as specified below.
- C. Motors Smaller than 3/4 HP: Single-phase motor as specified below, except motors less than 250 watts or 1/4 HP may be equipment manufacturer's standard.
- D. Three-Phase Motors: NEMA MG 1, Design B, energy-efficient squirrel-cage induction motor with windings to accomplish starting methods and number of speeds, as indicated in individual equipment Specifications.
 - 1. Voltage: As indicated on Drawings and individual equipment Specifications.
 - 2. Service Factor: 1.15.
 - 3. Enclosure: Meet conditions of installation.
 - 4. Design for continuous operation in 40-degree C environment, with temperature rise according to NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
 - 5. Insulation System: NEMA Class F.
 - 6. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
 - 7. Thermistor System (Motor Frame Sizes 254T and Larger): Three PTC thermistors embedded in motor windings and epoxy-encapsulated solid state-control relay with wiring to terminal box.
 - 8. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA 9, L-10 life of 200,000 hours. Calculate bearing load with NEMA minimum, V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
 - 9. Sound Power Levels: Conform to NEMA MG 1.
- E. Single-Phase Motors:
 - 1. Permanent split-capacitor type where available; otherwise use split-phase start/capacitor run or capacitor start/capacitor run motor.
 - 2. Voltage: As indicated on Drawings and individual equipment Specifications.
- F. Motors with Variable Frequency Type Adjustable Speed Drives:
 - 1. Induction motors that are in compliance with NEMA MG 1, Part 31.
 - 2. Nameplate identification meeting NEMA MG 1 Part 31 requirements.
 - 3. Insulated drive end bearings on all motors.

SECTION 40 05 93 - COMMON MOTOR REQUIREMENTS FOR PROCESS EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Single- and three-phase motors for application on equipment provided under other Sections.
- B. Related Requirements:
 - 1. Section 10 14 00 - Identification Devices.
 - 2. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
 - 3. Division 43 - Process Gas and Liquid Handling.

1.2 REFERENCE STANDARDS

- A. American Bearing Manufacturers Association:
 - 1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
- B. National Electrical Manufacturers Association:
 - 1. NEMA MG 1 - Motors and Generators.
- C. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit catalog data for each motor furnished loose. Indicate nameplate data, standard compliance, electrical ratings and characteristics, physical dimensions, weights, mechanical performance data, and support points.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Testing Agency: Company Member of International Electrical Testing Association and specializing in testing products specified in this Section with minimum three years' documented experience.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Degrease and clean surfaces to receive adhesive for identification materials.

3.2 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Install plastic nameplates with corrosion-resistant mechanical fasteners or adhesive.
- C. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- D. Piping:
 - 1. Identify piping, concealed or exposed, with plastic pipe markers, plastic tape pipe markers, or stenciled painting.
 - 2. Identify service and flow direction.
 - 3. Install in clear view and align with axis of piping.
 - 4. Locate identification not to exceed 20 feet on straight runs, including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION 40 05 53

- 1) Self.
 - 2) Screws.
 - 3) Adhesive.
 - c. Legend:
 - 1) Letter height: 1/2 IN minimum.
 - 2) Equipment designation as indicated on the Drawings (e.g., "Primary Sludge Pump P-xxx")
6. Piping systems:
- a. Tag type:
 - 1) Outdoor locations: Type G - Stenciling System.
 - 2) Indoor locations:
 - a) Type D - Self-Adhesive Tape Tags and Signs.
 - b) Type G - Stenciling System.
 - b. Fastener: Self.
 - c. Color: Per ASME A13.1.
 - d. Legend:
 - 1) Letter height: Manufacturers standard for the pipe diameter.
 - 2) Mark piping in accordance with ASME A13.1.
 - 3) Use piping designation as indicated on the Drawings.
 - 4) Arrow: Single arrow.
7. Process Tanks (less than 1000 GAL) (e.g., break tanks, chemical tanks, hydro-pneumatic tanks, air receivers, etc.):
- a. Tag type:
 - 1) Type D - Self-Adhesive Tape Tags and Signs.
 - 2) Type G - Stenciling System.
 - b. Fastener: Self.
 - c. Legend:
 - 1) Letter height: 2 IN minimum.
 - 2) Equipment designation as indicated on the Drawings (e.g., "Polymer Storage Tank Txxx")
8. Equipment that starts automatically:
- a. Tag type:
 - 1) Type B2 - Non-Metallic Signs.
 - 2) Type D - Self-Adhesive Tape Tags and Signs.
 - b. Fastener:
 - 1) Type B2 - Screw or adhesive.
 - 2) Type D - Self.
 - c. Size: 5 IN x 7 IN
 - d. Location: Equipment name.
 - e. Legend:
 - 1) OSHA Warning Sign.
 - 2) Description of Warning: "THIS MACHINE STARTS AUTOMATICALLY".

- d. Sanitary sewer lines:
 - 1) Color: Green with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED SEWER LINE BELOW"
 - e. Chemical feed piping (e.g., chlorine solution, polymer solution, caustic solution, etc.):
 - 1) Color: Yellow with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED CHEMICAL LINE BELOW"
 - f. Other piping (e.g., compressed air, irrigation, refrigerant, heating water, etc.):
 - 1) Color: Yellow with black letters.
 - 2) Legend:
 - a) First line: "CAUTION CAUTION CAUTION"
 - b) Second line: "BURIED PIPE LINE BELOW"
3. Yard valves, buried, with valve box and concrete pad:
- a. Tag type: Type A2 - Rectangle Metal Tags.
 - b. Fastener: 3/16 IN x 7/8 IN plastic screw anchor with 1 IN #6 stainless steel pan head screw.
 - c. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Valve designation as indicated on the Drawings (e.g., "V-xxx").
4. Valves and slide gates:
- a. Tag type:
 - 1) Outdoor locations: Type B1 - Square Non-Metallic Tags.
 - 2) Indoor non-corrosive:
 - a) Type A1 - Round Metal Tags.
 - b) Type B1 - Square Non-Metallic Tags.
 - 3) Indoor corrosive:
 - a) Stainless steel Type A1 - Round Metal Tags.
 - b) Type B1 - Square Non-Metallic Tags.
 - b. Fastener:
 - 1) Type A1: Chain of the same material.
 - 2) Type B1: Stainless steel chain.
 - c. Color: Per ASME A13.1 corresponding to the piping system.
 - d. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Valve designation as indicated on the Drawings (e.g., "V-xxx").
5. Process equipment (e.g., pumps, pump motors, blowers, air compressors, bar screens, clarifier drive mechanism, etc.):
- a. Tag type:
 - 1) Type B2 - Non-Metallic Signs.
 - 2) Type D - Self-Adhesive Tape Tags and Signs.
 - 3) Type G - Stenciling System.
 - b. Fastener:

- A. Install identification devices at specified locations.
- B. All identification devices to be printed by mechanical process, hand printing is not acceptable.
- C. Attach tags to equipment with sufficient surface or body area with solvent activated adhesive applied to back of each tag.
- D. Attach tags with 1/8 IN round or flat head screws to equipment without sufficient surface or body area, or porous surfaces.
 - 1. Where attachment with screws should not or cannot penetrate substrate, attach with plastic strap.
- E. Single items of equipment enclosed in a housing or compartment to be tagged on outside of housing.
 - 1. Several items of equipment mounted in housing to be individually tagged inside the compartment.
- F. Tracer Wire:
 - 1. Attach to pipe at a maximum of 10 FT intervals with tape or tie-wraps.
 - 2. Continuous pass from each valve box and above grade at each structure.
 - 3. Coil enough wire at each valve box to extend wire a foot above the ground surface.
 - 4. 1,000 FT maximum spacing between valve boxes.
 - 5. If split bolts are used for splicing, wrap with electrical tape.
 - 6. If wire nuts are used for splicing, knot wire at each splice point leaving 6 IN of wire for splicing.
 - 7. Use continuous strand of wire between valve box where possible.
 - a. Continuous length shall be no shorter than 100 FT.

3.2 SCHEDULES

- A. Process Systems:
 - 1. General:
 - a. Provide arrows and markers on piping.
 - 1) At 20 FT maximum centers along continuous lines.
 - 2) At changes in direction (route) or obstructions.
 - 3) At valves, risers, "T" joints, machinery or equipment.
 - 4) Where pipes pass through floors, walls, ceilings, cladding assemblies and like obstructions provide markers on both sides.
 - b. Position markers on both sides of pipe with arrow markers pointing in flow direction.
 - 1) If flow is in both directions use double headed arrow markers.
 - c. Apply tapes and stenciling in uniform manner parallel to piping.
 - 2. Trenches with piping:
 - a. Tag type: Type F - Underground Warning Tape
 - b. Location: Halfway between top of piping and finished grade.
 - c. Letter height: 1-1/4 IN minimum.

- d. Legend: Preprinted.
- e. Wire markers to be self-laminating.
- 4. Color: White with black lettering or as specified.
- 5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.

H. Type E - Heat Shrinkable Tape Tags:

- 1. Materials: Polyolefin.
- 2. Size: As required by text.
- 3. Fabrication:
 - a. Legend: Preprinted.
- 4. Color: White background, black printing.

I. Type F - Underground Warning Tape:

- 1. Materials: Polyethylene.
- 2. Size:
 - a. 6 IN wide (minimum).
 - b. Thickness: 3.5 mils.
- 3. Fabrication:
 - a. Legend: Preprinted and permanently imbedded.
 - b. Message continuous printed.
 - c. Tensile strength: 1750 psi.
- 4. Color: As specified.

J. Type G - Stenciling System:

- 1. Materials:
 - a. Exterior type stenciling enamel.
 - b. Either brushing grade or pressurized spray can form and grade.
- 2. Size: As required.
- 3. Fabrication:
 - a. Legend: As required.
- 4. Color: Black or white for best contrast.

2.2 ACCESSORIES

A. Fasteners:

- 1. Bead chain: #6 brass, aluminum or stainless steel.
- 2. Plastic strap: Nylon, urethane or polypropylene.
- 3. Screws: Self-tapping, stainless steel.
- 4. Adhesive, solvent activated.

2.3 MAINTENANCE MATERIALS

- A. Where stenciled markers are provided, clean and retain stencils after completion and include in extra stock, along with required stock of paints and applicators.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

- D. Type B1- Square Non-Metallic Tags:
1. Materials: Fiberglass reinforced plastic.
 2. Size:
 - a. Surface: 2 x 2 IN minimum.
 - b. Thickness: 100 mils.
 3. Fabrication:
 - a. 3/16 IN mounting hole with metal eyelet.
 - b. Legend: Preprinted and permanently embedded and fade resistant.
 4. Color:
 - a. Background: Manufacturer standard or as specified.
 - b. Lettering: Black.
- E. Type B2 - Non-Metallic Signs:
1. Materials: Fiberglass reinforced or durable plastic.
 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 60 mils minimum.
 3. Fabrication:
 - a. Rounded corners.
 - b. Drilled holes in corners with grommets.
 - c. Legend: Preprinted, permanently embedded and fade resistant for a 10 year minimum outdoor durability.
 4. Color:
 - a. Background: Manufacturer standard or as specified.
 - b. Lettering: Black.
 5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.
- F. Type C - Phenolic Name Plates:
1. Materials: Phenolic.
 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 1/16 IN.
 3. Fabrication:
 - a. Two (2) layers laminated.
 - b. Legend: Engraved through top lamination into bottom lamination.
 - c. Two (2) drilled side holes, for screw mounting.
 4. Color: Black top surface, white core, unless otherwise indicated.
- G. Type D - Self-Adhesive Tape Tags and Signs:
1. Materials: Vinyl tape or vinyl cloth.
 2. Size:
 - a. Surface: As required by text.
 - b. Thickness: 5 mils minimum.
 3. Fabrication:
 - a. Indoor/Outdoor grade.
 - b. Weather and UV resistant inks.
 - c. Permanent adhesive.

1.6 QUALITY ASSURANCE

- A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.
- B. Maintain one copy of each standard affecting the Work of this Section on-Site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years' documented experience.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

- A. Type A1 - Round Metal Tags:
 - 1. Materials:
 - a. Aluminum or stainless steel.
 - b. Stainless steel shall be used in corrosive environments.
 - 2. Size:
 - a. Diameter: 1-1/2 IN minimum.
 - b. Thickness: 0.035 IN (20 GA) minimum.
 - 3. Fabrication:
 - a. 3/16 IN minimum mounting hole.
 - b. Legend: Stamped and filled with black coloring.
 - 4. Color: Natural.
- B. Type A2 - Rectangle Metal Tags:
 - 1. Materials: Stainless steel.
 - 2. Size:
 - a. 3-1/2 IN x 1-1/2 IN minimum.
 - b. Thickness: 0.036 IN (20 GA) minimum.
 - 3. Fabrication:
 - a. 3/16 IN minimum mounting hole.
 - b. Legend: Stamped and filled with black coloring.
 - 4. Color: Natural.
- C. Type A3 - Metal Tape Tags:
 - 1. Materials: Aluminum or stainless steel.
 - 2. Size:
 - a. Width 1/2 IN minimum.
 - b. Length as required by text.
 - 3. Fabrication:
 - a. 3/16 IN minimum mounting hole.
 - b. Legend: Embossed.
 - 4. Color: Natural.

SECTION 40 05 53 – IDENTIFICATION FOR PROCESS PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe markers.

B. Related Requirements:

1. Section 40 05 51 - Common Requirements for Process Valves

1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer's catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color-coding for all process piping systems.

1.4 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for closeout procedures.

B. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance materials.

4. Install valves for throttling, bypass, or manual flow control services as indicated on Drawings.
5. Install gate valves in water systems for shutoff service.
6. Install valves in sanitary systems for shutoff service.

3.3 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Valve Field Testing:
 1. Test for proper alignment.
 2. If specified by valve Section, field test equipment to demonstrate operation without undue noise, vibration, or overheating.
 3. Engineer will witness field testing.

END OF SECTION 40 05 51

- B. Firmly support valves to avoid undue stresses on piping. Support exposed valves and piping adjacent to valves independently to eliminate pipe loads being transferred to valve and valve loads being transferred to the piping.
- C. For grooved coupling valves, install rigid type couplings.
- D. For threaded valves, provide union on one side within 2 FT of valve to allow valve removal.
- E. Install electric or cylinder actuators above or horizontally adjacent to valve and gear box to optimize access to controls and external handwheel.
- F. Coat studs, bolts and nuts with anti-seizing lubricant.
- G. Clean field welds of slag and splatter to provide a smooth surface.
- H. Install valves with stems upright or horizontal, not inverted.
- I. Install brass male adapters on each side of valves in copper-piped system and solder adapters to pipe.
- J. Install 3/4 IN ball valves with cap for drains at main shutoff valves, low points of piping, bases of vertical risers, and equipment.
- K. Install valves with clearance for installation of insulation and to allow access.
- L. Provide access where valves and fittings are not accessible.
- M. Setting buried valves:
 - 1. Locate valves installed in pipe trenches where buried pipe indicated on Drawings.
 - 2. Set valves and valve boxes plumb.
 - 3. Place valve boxes directly over valves with top of box being brought to surface of finished grade.
 - 4. Install in closed position.
 - 5. Place valve on firm footing in trench to prevent settling and excessive strain on connection to pipe.
 - 6. After installation, backfill up to top of box for a minimum distance of 4 FT on each side of box.
- N. Pipe Hangers and Supports: As specified in Section 22 05 29 - Hangers and Supports for HVAC and Plumbing Piping and Equipment.
- O. Comply with Division 40 - Process Interconnections for piping materials applying to various system types.
- P. Valve Applications:
 - 1. Install shutoff and drain valves at locations as indicated on Drawings and as specified in this Section.
 - 2. Install shutoff and isolation valves.
 - 3. Isolate equipment, part of systems, or vertical risers as indicated on Drawings.

- B. ANSI/NSF 61 approved where noted in the Valve Schedule or as required.
- C. Exposed Valves: As specified in Section 09 96 00 – High Performance Industrial Coatings.
- D. Do not coat flange faces of valves unless otherwise specified.

2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Testing: Test valves according to manufacturer's standard testing protocol, including hydrostatic, seal, and performance testing.
- C. Owner Inspection:
 - 1. Make completed valves available for inspection at manufacturer's factory prior to packaging for shipment.
 - 2. Owner inspections will be at the Owner's discretion, and will be paid for by the Owner and coordinated by the Contractor.
 - 3. Notify Owner at least seven days before inspection is allowed.
- D. Owner Witnessing:
 - 1. Allow witnessing of factory inspections and test at manufacturer's test facility.
 - 2. Owner witnessing will be at the Owner's discretion, and will be paid for by the Owner and coordinated by the Contractor.
 - 3. Notify Owner at least seven days before inspections and tests are scheduled.
- E. Certificate of Compliance:
 - 1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
 - 2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for installation examination.
- B. Verify that piping system is ready for valve installation.

3.2 INSTALLATION

- A. Install valves, actuators, extensions, valve boxes, and accessories according to manufacturer instructions.

M. Cylinder Actuators:

1. General:
 - a. Self-contained unit including actuator and controls.
 - b. Electrical enclosure to meet area classification shown on Drawings.
 - c. Factory assembled requiring field supply connection and control wires.
2. Cylinders:
 - a. Conform to AWWA C540, hydraulic cylinders.
 - b. Cylinder barrel: Stainless steel.
 - c. Heads and caps: Ductile iron.
 - d. Cylinder pistons: Ductile iron.
 - e. Double acting and operate on 60 psig water supply.
 - f. Cylinder rated for 300 psig.
 - g. Any hoses between control and cylinder to be oil resistant and arranged to avoid sharp bending from hose weight.
 - h. Provide supply filter.
 - i. Position cylinder above or to side of valve.
3. Controls: Provide pre-piped, pre-wired control:
 - a. Pipe with corrosion-resistant metal.
 - b. Provide four-way, two-position, 110 V solenoid valve in weatherproof enclosure.
 - c. Provide open-closed signal limit switches.
 - d. Speed control valves, to independently control opening and closing speed between 10 and 60 SEC.
 - e. Manual-automatic selector valve on supply to solenoid.
 - f. For modulating valves, provide a positioner, input signal 4-20 mA, including signal converter.
 - g. For modulating valves, provide valve position transmitter, 4-20 mA, including signal converter, where shown.
 - h. For pump check valves, provide additional two-way solenoid valve with speed control to allow rapid close on loss of electric power. Emergency closing time shall be adjustable from 30 to 90 SEC.

N. Valve Actuators in NEC Class I, Group D, Division 1 or 2 Hazardous Locations: UL approved.

O. Accessories:

- I. Handwheel:
 - a. Furnish permanently attached handwheel for emergency manual operation.
 - b. Rotation: None during powered operation.
 - c. Permanently affix directional arrow and cast OPEN and CLOSE on handwheel to indicate appropriate direction to turn handwheel.
 - d. Maximum Operating Force: 60 LBS/FT.
 - e. Positive declutch mechanism to engage and disengage handwheel.
 - f. Inoperable motor shall not prevent manual operation.

2.3 FINISHES

A. Valve Lining and Coating: Comply with AWWA C550.

- b) Full open contact.
 - c) Full close contact.
 - 4) Wire all components to an internal terminal strip and include mounted wiring diagram inside enclosure.
- 11. Additional requirements for modulating valve actuators:
 - a. Proportional position servo-amplifier mounted integral with the actuator control compartment.
 - b. Positioning of valve shall be proportional to a 4-20 mA signal input to the position servo-amplifier when remote control has been selected.
 - c. Servo-amplifier adjustments shall include zero, span, gain, and dead-band.
 - d. Provide 4-20 mA signal position control as shown on the Drawings that interfaces with the position control/position feedback instrumentation wiring to and from PLC.

L. Electric Actuators (120V, 1 phase):

- 1. General:
 - a. Self-contained including motor, gearing, torque switch, limit switches and cast housing.
 - b. Enclosure shall be rated NEMA 4, unless otherwise indicated in the Valve Schedule.
 - c. Factory assembled requiring only field connection of power and control wires.
 - d. Comply with Section 40 05 93 - Common Motor Requirements for Process Equipment.
- 2. Motors:
 - a. Produce 1.5 times the required torque.
 - b. Sized for two complete open-close cycles without overheating.
 - c. One fully closed to fully open cycle to occur within 60 SEC.
 - d. Class F insulation.
 - e. Operate at plus or minus 10 percent voltage.
 - f. 120 Volt, single phase, 60 Hz.
 - g. Provide thermal cutout switch and internal heater for actuator enclosure.
 - h. Control wiring as shown on Drawing control diagrams.
- 3. Remote Pushbutton Station:
 - a. Enclosure: NEMA 4 stainless steel.
 - b. Control relays shall include:
 - 1) Open relay.
 - 2) Closed relay.
 - 3) Remote control device interface relay.
 - c. Push-to-test indicating lights shall include:
 - 1) Open.
 - 2) Closed.
 - 3) Remote.
 - d. Selector switches shall include:
 - 1) Local-Remote.
 - 2) Open-Close.
 - e. Space heater for enclosure.
 - f. Control wiring as shown on control diagrams.
 - g. Wire all components to an internal terminal strip and include mounted wiring diagram inside enclosure.

- e. Support rotating shafts with anti-friction bearings.
- f. Provide separate drive nut/thrust bearing assembly:
 - 1) Mounted to base of actuator.
 - 2) High tensile bronze.
 - 3) Quarter turn actuator: Provide 90 degree mounting intervals.
 - 4) Provide grease fitting on drive assembly.
- 6. Handwheel:
 - a. Permanently attached for manual operation.
 - b. Positive declutch mechanism to engage and disengage handwheel.
 - c. Handwheel shall not rotate during motor operation.
 - d. Inoperable motor shall not prevent manual operation.
- 7. Limit torque and thrust loads in both closing and opening directions by torque limit switches.
 - a. Provide torque switches with micrometer adjustment and reference setting indicator. Assure adjustment variation of approximately 40 percent in torque setting.
 - b. Provide switches having rating of not less than 6 A at 120 Vac and 2.2 A at 115 Vdc.
 - c. Limit and torque switches shall have totally sealed contacts.
- 8. Furnish electric actuator with two geared limit switch assemblies with each switch assembly having four separate limit switches:
 - a. Assure each limit switch assembly is geared to driving mechanism and is independently adjustable to trip at any point at and between the fully open and fully closed valve position.
 - b. Provide minimum of two normally open contacts and two normally closed contacts at each end of valve travel.
 - c. Provide switches with inductive contact rating of not less than 6 A at 120 Vac, 3 A at 240 Vac, 1.5 A at 480 Vac, 2.2 A at 115 Vdc and 1.1 A at 230 Vdc.
 - d. Limit switches shall be fully adjustable when power is applied to actuator.
- 9. Provide space heating elements sized to prevent condensation in both motor and geared limit switch compartment(s).
 - a. Furnish heating elements rated at 120 Vac with heaters continuously energized.
- 10. Open-close actuator controls:
 - a. Provide control assembly with necessary holding relays, reversing starter, control transformers of sufficient capacity to provide control power, space heating element power and valve position transmitter.
 - b. Provide control assembly in an enclosure rated for the defined area classification.
 - c. Controls for open/close actuator:
 - 1) Provide prewired NEMA 4 stainless steel remote pushbutton station enclosure with:
 - a) Open pushbutton.
 - b) Close pushbutton.
 - c) Stop pushbutton.
 - d) Remote/local switch.
 - e) Full open light.
 - f) Full close light.
 - g) Open and close relays as required.
 - 2) Provide control enclosure to accept:
 - a) Remote open/close switches.
 - 3) Provide contacts in control enclosure:
 - a) Remote/local contact.

K. Electric Actuators (480 V, 3 Phase):

1. Provide electric valve actuators with integral control devices and a remote pushbutton station.
2. Furnish electric actuator integral with valve consisting of:
 - a. Motor and gearing.
 - b. Handwheel.
 - c. Limit and torque switches.
 - d. Lubricants.
 - e. Heating elements.
 - f. Wiring.
 - g. Terminals for motor power and controls.
 - h. Drive nut.
3. Housing/Enclosure:
 - a. Provide cast iron gear housing and cast iron load bearing enclosure.
 - b. Nonload bearing enclosure and housing shall be aluminum or cast iron.
 - c. Enclosure shall be rated NEMA 4, unless otherwise indicated in the Valve Schedule.
 - d. Provide O-ring seals for covers and entries.
 - e. Terminal and limit switch compartment covers are to be fastened to gear housing by stainless steel fasteners with capture devices to prevent loss.
4. Motors:
 - a. Produce 1.2 times the required torque.
 - b. Provide motors that are totally enclosed, high torque design made expressly for valve actuator service and capable of operating the valve under full differential pressure for complete open-close and reverse cycle of travel at least twice in immediate succession without overheating.
 - c. One fully closed to fully open cycle to occur within 60 SEC.
 - d. Design motors in accordance with NEMA MG 1 standards, with Class B insulation, and to operate successfully at any voltage within 10 percent above or below rated voltage.
 - e. Provide positive method to ensure motor bearings are permanently lubricated.
 - f. Provide three thermal switches imbedded in windings:
 - 1) 120 degrees apart.
 - 2) Provide motor shutdown at high temperature.
 - g. Motor housing:
 - 1) Aluminum or cast iron.
 - 2) Totally enclosed nonventilated with cooling fins.
 - h. Provide motor capable of operating in any position.
 - i. Provide motor sealed from gearcase to allow any mounting position.
 - j. Provide motors suitable for 480 V, 3 phase, 60 Hz.
5. Gearing:
 - a. Provide power gearing consisting of heat treated steel helical gears, carburized and hardened alloy steel worm, and alloy bronze worm gear, all grease or oil bath lubricated, designed for 100 percent overload, and effectively sealed against entrance of foreign matter.
 - b. Provide gearing mechanism constructed to permit field changes of reduction gear ratio.
 - c. Design actuators so that motor comes up to speed before stem load is encountered in either opening or closing operation.
 - d. Limit switch gearings and feedback device reduction gearing Steel or bronze.

G. Chain Actuator:

1. Description: Chain guides and hot-dip galvanized operating chain extending to 3 FT above floor level.
2. Chain Wheels: Sprocket-rim type.
3. Furnish chain storage if chains may interfere with pedestrian traffic.

H. Buried Actuators:

1. Provide screw or slide type adjustable cast iron valve box, 5 IN minimum diameter, 3/16 IN minimum thickness and identifying cast iron cover.
2. Box base to enclose buried valve gear box or bonnet.
3. Provide 2 IN standard actuator nuts complying with Section 3.16 of AWWA C500.
4. Provide at least two tee handle keys for actuator nuts, with 5 FT extension between key and handle.
5. Extension stem shall be provided for buried valves, extended to within 6 IN of finish grade.
6. Provide concrete pad encasement of valve box as shown for all buried valves unless shown otherwise.

I. Exposed Manual Actuators:

1. Provide for all exposed valves not having electric or cylinder actuators.
2. Provide handwheels for gate and globe valves, sized for valves in accordance with AWWA C500.
3. Provide lever actuators for plug valves, butterfly valves and ball valves 3 IN and smaller.
 - a. Lever actuators for butterfly valves shall have a minimum of 5 intermediate lock positions between full open and full close.
 - b. Provide at least two levers for each type and size of valve furnished.
4. Gear actuators required for plug valves, butterfly valves and ball valves 4 IN and larger.
5. Provide gearing for gate valves 20 IN and larger in accordance with AWWA C500.
6. Gear actuators to be totally enclosed, permanently lubricated and with sealed bearings.
7. Provide chain actuators for valves 6 FT or higher from finish floor to valve centerline.
 - a. Cadmium-plated chain looped to within 3 FT of finish floor.
 - b. Equip chain wheels with chain guides to permit rapid operation with reasonable side pull without "gagging" the wheel.
8. Provide cast iron floor stands where shown on Drawings. Stands to be furnished by valve manufacturer with actuator. Stand or actuator to include thrust bearings for valve operation and weight of accessories.

J. Submerged Actuators:

1. The valve actuator shall be mounted on top of an extension bonnet, 3 FT above any adjacent personnel access.
2. The valve and bonnet connection shall be flanged and watertight.
3. Provide a top brace support for the bonnet. Mount the brace 6 IN below the top of wall as shown on the Drawings.
4. Materials:
 - a. Extension bonnet: Cast iron ASTM A126 or steel.
 - b. Brace and anchor bolts: Type 304 stainless steel.

1. Open by turning counterclockwise; close by turning clockwise.
 2. Cast directional arrow on valve or actuator with OPEN and CLOSE cast on valve in appropriate location.
- D. Valve Marking and Labeling:
1. Marking: Comply with MSS SP-25.
 2. Labeling: As specified in Section 10 14 00 - Identification Devices and valve schedule.
 3. Provide buried valves with valve boxes, covers, and extensions as specified in Section 33 11 13 - Public Water Utility Distribution Piping.
- E. Valve Construction:
1. Bodies: Rated for maximum temperature and pressure to which valve will be subjected as specified in valve Sections.
 2. Bonnets:
 - a. Screwed, or flanged to body and of same material and pressure rating as body.
 - b. Furnish glands, packing nuts, or yokes as specified in valve Sections.
 3. Stems and Stem Guides:
 - a. Materials and Seals: As specified in valve Sections.
 - b. Bronze Valve Stems: According to ASTM B62.
 - c. Space stem guides 10 feet O.C.
 - d. Submerged Stem Guides: Type 304 stainless steel.
 4. Nuts and Bolts:
 - a. As specified in Section 05 50 00 - Metal Fabrications.
 - b. Wetted or internal to be bronze or stainless steel. Exposed to be zinc or cadmium plated.

2.2 VALVE ACTUATORS

- A. Provide actuators with position indicators for shutoff valves 6 inches and larger.
- B. Comply with AWWA C542.
- C. Provide chain actuators for shutoff valves mounted 5 FT above floor level.
- D. Provide gear and power actuators with position indicators.
- E. Counterclockwise opening as viewed from the top.
- F. Gear-Assisted Manual Actuators:
 1. Provide totally enclosed gears.
 2. Maximum Operating Force: 60 LBS/FT.
 3. Bearings: Permanently lubricated bronze.
 4. Packing: Accessible for adjustment without requiring removal of actuator from valve.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.
- B. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of Illinois.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

1.9 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish manufacturer's warranty for valves and actuators.

PART 2 - PRODUCTS

2.1 VALVES

- A. Description: Valves, operator, actuator, handwheel, chainwheel, extension stem, floor stand, worm and gear operator, operating nut, chain, wrench, and other accessories as required. All valves of the same type shall be supplied by the same manufacturer.
- B. Valve Ends:
 - 1. Compatible with adjacent piping system. Refer to valve schedule.
 - 2. Comply with the following standards:
 - a. Threaded: ANSI B1.20.1.
 - b. Flanged: ANSI B16.1 Class 125 unless otherwise noted or AWWA C207.
 - c. Bell and spigot or mechanical (gland) type: AWWA C111.
 - d. Soldered: ANSI B16.18.
 - e. Grooved: Rigid joints per Table 5 of AWWA C606.
- C. Operation:

G. UL:

1. Equipment Directory.

1.3 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with piping, equipment, and appurtenances.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 1. Manufacturer information for actuator with model number and size indicated.
 2. Valve cavitation limits.
 3. Acknowledgement that products submitted meet requirements of standards referenced.
 4. Manufacturer's installation instructions.
 5. Valve pressure and temperature rating.
 6. Material of construction.
 7. Special linings.
 8. Valve dimensions, class and weight.
 9. Valve flow coefficient and nonshock shutoff.
 10. Quantity of valves and operators.
 11. Indicator attachments.
 12. Wiring and control diagrams for electric or cylinder actuators.
 13. Test reports.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

1.6 QUALITY ASSURANCE

- A. Maintain clearances as indicated on Drawings.
- B. Ensure that materials of construction of wetted parts are compatible with process liquid.
- C. Materials in Contact with Potable Water: Certified to NSF 61 and NSF 372.
- D. Perform Work according to manufacturer's standards.
- E. Maintain a copy of each standard affecting Work of this Section on Site.

SECTION 40 05 51 - COMMON REQUIREMENTS FOR PROCESS VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Valves.
2. Valve actuators.

B. Related Requirements:

1. Section 09 96 00 - High Performance Industrial Coatings.
2. Section 40 05 06 - Couplings, Adapters and Specials for Process Piping
3. Section 40 05 93 - Common Motor Requirements for Process Equipment

1.2 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA C541 - Hydraulic and Pneumatic Cylinder and Vane-Type Actuators for Valves and Slide Gates.
2. AWWA C542 - Electric Motor Actuators for Valves and Slide Gates.
3. AWWA C550 - Protective Interior Coatings for Valves and Hydrants.

B. ASTM International:

1. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
2. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

C. Manufacturers Standardization Society:

1. MSS SP-25 - Standard Marking System for Valves, Fittings, Flanges, and Unions.

D. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

E. NFPA:

1. NFPA 70 - National Electrical Code (NEC).

F. NSF International:

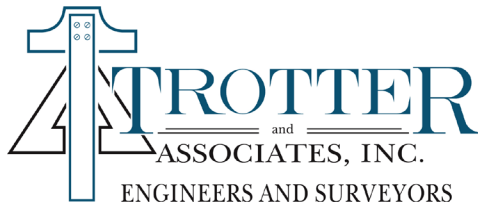
1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

- B. Inspect for damage to pipe lining or coating, or other defects that may be detrimental as determined by the Architect/Engineer. Repair damaged piping, or provide new, undamaged pipe.
- C. After installation, inspect for proper supports and interferences.
- D. Pressure Testing:
 - 1. Section 40 05 06 - Couplings, Adapters and Specials for Process Piping: Pipe Pressure Testing; Cleaning, Disinfection and Purging.
 - 2. Test Pressure: 100 psig or 50 psi in excess of maximum static pressure, whichever is greater.
 - 3. Conduct hydrostatic test for at least two hours.

3.6 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for cleaning.
- B. Section 40 05 06 - Couplings, Adapters and Specials for Process Piping: Cleaning, Disinfection and Purging.
- C. Keep pipe interior clean as installation progresses.
- D. Clean pipe interior of soil, grit, shavings, and other debris after pipe installation.

END OF SECTION 40 05 31



October 8th, 2025

Village of Oak Brook
Attn: Tim O'Malley, BBA
Public Works Director
3003 Jorie Boulevard
Oak Brook, Illinois 60523

Re: Water System Disinfection Modernization
Recommendation to Award

Dear Mr. O'Malley,

The Village of Oak Brook advertised the above reference project in accordance with local, state, and federal guidelines on September 17th, 2025. The Village received bids until 10:00 a.m. on Wednesday, October 8th, 2025. One bid was received for the project through the Village's OpenGov eProcurement portal. The following is a tabulation of the bid received:

<u>Company</u>	<u>Total Bid Amount</u>	<u>Percent Above Low Bid</u>
<i>Engineer's Opinion of Probable Cost</i>	\$ 540,000.00	-
Dahme Mechanical Industries, Inc.	\$ 493,888.00	-

Dahme Mechanical Industries, Inc. (DMI) of Arlington Heights, Illinois was founded in 1995 and is a well-established contractor in the water and wastewater industry. Trotter and Associates has worked with DMI previously on a number of projects and found them to be a quality contractor with whom we are confident will provide a successful project for the Village of Oak Brook.

It is therefore the recommendation of TAI that the Village award the Water System Disinfection Modernization contract to Dahme Mechanical Industries, Inc. for the amount of \$493,888.00. If you should have any questions or wish to discuss this further, please contact me at your earliest convenience.

Sincerely,


Scott Trotter, P.E. BCEE
President



ITEM 7.A.4.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Recommendation to Purchase - 1 (ODB) Leaf Collection Machine

FROM: Tim O'Malley, Public Works Director

BUDGET SOURCE/BUDGET IMPACT: \$195,880.00 is budgeted for FY2025 Budget in Account # 342-90200 for the purchase of this item.

RECOMMENDED MOTION: I move that the Village Board approve Resolution R-2323, waiving further bidding since SourceWell has already conducted the bid process, and issue a Purchase Order to Standard Equipment of Elmhurst, IL, for the purchase of one (1) ODB (Old Dominion Brush) leaf collection vacuum for the total purchase cost of \$155,657.00.

Background/History:

Currently, the Village of Oak Brook owns (3) leaf collection vacuums. The unit to be replaced is a 2009 Tarrant Windy. This unit has served us well for the leaf collection program; however, it is currently used as a reserve unit because of its age and vulnerability to breakdowns. Public Works utilizes this machine for approximately 50% of the program during the height of leaf fall or while one of the other machines are down for maintenance. The Village is saving approximately \$40,000 by purchasing this unit through the Sourcewell contract. A Leaf Collection Vacuum has an expected useful life of 15 years.

Recommendation:

Staff recommends that the Village Board approve Resolution R-2323, waiving further bidding since SourceWell has already conducted the bid process, and issue a Purchase Order to Standard Equipment of Elmhurst, IL, for the purchase of one (1) ODB (Old Dominion Brush) leaf collection vacuum for the total purchase cost of \$155,657.00.

Attachments:

1. 2025-PW-LRP-PG-R-2323 10-28-25
2. Old Dominion-DuCo Contract 112624
3. Village of Oak Brook ODB LCT6000 (002)

THE VILLAGE OF OAK BROOK
COOK AND DUPAGE COUNTIES, ILLINOIS

RESOLUTION
NUMBER 2025-PW-LRP-PG-R-2323

A RESOLUTION
TO WAIVE COMPETITIVE BIDDING AND AUTHORIZE THE
ISSUANCE OF A PURCHASE ORDER TO STANDARD
EQUIPMENT FOR THE PURCHASE ONE (1) ODB LEAF
COLLECTION MACHINE

LAURENCE E. HERMAN, Village President
NETASHA SCARPINITI, Village Clerk

NAVEEN JAIN
MICHAEL MANZO
MELISSA MARTIN
JAMES NAGLE
A. SURESH REDDY
EDWARD TIESENGA

Village Board

Published in pamphlet form by authority of the
President and the Board of Trustees of the Village of Oak Brook
on this 28th day of October 2025

RESOLUTION NO. 2025-PW-LRP-PG-R-2323

A RESOLUTION
TO WAIVE COMPETITIVE BIDDING AND AUTHORIZE THE ISSUANCE OF A PURCHASE
ORDER TO STANDARD EQUIPMENT FOR THE PURCHASE ONE (1) ODB LEAF
COLLECTION MACHINE

WHEREAS, the Village of Oak Brook is a municipal corporation with authority provided for and granted pursuant to the Illinois Municipal Code to exercise certain powers and perform certain functions pertaining to its local government and affairs;

WHEREAS, the Village of Oak Brook (hereinafter referred to as "Village") upon approval of the Village President and Board of Trustees (collectively, the "Corporate Authorities") may issue a Purchase Order to another party pursuant to Illinois Statute;

WHEREAS, in the Village of Oak Brook owns three leaf collection vacuums, one of which being a 2009 Tarrant Windy, has reached the end of its useful lifecycle and is in need of replacement;

WHEREAS, pursuant to Section 1-7-10 of the Code of Ordinances and Compiled Statutes, the Village is permitted to participate in cooperative purchasing arrangements with other governmental entities, namely Sourcewell, which provides competitively bid contracts for public agencies offering an efficient procurement process;

WHEREAS, Staff is recommending that the Corporate Authorities waive further bidding since Sourcewell already conducted the bid process and authorize the issuance of a Purchase Order, attached hereto and incorporated herein as Exhibit A (the "Purchase Order") to Standard Equipment, Elmhurst, Illinois; ("Company"), in the amount of \$155,657.00 for the purchase of one (1) Old Dominion Brush (ODB) leaf collection vacuum, all as further detailed therein;

WHEREAS, the Village of Oak Brook Corporate Authorities are of the opinion that it is in the best interests of the Village of Oak Brook to approve the Purchase Order for the purposes referenced herein.

NOW, THEREFORE, BE IT RESOLVED, in open meeting assembled, by the Village President and Board of Trustees of the Village of Oak Brook, DuPage and Cook Counties, Illinois as follows:

Section One – Recitals

The Corporate Authorities hereby find that all of the recitals hereinbefore stated as contained in the preamble to this Resolution are full, true, and correct and do hereby, by reference, incorporate and make them part of this Resolution as legislative findings.

Section Two – Approval of a Purchase Order.

The President and Board of Trustees hereby approve the Purchase Order with Company in substantially the same form attached as Exhibit A.

Section Three – Authorization and Direction

The Village Manager is hereby authorized to execute the purchase order, substantially in the form attached hereto as Exhibit A,

Section Four - Other Actions Authorized

The officers, employees and/or agents of the Village shall take all actions necessary or reasonably required to carry out and give effect to the intent of the Purchase Order and otherwise to consummate the transactions contemplated herein, and shall take all actions necessary in conformity therewith including, without limitation, the execution and delivery of all documents required to be delivered in connection with the transaction contemplated herein.

Section Five - Authorization of Expenditures

The Corporate Authorities hereby authorize and direct the expenditure of all costs related to the execution of the Purchase Order. Additionally, the Village is authorized and directed to allocate and spend all necessary funds to fulfill the requirements of the Purchase Order and of this Resolution.

Section Six – Waiver of Bidding Process

To the extent that any requirement of bidding would be applicable to the transactions contemplated hereunder, the same is hereby waived.

Section Seven - Acts of Village Officials

That all past, present and future acts and doings of the officials of the Village that are in conformity with the purpose and intent of this Resolution are hereby, in all respects, ratified, approved, authorized and confirmed.

Section Eight – Effective Date

This resolution shall be in full force and effect from and after its passage, approval and publication as provided by law.

Section Nine - Publication

This resolution shall be published in book or pamphlet form as provided by the Illinois Municipal Code.

Section ten – Conflict Clause

All resolutions, parts of resolutions or board actions in conflict herewith are hereby repealed to the extent of such conflict.

Section Eleven – Saving Clause

If any section, paragraph, clause or provision of this resolution is declared by a court of law to be invalid or unconstitutional, the invalidity or unconstitutionality thereof shall not affect the validity of any other provisions of this resolution, which are hereby declared to be separable.

Section Twelve – Recording

This resolution shall be entered into the minutes and upon the journals of the Board of Trustees of the Village of Oak Brook.

PASSED THIS 28th day of October 2025.

Ayes: _____

Nays: _____

Absent: _____

APPROVED THIS 28th day of October 2025.

LAURENCE E. HERMAN,
Village President

ATTEST:

NETASHA SCARPINITI,
Village Clerk

EXHIBIT A

[Purchase Order]

**MASTER AGREEMENT #112624****CATEGORY: Grounds Maintenance Equipment and Related Attachments****SUPPLIER: Old Dominion Brush Company/DuCo, LLC**

This Master Agreement (Agreement) is between Sourcewell, a Minnesota service cooperative located at 202 12th Street Northeast, P.O. Box 219, Staples, MN 56479 (Sourcewell) and Old Dominion Brush Company/DuCo, LLC, 5118 Glen Alden Drive, Henrico, VA 23231 (Supplier).

Sourcewell is a local government and service cooperative created under the laws of the State of Minnesota (Minnesota Statutes Section 123A.21) offering a Cooperative Purchasing Program to eligible participating government entities.

Under this Master Agreement entered with Sourcewell, Supplier will provide Included Solutions to Participating Entities through Sourcewell's Cooperative Purchasing Program.

**Article 1:
General Terms**

The General Terms in this Article 1 control the operation of this Master Agreement between Sourcewell and Supplier and apply to all transactions entered by Supplier and Participating Entities. Subsequent Articles to this Master Agreement control the rights and obligations directly between Sourcewell and Supplier (Article 2), and between Supplier and Participating Entity (Article 3), respectively. These Article 1 General Terms control over any conflicting terms. Where this Master Agreement is silent on any subject, Participating Entity and Supplier retain the ability to negotiate mutually acceptable terms.

- 1) **Purpose.** Pursuant to Minnesota law, the Sourcewell Board of Directors has authorized a Cooperative Purchasing Program designed to provide Participating Entities with access to competitively awarded cooperative purchasing agreements. To facilitate the Program, Sourcewell has awarded Supplier this cooperative purchasing Master Agreement following a competitive procurement process intended to meet compliance standards in accordance with Minnesota law and the requirements contained herein.
- 2) **Intent.** The intent of this Master Agreement is to define the roles of Sourcewell, Supplier, and Participating Entity as it relates to Sourcewell's Cooperative Purchasing Program.
- 3) **Participating Entity Access.** Sourcewell's Cooperative Purchasing Program Master Agreements are available to eligible public agencies (Participating Entities). A Participating Entity's authority to access Sourcewell's Cooperative Purchasing Program is determined through the laws of its respective jurisdiction.
- 4) **Supplier Access.** The Included Solutions offered under this Agreement may be made available to any Participating Entity. Supplier understands that a Participating Entity's use of this Agreement is at the Participating Entity's sole convenience. Supplier will educate its sales and service forces about Sourcewell eligibility requirements and required documentation. Supplier will be responsible for ensuring sales are with Participating Entities.

- 5) **Term.** This Agreement is effective upon the date of the final signature below. The term of this Agreement is four (4) years from the effective date. The Agreement expires at 11:59 P.M. Central Time on January 31, 2029, unless it is cancelled or extended as defined in this Agreement.
- a) **Extensions.** Sourcewell and Supplier may agree to up to three (3) additional one-year extensions beyond the original four-year term. The total possible length of this Agreement will be seven (7) years from the effective date.
- b) **Exceptional Circumstances.** Sourcewell retains the right to consider additional extensions as required under exceptional circumstances.
- 6) **Survival of Terms.** Notwithstanding the termination of this Agreement, the obligations of this Agreement will continue through the performance period of any transaction entered between Supplier and any Participating Entity before the termination date.
- 7) **Scope.** Supplier is awarded a Master Agreement to provide the solutions identified in RFP #112624 to Participating Entities. In Scope solutions include:
- a) Lawn and garden equipment for all types of lawn, field and turf care, golf course, landscape, sidewalk, walking path, and parking lot maintenance, and snow removal;
- b) Irrigation and aeration equipment, systems, parts, and installation; and
- c) Beach and waterfront maintenance equipment and accessories.
- 8) **Included Solutions.** Supplier's Proposal to the above referenced RFP is incorporated into this Master Agreement. Only those Solutions included within Supplier's Proposal and within Scope (Included Solutions) are included within the Agreement and may be offered to Participating Entities.
- 9) **Indefinite Quantity.** This Master Agreement defines an indefinite quantity of sales to eligible Participating Entities.
- 10) **Pricing.** Pricing information (including Pricing and Delivery and Pricing Offered tables) for all Included Solutions within Supplier's Proposal is incorporated into this Master Agreement.
- 11) **Not to Exceed Pricing.** Suppliers may not exceed the prices listed in the current Pricing List on file with Sourcewell when offering Included Solutions to Participating Entities. Participating Entities may request adjustments to pricing directly from Supplier during the negotiation and execution of any transaction.
- 12) **Open Market.** Supplier's open market pricing process is included within its Proposal.
- 13) Supplier Representations:**
- i) **Compliance.** Supplier represents and warrants it will provide all Included Solutions under this Agreement in full compliance with applicable federal, state, and local laws and regulations.

ii) **Licenses.** As applicable, Supplier will maintain a valid status on all required federal, state, and local licenses, bonds, and permits required for the operation of Supplier's business with Participating Entities. Participating Entities may request all relevant documentation directly from Supplier.

iii) **Supplier Warrants.** Supplier warrants that all Included Solutions furnished under this Agreement are free from liens and encumbrances, and are free from defects in design, materials, and workmanship. In addition, Supplier warrants the Solutions are suitable for and will perform in accordance with the ordinary use for which they are intended.

14) **Bankruptcy Notices.** Supplier certifies and warrants it is not currently in a bankruptcy proceeding. Supplier has disclosed all current and completed bankruptcy proceedings within the past seven years within its Proposal. Supplier must provide notice in writing to Sourcewell if it enters a bankruptcy proceeding at any time during the term of this Agreement.

15) **Debarment and Suspension.** Supplier certifies and warrants that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from programs operated by the State of Minnesota, the United States federal government, or any Participating Entity. Supplier certifies and warrants that neither it nor its principals have been convicted of a criminal offense related to the subject matter of this Agreement. Supplier further warrants that it will provide immediate written notice to Sourcewell if this certification changes at any time during the term of this Agreement.

16) **Provisions for non-United States federal entity procurements under United States federal awards or other awards (Appendix II to 2 C.F.R § 200).** Participating Entities that use United States federal grant or other federal funding to purchase solutions from this Agreement may be subject to additional requirements including the procurement standards of the Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards, 2 C.F.R. § 200. Participating Entities may have additional requirements based on specific funding source terms or conditions. Within this Section, all references to "federal" should be interpreted to mean the United States federal government. The following list applies when a Participating Entity accesses Supplier's Included Solutions with United States federal funds.

i) **EQUAL EMPLOYMENT OPPORTUNITY.** Except as otherwise provided under 41 C.F.R. § 60, all agreements that meet the definition of "federally assisted construction contract" in 41 C.F.R. § 60-1.3 must include the equal opportunity clause provided under 41 C.F.R. § 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 C.F.R. §, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 C.F.R. § 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." The equal opportunity clause is incorporated herein by reference.

ii) **DAVIS-BACON ACT, AS AMENDED (40 U.S.C. § 3141-3148).** When required by federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. § 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 C.F.R. § 5,

“Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-federal entity must report all suspected or reported violations to the federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations (29 C.F.R. § 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-federal entity must report all suspected or reported violations to the federal awarding agency. Supplier must comply with all applicable Davis-Bacon Act provisions.

iii) **CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (40 U.S.C. § 3701-3708).**

Where applicable, all contracts awarded by the non-federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations (29 C.F.R. § 5). Under 40 U.S.C. § 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies, materials, or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence. This provision is hereby incorporated by reference into this Agreement. Supplier certifies that during the term of an award for all Agreements by Sourcewell resulting from this procurement process, Supplier must comply with applicable requirements as referenced above.

iv) **RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT.** If the federal award meets the definition of “funding agreement” under 37 C.F.R. § 401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 C.F.R. § 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency. Supplier certifies that during the term of an award for all Agreements by Sourcewell resulting from this procurement process, Supplier must comply with applicable requirements as referenced above.

v) **CLEAN AIR ACT (42 U.S.C. § 7401-7671Q.) AND THE FEDERAL WATER POLLUTION CONTROL ACT (33 U.S.C. § 1251-1387).** Contracts and subgrants of amounts in excess of

\$150,000 require the non-federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. § 7401- 7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251- 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). Supplier certifies that during the term of this Agreement it will comply with applicable requirements as referenced above.

vi) **DEBARMENT AND SUSPENSION (EXECUTIVE ORDERS 12549 AND 12689).** A contract award (see 2 C.F.R. § 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. § 180 that implement Executive Orders 12549 (3 C.F.R. § 1986 Comp., p. 189) and 12689 (3 C.F.R. § 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. Supplier certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency.

vii) **BYRD ANTI-LOBBYING AMENDMENT, AS AMENDED (31 U.S.C. § 1352).** Suppliers must file any required certifications. Suppliers must not have used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Suppliers must disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the non-federal award. Suppliers must file all certifications and disclosures required by, and otherwise comply with, the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352).

viii) **RECORD RETENTION REQUIREMENTS.** To the extent applicable, Supplier must comply with the record retention requirements detailed in 2 C.F.R. § 200.333. The Supplier further certifies that it will retain all records as required by 2 C.F.R. § 200.333 for a period of 3 years after grantees or subgrantees submit final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed.

ix) **ENERGY POLICY AND CONSERVATION ACT COMPLIANCE.** To the extent applicable, Supplier must comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

x) **BUY AMERICAN PROVISIONS COMPLIANCE.** To the extent applicable, Supplier must comply with all applicable provisions of the Buy American Act. Purchases made in accordance with the Buy American Act must follow the applicable procurement rules calling for free and open competition.

xi) **ACCESS TO RECORDS (2 C.F.R. § 200.336).** Supplier agrees that duly authorized representatives of a federal agency must have access to any books, documents, papers and records of Supplier that are directly pertinent to Supplier's discharge of its obligations under this Agreement for the purpose of making audits, examinations, excerpts, and transcriptions. The

right also includes timely and reasonable access to Supplier's personnel for the purpose of interview and discussion relating to such documents.

xii) **PROCUREMENT OF RECOVERED MATERIALS (2 C.F.R. § 200.322).** A non-federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. § 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

xiii) **FEDERAL SEAL(S), LOGOS, AND FLAGS.** The Supplier cannot use the seal(s), logos, crests, or reproductions of flags or likenesses of Federal agency officials without specific pre-approval.

xiv) **NO OBLIGATION BY FEDERAL GOVERNMENT.** The U.S. federal government is not a party to this Agreement or any purchase by a Participating Entity and is not subject to any obligations or liabilities to the Participating Entity, Supplier, or any other party pertaining to any matter resulting from the Agreement or any purchase by an authorized user.

xv) **PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS.** The Contractor acknowledges that 31 U.S.C. § 38 (Administrative Remedies for False Claims and Statements) applies to the Supplier's actions pertaining to this Agreement or any purchase by a Participating Entity.

xvi) **FEDERAL DEBT.** The Supplier certifies that it is non-delinquent in its repayment of any federal debt. Examples of relevant debt include delinquent payroll and other taxes, audit disallowance, and benefit overpayments.

xvii) **CONFLICTS OF INTEREST.** The Supplier must notify the U.S. Office of General Services, Sourcewell, and Participating Entity as soon as possible if this Agreement or any aspect related to the anticipated work under this Agreement raises an actual or potential conflict of interest (as described in 2 C.F.R. Part 200). The Supplier must explain the actual or potential conflict in writing in sufficient detail so that the U.S. Office of General Services, Sourcewell, and Participating Entity are able to assess the actual or potential conflict; and provide any additional information as necessary or requested.

xviii) **U.S. EXECUTIVE ORDER 13224.** The Supplier, and its subcontractors, must comply with U.S. Executive Order 13224 and U.S. Laws that prohibit transactions with and provision of resources and support to individuals and organizations associated with terrorism.

xix) **PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT.** To the extent applicable, Supplier certifies that during the term of this Agreement it will comply with applicable requirements of 2 C.F.R. § 200.216.

xx) **DOMESTIC PREFERENCES FOR PROCUREMENTS.** To the extent applicable, Supplier certifies that during the term of this Agreement, Supplier will comply with applicable requirements of 2 C.F.R. § 200.322.

Article 2: Sourcewell and Supplier Obligations

The Terms in this Article 2 relate specifically to Sourcewell and its administration of this Master Agreement with Supplier and Supplier's obligations thereunder.

- 1) **Authorized Sellers.** Supplier must provide Sourcewell a current means to validate or authenticate Supplier's authorized dealers, distributors, or resellers which may complete transactions of Included Solutions offered under this Agreement. Sourcewell may request updated information in its discretion, and Supplier agrees to provide requested information within a reasonable time.
- 2) **Product and Price Changes Requirements.** Supplier may request Included Solutions changes, additions, or deletions at any time. All requests must be made in writing by submitting a Sourcewell Price and Product Change Request Form to Sourcewell. At a minimum, the request must:
 - Identify the applicable Sourcewell Agreement number;
 - Clearly specify the requested change;
 - Provide sufficient detail to justify the requested change;
 - Individually list all Included Solutions affected by the requested change, along with the requested change (e.g., addition, deletion, price change); and
 - Include a complete restatement of Pricing List with the effective date of the modified pricing, or product addition or deletion. The new pricing restatement must include all Included Solutions offered, even for those items where pricing remains unchanged.

A fully executed Sourcewell Price and Product Change Request Form will become an amendment to this Agreement and will be incorporated by reference.

- 3) **Authorized Representative.** Supplier will assign an Authorized Representative to Sourcewell for this Agreement and must provide prompt notice to Sourcewell if that person is changed. The Authorized Representative will be responsible for:
 - Maintenance and management of this Agreement;
 - Timely response to all Sourcewell and Participating Entity inquiries; and
 - Participation in reviews with Sourcewell.

Sourcewell's Authorized Representative is its Chief Procurement Officer.

- 4) **Performance Reviews.** Supplier will perform a minimum of one review with Sourcewell per agreement year. The review will cover transactions to Participating Entities, pricing and terms, administrative fees, sales data reports, performance issues, supply chain issues, customer issues, and any other necessary information.

- 5) **Sales Reporting Required.** Supplier is required as a material element to this Master Agreement to report all completed transactions with Participating Entities utilizing this Agreement. Failure to provide complete and accurate reports as defined herein will be a material breach of the Agreement and Sourcewell reserves the right to pursue all remedies available at law including cancellation of this Agreement.
- 6) **Reporting Requirements.** Supplier must provide Sourcewell an activity report of all transactions completed utilizing this Agreement. Reports are due at least once each calendar quarter (Reporting Period). Reports must be received no later than 45 calendar days after the end of each calendar quarter. Supplier may report on a more frequent basis in its discretion. Reports must be provided regardless of the amount of completed transactions during that quarter (i.e., if there are no sales, Supplier must submit a report indicating no sales were made).

The Report must contain the following fields:

- Participating Entity Name (e.g., City of Staples Highway Department);
- Participating Entity Physical Street Address;
- Participating Entity City;
- Participating Entity State/Province;
- Participating Entity Zip/Postal Code;
- Sourcewell Participating Entity Account Number;
- Transaction Description;
- Transaction Purchased Price;
- Sourcewell Administrative Fee Applied; and
- Date Transaction was invoiced/sale was recognized as revenue by Supplier.

If collected by Supplier, the Report may include the following fields as available:

- Participating Entity Contact Name;
- Participating Entity Contact Email Address;
- Participating Entity Contact Telephone Number;

- 7) **Administrative Fee.** In consideration for the support and services provided by Sourcewell, Supplier will pay an Administrative Fee to Sourcewell on all completed transactions to Participating Entities utilizing this Agreement. Supplier will include its Administrative Fee within its proposed pricing. Supplier may not directly charge Participating Entities to offset the Administrative Fee.
- 8) **Fee Calculation.** Supplier's Administrative Fee payable to Sourcewell will be calculated as a stated percentage (listed in Supplier's Proposal) of all completed transactions utilizing this Master Agreement within the preceding Reporting Period. For certain categories, a flat fee may be proposed. The Administrative Fee will be stated in Supplier's Proposal.
- 9) **Fee Remittance.** Supplier will remit fee to Sourcewell no later than 45 calendar days after the close of the preceding calendar quarter in conjunction with Supplier's Reporting Period obligations defined herein. Payments should note the Supplier's name and Sourcewell-assigned Agreement number in the memo; and must be either mailed to Sourcewell above "Attn: Accounts Receivable" or remitted electronically to Sourcewell's banking institution per Sourcewell's Finance department instructions.

- 10) **Noncompliance.** Sourcewell reserves the right to seek all remedies available at law for unpaid or underpaid Administrative Fees due under this Agreement. Failure to remit payment, delinquent payments, underpayments, or other deviations from the requirements of this Agreement may be deemed a material breach and may result in cancellation of this Agreement and disbarment from future Agreements.
- 11) **Audit Requirements.** Pursuant to Minn. Stat. § 16C.05, subdivision 5, the books, records, documents, and accounting procedures and practices relevant to this Agreement are subject to examination by Sourcewell and the Minnesota State Auditor for a minimum of six years from the end of this Agreement. Supplier agrees to fully cooperate with Sourcewell in auditing transactions under this Agreement to ensure compliance with pricing terms, correct calculation and remittance of Administrative Fees, and verification of transactions as may be requested by a Participating Entity or Sourcewell. Supplier shall make available all records, including books, documents, accounting procedures and practices, and other data, regardless of type and regardless of whether such items are in written form, in the form of computer data, or in any other form, and other supporting evidence to satisfy any contract negotiation, administration, and audit requirements of the contracting agencies and the Comptroller General for 7 years after final payment. Supplier shall make available the foregoing records and supporting evidence at any time they are requested to pursuant to relevant contract requirements. Supplier shall keep these records in hard copy for three years and electronic copy for the seven-year period. These documents are on both a physical server, and a cloud-based server that are encrypted; these documents are backed up daily.
- 12) **Assignment, Transfer, and Administrative Changes.** Supplier may not assign or otherwise transfer its rights or obligations under this Agreement without the prior written consent of Sourcewell. Such consent will not be unreasonably withheld. Sourcewell reserves the right to unilaterally assign all or portions of this Agreement within its sole discretion to address corporate restructurings, mergers, acquisitions, or other changes to the Responsible Party and named in the Agreement. Any prohibited assignment is invalid. Upon request Sourcewell may make administrative changes to agreement documentation such as name changes, address changes, and other non-material updates as determined within its sole discretion.
- 13) **Amendments.** Any material change to this Agreement must be executed in writing through an amendment and will not be effective until it has been duly executed by the parties.
- 14) **Waiver.** Failure by Sourcewell to enforce any right under this Agreement will not be deemed a waiver of such right in the event of the continuation or repetition of the circumstances giving rise to such right.
- 15) **Complete Agreement.** This Agreement represents the complete agreement between the parties for the scope as defined herein. Supplier and Sourcewell may enter into separate written agreements relating specifically to transactions outside of the scope of this Agreement.
- 16) **Relationship of Sourcewell and Supplier.** This Agreement does not create a partnership, joint venture, or any other relationship such as employee, independent contractor, master-servant, or principal-agent.
- 17) **Indemnification.** Supplier must indemnify, defend, save, and hold Sourcewell, including their agents and employees, harmless from any claims or causes of action, including attorneys' fees incurred by

Sourcewell, arising out of any act or omission in the performance of this Agreement by the Supplier or its agents or employees; this indemnification includes injury or death to person(s) or property alleged to have been caused by some defect in design, condition, or performance of Included Solutions under this Agreement. Sourcewell's responsibility will be governed by the State of Minnesota's Tort Liability Act (Minnesota Statutes Chapter 466) and other applicable law.

18) **Data Practices.** Supplier and Sourcewell acknowledge Sourcewell is subject to the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13. As it applies to all data created and maintained in performance of this Agreement, Supplier may be subject to the requirements of this chapter.

19) **Grant of License.**

a) **During the term of this Agreement:**

i) **Supplier Promotion.** Sourcewell grants to Supplier a royalty-free, worldwide, non-exclusive right and license to use the trademark(s) provided to Supplier by Sourcewell in advertising, promotional materials, and informational sites for the purpose of marketing Sourcewell's Agreement with Supplier.

ii) **Sourcewell Promotion.** Supplier grants to Sourcewell a royalty-free, worldwide, non-exclusive right and license to use Supplier's trademarks in advertising, promotional materials, and informational sites for the purpose of marketing Supplier's Agreement with Sourcewell.

b) **Limited Right of Sublicense.** The right and license granted herein includes a limited right of each party to grant sublicenses to their respective subsidiaries, distributors, dealers, resellers, marketing representatives, partners, or agents (collectively "Permitted Sublicensees") in advertising, promotional, or informational materials for the purpose of marketing the Parties' relationship. Any sublicense granted will be subject to the terms and conditions of this Article. Each party will be responsible for any breach of this section by any of their respective sublicensees.

c) **Use; Quality Control.**

i) Neither party may alter the other party's trademarks from the form provided and must comply with removal requests as to specific uses of its trademarks or logos.

ii) Each party agrees to use, and to cause its Permitted Sublicensees to use, the other party's trademarks only in good faith and in a dignified manner consistent with such party's use of the trademarks. Each party may make written notice to the other regarding misuse under this section. The offending party will have 30 days of the date of the written notice to cure the issue or the license/sublicense will be terminated.

d) **Termination.** Upon the termination of this Agreement for any reason, each party, including Permitted Sublicensees, will have 30 days to remove all Trademarks from signage, websites, and the like bearing the other party's name or logo (excepting Sourcewell's pre-printed catalog of suppliers which may be used until the next printing). Supplier must return all marketing and promotional materials, including signage, provided by Sourcewell, or dispose of it according to Sourcewell's written directions.

- 20) **Venue and Governing law between Sourcewell and Supplier Only.** The substantive and procedural laws of the State of Minnesota will govern this Agreement between Sourcewell and Supplier. Venue for all legal proceedings arising out of this Agreement between Sourcewell and Supplier will be in court of competent jurisdiction within the State of Minnesota. This section does not apply to any dispute between Supplier and Participating Entity. This Agreement reserves the right for Supplier and Participating Entity to negotiate this term to within any transaction documents.
- 21) **Severability.** If any provision of this Agreement is found by a court of competent jurisdiction to be illegal, unenforceable, or void then both parties will be relieved from all obligations arising from that provision. If the remainder of this Agreement is capable of being performed, it will not be affected by such determination or finding and must be fully performed.
- 22) **Insurance Coverage.** At its own expense, Supplier must maintain valid insurance policy(ies) during the performance of this Agreement with insurance company(ies) licensed or authorized to do business in the State of Minnesota having an "AM BEST" rating of A- or better, with coverage and limits of insurance not less than the following:
- a) **Commercial General Liability Insurance.** Supplier will maintain insurance covering its operations, with coverage on an occurrence basis, and must be subject to terms no less broad than the Insurance Services Office ("ISO") Commercial General Liability Form CG0001 (2001 or newer edition), or equivalent. At a minimum, coverage must include liability arising from premises, operations, bodily injury and property damage, independent contractors, products-completed operations including construction defect, contractual liability, blanket contractual liability, and personal injury and advertising injury. All required limits, terms and conditions of coverage must be maintained during the term of this Agreement.
 - \$1,500,000 each occurrence Bodily Injury and Property Damage
 - \$1,500,000 Personal and Advertising Injury
 - \$2,000,000 aggregate for products liability-completed operations
 - \$2,000,000 general aggregate
 - b) **Certificates of Insurance.** Prior to execution of this Agreement, Supplier must furnish to Sourcewell a certificate of insurance, as evidence of the insurance required under this Agreement. Prior to expiration of the policy(ies), renewal certificates must be mailed to Sourcewell, 202 12th Street Northeast, P.O. Box 219, Staples, MN 56479 or provided to in an alternative manner as directed by Sourcewell. The certificates must be signed by a person authorized by the insurer(s) to bind coverage on their behalf. Failure of Supplier to maintain the required insurance and documentation may constitute a material breach.
 - c) **Additional Insured Endorsement and Primary and Non-contributory Insurance Clause.** Supplier agrees to list Sourcewell, including its officers, agents, and employees, as an additional insured under the Supplier's commercial general liability insurance policy with respect to liability arising out of activities, "operations," or "work" performed by or on behalf of Supplier, and products and completed operations of Supplier. The policy provision(s) or endorsement(s) must further provide that coverage is primary and not excess over or contributory with any other valid, applicable, and collectible insurance or self-insurance in force for the additional insureds.
 - d) **Waiver of Subrogation.** Supplier waives and must require (by endorsement or otherwise) all its insurers to waive subrogation rights against Sourcewell and other additional insureds for losses

paid under the insurance policies required by this Agreement or other insurance applicable to the Supplier or its subcontractors. The waiver must apply to all deductibles and/or self-insured retentions applicable to the required or any other insurance maintained by the Supplier or its subcontractors. Where permitted by law, Supplier must require similar written express waivers of subrogation and insurance clauses from each of its subcontractors.

- e) **Umbrella/Excess Liability/SELF-INSURED RETENTION.** The limits required by this Agreement can be met by either providing a primary policy or in combination with umbrella/excess liability policy(ies), or self-insured retention.

23) **Termination for Convenience.** Sourcewell or Supplier may terminate this Agreement upon 60 calendar days' written notice to the other Party. Termination pursuant to this section will not relieve the Supplier's obligations under this Agreement for any transactions entered with Participating Entities through the date of termination, including reporting and payment of applicable Administrative Fees.

24) **Termination for Cause.** Sourcewell may terminate this Agreement upon providing written notice of material breach to Supplier. Notice must describe the breach in reasonable detail and state the intent to terminate the Agreement. Upon receipt of Notice, the Supplier will have 30 calendar days in which it must cure the breach. Termination pursuant to this section will not relieve the Supplier's obligations under this Agreement for any transactions entered with Participating Entities through the date of termination, including reporting and payment of applicable Administrative Fees.

Article 3: Supplier Obligations to Participating Entities

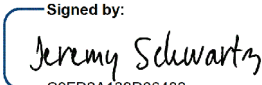
The Terms in this Article 3 relate specifically to Supplier and a Participating Entity when entering transactions utilizing the General Terms established in this Master Agreement. Article 1 General Terms control over any conflict with this Article 3. Where this Master Agreement is silent on any subject, Participating Entity and Supplier retain the ability to negotiate mutually acceptable terms.

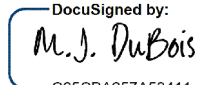
- 1) **Quotes to Participating Entities.** Suppliers are encouraged to provide all pricing information regarding the total cost of acquisition when quoting to a Participating Entity. Suppliers and Participating Entities are encouraged to include all cost specifically associated with or included within the Suppliers proposal and Included Solutions within transaction documents.
- 2) **Shipping, Delivery, Acceptance, Rejection, and Warranty.** Supplier's proposal may include proposed terms relating to shipping, delivery, inspection, and acceptance/rejection and other relevant terms of tendered Solutions. Supplier and Participating Entity may negotiate final terms appropriate for the specific transaction relating to non-appropriation, shipping, delivery, inspection, acceptance/rejection of tendered Solutions, and warranty coverage for Included Solutions. Such terms may include, but are not limited to, costs, risk of loss, proper packaging, inspection rights and timelines, acceptance or rejection procedures, and remedies as mutually agreed include notice requirements, replacement, return or exchange procedures, and associated costs.
- 3) **Applicable Taxes.** Participating Entity is responsible for notifying supplier of its tax-exempt status and for providing Supplier with any valid tax-exemption certification(s) or related documentation.

- 4) **Ordering Process and Payment.** Supplier's ordering process and acceptable forms of payment are included within its Proposal. Participating Entities will be solely responsible for payment to Supplier and Sourcewell will have no liability for any unpaid invoice of any Participating Entity.
- 5) **Transaction Documents.** Participating Entity may require the use of its own forms to complete transactions directly with Supplier utilizing the terms established in this Agreement. Supplier's standard form agreements may be offered as part of its Proposal. Supplier and Participating Entity may complete and document transactions utilizing any type of transaction documents as mutually agreed. In any transaction document entered utilizing this Agreement, Supplier and Participating Entity must include specific reference to this Master Agreement by number and to Participating Entity's unique Sourcewell account number.
- 6) **Additional Terms and Conditions Permitted.** Participating Entity and Supplier may negotiate and include additional terms and conditions within transaction documentation as mutually agreed. Such terms may supplant or supersede this Master Agreement when necessary and as solely determined by Participating Entity. Sourcewell has expressly reserved the right for Supplier and Participating Entity to address any necessary provisions within transaction documents not expressly included within this Master Agreement, including but not limited to transaction cancellation, dispute resolution, governing law and venue, non-appropriation, insurance, defense and indemnity, force majeure, and other material terms as mutually agreed.
- 7) **Subsequent Agreements and Survival.** Supplier and Participating Entity may enter into a separate agreement to facilitate long-term performance obligations utilizing the terms of this Master Agreement as mutually agreed. Such agreements may provide for a performance period extending beyond the full term of this Master Agreement as determined in the discretion of Participating Entity.
- 8) **Participating Addendums.** Supplier and Participating Entity may enter a Participating Addendum or similar document extending and supplementing the terms of this Master Agreement to facilitate adoption as may be required by a Participating Entity.

Sourcewell

Old Dominion Brush Company/DuCo, LLC

Signed by:

By: C0FD2A139D06489...
Jeremy Schwartz
Title: Chief Procurement Officer
Date: 1/28/2025 | 7:02 PM CST

DocuSigned by:

By: C65CBA257A53411...
M.J. DuBois
Title: Authorized Contract Administrator
Date: 1/28/2025 | 2:25 PM PST

RFP 112624 - Grounds Maintenance Equipment and Related Attachments

Vendor Details

Company Name: DuCo, LLC
Address: 1079 Tamiami Trl N
#350
Nokomis, Florida 34275
Contact: MJ DUBOIS
Email: mjdubois@ducollc.com
Phone: 410-924-1004
Fax: 410-924-1004
HST#: 81-1963530

Submission Details

Created On: Tuesday November 05, 2024 10:32:40
Submitted On: Tuesday November 26, 2024 12:05:39
Submitted By: MJ DUBOIS
Email: mjdubois@ducollc.com
Transaction #: 8a4b46cf-7311-48d1-a742-12e96a65fba6
Submitter's IP Address: 47.203.144.119

Specifications

Table 1: Proposer Identity & Authorized Representatives (Not Scored)

General Instructions (applies to all Tables) Sourcewell prefers a brief but thorough response to each question. Do not merely attach additional documents to your response without also providing a substantive response. Do not leave answers blank; respond "N/A" if the question does not apply to you (preferably with an explanation).

Table 1 Specific Instructions. Sourcewell requires identification of all parties responsible for providing Solutions under a resulting master agreement(s) (Responsible Supplier). Proposers are strongly encouraged to include all potential Responsible Suppliers including any corporate affiliates, subsidiaries, D.B.A., and any other authorized entities within a singular proposal. All information required under this RFP must be included for each Responsible Supplier as instructed. Proposers with multiple Responsible Supplier options may choose to respond individually as distinct entities, however each response will be evaluated individually and only those proposals recommended for award may result in a master agreement award. Unawarded entities will not be permitted to later be added to an existing master agreement through operation of Proposer's corporate organization affiliation.

Line Item	Question	Response *	
1	Provide the legal name of the Proposer authorized to submit this Proposal.	Old Dominion Brush Company EIN: 81-4164227	*
2	In the event of award, is this entity the Responsible Supplier that will execute the master agreement with Sourcewell? Y or N.	Yes	*
3	Identify all subsidiaries, D.B.A., authorized affiliates, and any other entity that will be responsible for offering and performing delivery of Solutions within this Proposal (i.e. Responsible Supplier(s) that will execute a master agreement with Sourcewell).	N/A	*
4	Provide your CAGE code or Unique Entity Identifier (SAM):	ODB has applied for both via SAM.gov	*
5	Provide your NAICS code applicable to Solutions proposed.	Code: 333924 Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	
6	Proposer Physical Address:	5118 Glen Alden Drive Henrico, Virginia 23231 800-446-9823	*
7	Proposer website address (or addresses):	www.odbco.com	*
8	Proposer's Authorized Representative (name, title, address, email address & phone) (The representative must have authority to sign the "Proposer's Assurance of Compliance" on behalf of the Proposer):	M.J. DuBois, Authorized Contract Administrator (See attached Letter) DuCo, LLC. 1079 Tamiami Trl N #350 Nokomis, FL 34275 email: mjdubois@ducollc.com 410-924-1004	*
9	Proposer's primary contact for this proposal (name, title, address, email address & phone):	Same as above	*
10	Proposer's other contacts for this proposal, if any (name, title, address, email address & phone):	Alternative Contact: Tim Stumph, ODB President 5118 Glen Alden Drive Henrico, Virginia 23231 804-887-4501 email: tstumph@odbco.cm	*

Table 2A: Financial Viability and Marketplace Success (50 Points)

Line Item	Question	Response *
-----------	----------	------------

11	Provide a brief history of your company, including your company's core values, business philosophy, and industry longevity related to the requested Solutions.	The Old Dominion Brush Company (ODB) was founded in 1910 by Henry Brizzolara to produce household booms, street push brooms and small hand held brushes for sale to the general public or household goods stores. All of these brooms were handmade by filling the broom heads with straw bristles. Over the next five decades, the Company's product line was expanded and management transitioned to the next generation of the Brizzolara family. Broom manufacturing equipment was introduced and the Company expanded into the municipal street sweeper replacement broom market. In the 1960's and in the 1970's ODB began fabricating certain metal replacement parts for street sweepers, ultimately establishing a large sheet metal fabrication facility to meet growing demand. This lead to the expansion into leaf vacuum equipment parts production in the late 1980's. Today, through continued investment in the state-of-the-art metal fabrication and production equipment, ODB offers the highest quality leaf vacuum equipment and is viewed as the largest manufacturer of leaf and debris collection equipment in North America. ODB's long history of serving large and small cities, towns, counties, boroughs, villages, townships, states and other municipal customers across the country has resulted in an extremely diversified revenue base consisting of over 6,500 unique municipal customers. ODB's company philosophy: Provide quality products at competitive pricing while maintaining a safe and rewarding environment for our employees to work in. Our goal has always been, "growth through innovation". ODB is proud of their history along with the contributions they have made in their industry and are excited to take on the challenges of tomorrow. In 2017 ODB was purchased by The Alamo Group, Inc. (stock sign ALG), a publicly traded company whose various lines of commercial mowers are world-renowned for ruggedness and dependability. The Alamo Group offers ODB the financial strength and stability of a public company. Since the purchase, ODB has expanded its metal fabrication capabilities, enabling the company to become the major manufacturer of its own lines of leaf vacuum equipment. Alamo has invested heavily into ODB and this has allowed upgrades in new manufacturing equipment such as state-of-the-art laser and water-jet cutting machines for precision steel cutting and programmable robotic welding stations to meet current production demands and safety standards. In March of 2022, ODB developed a new model (DCL8031E) to satisfy a market need at equine centers for a quicker, labor-saving, and safer stall shavings clean out. In May of 2022, ARM TruckCorp LLC sold its leaf and debris vacuum product line to ODB. With the acquisition of the ARM line, ODB has enhanced its range of products and can cater to distinct market segments with tailored solutions while lowering costs through shared inventory management, combined sales efforts and optimizing buying power. As a proud subsidiary company of The Alamo Group, ODB adheres to the following Code of Business Conduct: ODB is as committed to maintaining the highest ethical standards and to conducting our business in a manner consistent with their moral and legal obligations to their customers, suppliers, employees, shareholders and the public. The Code of Business Conduct and Ethics has been approved and adopted by The Alamo Group's Board of Directors and senior management and covers such concepts as confidential and proprietary information, inventions, conflicts of interest and fair dealer, corporate opportunities, insider trading and tipping the Foreign Corrupt Practices Act, The Bribery Act 2010 and similar anti-bribery laws, antitrust compliance, export controls, fraud, confidential reporting procedures and non-retaliation measures. Please see the attached copy of The Alamo Group's Code of Business Conduct and Ethics.
----	--	---

12	What are your company's expectations in the event of an award?	As a current Sourcwell contract holder, we hope to continue to build on our past success the contract and provide vacuum debris collection solutions to all Sourcwell Members. ODB has developed a strong following with existing Sourcwell Members and they expect to build on that momentum adding to Sourcwell Membership with increased promotion of their premier partnership with Sourcwell. A newly awarded contract will allow ODB to continue to provide Members with great products at a discounted price to their existing municipal customers, grow our municipal base and open new opportunities in the educational and non-profit space. ODB has successfully increased their Sourcwell Sales every year and based on the previous years sales, the trend is still moving in that direction. 2022 SW Sales: \$7,32,269.41 2023 SW Sales: \$9,943,628.09 2024 SW Sales 1st and 2nd Qtr Only: \$5,647,462.21.	*
13	Demonstrate your financial strength and stability with meaningful data. This could include such items as financial statements, SEC filings, credit and bond ratings, letters of credit, and detailed reference letters. Upload supporting documents (as applicable) in the document upload section of your response. DO NOT PROVIDE ANY TAX INFORMATION OR PERSONALLY IDENTIFIABLE INFORMATION.	ODB is financially sound. ODB's parent company is The Alamo Group, Inc. which is a publicly traded entity. See the attached Alamo Group SEC Q3 report attached as well as the Alamo Code of Conduct.	*
14	What is your US market share for the Solutions that you are proposing?	ODB operates in product categories that are sold primarily to the municipal, state and local government market segment and to a small degree, the commercial market segment. Their market share is 72% as they are considered to be the most efficient, diverse and comprehensive units by government equipment fleets.	*
15	What is your Canadian market share for the Solutions that you are proposing?	ODB also operates in product categories that are sold that primarily include government markets in Canada. They have a large, active dealership participation in Canada. They maintain approximately 45% of the Canadian market share.	*
16	Disclose all current and completed bankruptcy proceedings for Proposer and any included possible Responsible Party within the past seven years. Proposer must provide notice in writing to Sourcwell if it enters a bankruptcy proceeding at any time during the pendency of this RFP evaluation.	ODB and its parent company, Alamo Group, have never petitioned for bankruptcy protection.	*
17	How is your organization best described: is it a manufacturer, a distributor/dealer/reseller, or a service provider? Answer the question that best applies to your organization, either a) or b). a) If your company is best described as a distributor/dealer/reseller (or similar entity), provide your written authorization to act as a distributor/dealer/reseller for the manufacturer of the products proposed in this RFP. If applicable, is your dealer network independent or company owned? b) If your company is best described as a manufacturer or service provider, describe your relationship with your sales and service force and with your dealer network in delivering the products and services proposed in this RFP. Are these individuals your employees, or the employees of a third party?	B. ODB is the manufacturer of Extreme Vac by ODB and the ARM line of equipment. The line of vacuum debris collectors are sold, serviced and supported by both dealers and the factory direct. Both ODB and their dealers work in tandem to support sales and service to the US and Canadian Sourcwell Members.	*
18	If applicable, provide a detailed explanation outlining the licenses and certifications that are both required to be held, and actually held, by your organization (including third parties and subcontractors that you use) in pursuit of the business contemplated by this RFP.	ODB holds a license issued by the Virginia Department of Motor Vehicles for the manufacturing of Motor Vehicles and Henrico County Virginia Business License. See attached	*
19	Disclose all current and past debarments or suspensions for Proposer and any included possible Responsible Party within the past seven years. Proposer must provide notice in writing to Sourcwell if it enters a debarment or suspension status any time during the pendency of this RFP evaluation.	Neither ODB or their parent company, Alamo Group have ever received a suspension or disbarment.	*

20	Describe any relevant industry awards or recognition that your company has received in the past five years.	Since ODB's last submission to Sourcewell's Solicitation (2021), they continue to lead the industry in innovation and have applied for U.S. Patent's on the following items: 06/15/2021, US-11035089-B1 System and method for efficient engine operation. 05/03/2022, US-11319683-B1 Compact material collection system. 08/02/2022, US-11399623-B2 Cable Broom. 12/13/2022, US-11523676-B2 Gutter Broom. 09/12/2023, US-11753784-B2 Compact material collection system. 09/19/2023, US-11759004-B2 Gutter Broom. 03/19/2024, US-11933006-B2 Material collection system. 04/16/2024, US-11957298-B1 System and method for efficient engine operation. 04/16/2024, US-11959236-B1 Material collection system. 07/09/2024, US-12029312-B2 Gutter broom. ODB continues to be involved and support community enhancement as corporate sponsors to McGuire Veterans Hospital, Henrico County Homeless Shelter, Community Outreach - Prison Re-Entry Program, Varina School District Supplies Program. ODB is a member of the Better Business Bureau, participates in national and local trade associations and is a member of the Rotary Club. ODB is an Association of Equipment Manufacturers (AEM) participant. AEM Manufacturing Express is a multi state, 10,000-mile bus tour highlighting member companies and their impact on the US economy and their local communities.	*
21	What percentage of your sales are to the governmental sector in the past three years?	ODB's market segment is strongly rooted in government sales. 95% of all sales are made to the government sector in the last 3 years.	*
22	What percentage of your sales are to the education sector in the past three years?	Approximately 3% of all ODB sales have been to the education sector in the past 3 years.	*
23	List all state, cooperative purchasing agreements that you hold. What is the annual sales volume for each of these agreement over the past three years?	ODB's premier Cooperative is Sourcewell, ODB no longer holds any other State or Local Cooperative Purchasing Agreements.	*
24	List any GSA contracts or Standing Offers and Supply Arrangements (SOSA) that you hold. What is the annual sales volume for each of these contracts over the past three years?	ODB does not hold a GSA Contract or any Standing Offer Arrangements.	*

Table 2B: References/Testimonials

Line Item 25. Supply reference information from three customers who are eligible to be Sourcewell participating entities.

Entity Name *	Contact Name *	Phone Number *	
Gloucester Township, New Jersey, see attached Letter	Domenic Martino, Dmartino@glotwp.com	856-228-3144 est 3114	*
City of Cleveland Tennessee	Tommy Myers, Direction of Public Works Tmyers@cleelandtn.gov	423-472-2851	*
Town of Aurora New York	Charles Snyder csnyder@townofaurora.com	716-652-7590	*
Town of Ellicott	Bob Pickett, Superintendent	716-665-2101	
City of Milford Delaware	Charlie Nordberg, Public Works	302-985-1571	

Table 3: Ability to Sell and Deliver Solutions (150 Points)

Describe your company's capability to meet the needs of Sourcewell participating entities across the US and Canada, as applicable. Your response should address in detail at least the following areas: locations of your network of sales and service providers, the number of workers (full-time equivalents) involved in each sector, whether these workers are your direct employees (or employees of a third party), and any overlap between the sales and service functions.

Line Item	Question	Response *	
-----------	----------	------------	--

26	Sales force.	Old Dominion Brush (ODB) has a well-structured sales force designed to effectively support their customers and extensive dealer network. 1. Internal Sales Representatives: ODB has four internal sales representatives who handle direct customer inquiries and support sales operations. 2. Sales Administrative Support: One individual provides administrative support to the sales team, ensuring smooth operations and handling necessary documentation. 3. Regional Sales Managers: There are three Regional Sales Managers at ODB. They are responsible for managing relationships with the dealer network across different regions and report directly to the Sales and Marketing Manager. 4. Product Specialists: The service and sales departments share two product specialists. These specialists have in-depth knowledge of ODB's product offerings and provide technical support and expertise to both customers and internal staff. 5. Parts and Service Staff: In addition to the sales team, ODB has dedicated Parts and Service staff. They support customer inquiries directly, handle service and warranty issues, and ensure the availability of necessary parts. Overall, ODB's sales force is equipped with a mix of internal sales reps, administrative support, regional managers, and product specialists, all working together to provide comprehensive support to customers and maintain strong dealer relationships.	*
27	Describe the network of Authorized Sellers who will deliver Solutions, including dealers, distributors, resellers, and other distribution methods.	ODB utilizes a US national and Canadian dealer network. The dealer listing is attached. There is also a dealer geographic coverage map attached. There are 22 independently owned US dealers that have a total of 56 dealer locations and there are two independently owned Canadian dealers with 9 locations across Canada. Salespeople from these dealerships actively call on prospective clients in their geographical areas of responsibility. I'm attaching a current map of our dealers, RSM and inside sales coverage.	*
28	Service force.	ODB employs a 14-person internal service team to support both dealers and direct customers. These employees focus on parts, warranty, service, and inventory control and report to the Operations Manager. ODB's dealer network also has dedicated service and parts teams and is required to maintain a minimum amount of inventory to support their specific customer volume and sales region. ODB's dealer network is typically the first point of contact for customers with service needs.	*
29	Describe the ordering process. If orders will be handled by distributors, dealers or others, explain the respective roles of the Proposer and others.	ODB utilizes DuCo LLC as their Sourcwell Contract Administrator to oversee proper adherence to Sourcwell's Terms and Conditions by both the ODB/ARM Dealers and ODB's Internal Sales personnel. DuCo is integral in the order process from start to finish. A Sourcwell Member or ODB/ARM Dealer will contact DuCo for initial information, contract questions and ordering. DuCo will provide the prospective dealer with a quotation meeting the Sourcwell Contract requirements and if applicable, a letter to the Member allowing them the authority to issue a Purchase Order directly to a dealer. Purchase Orders are to be made out to ODB if no Authorization Letter is issued. If the dealer is authorized and accepts the Member Purchase Order, they will fulfill the order and will invoice for the item to the Member directly. For ODB direct sales, the Member will make out the Purchase Order to Old Dominion Brush Company, LLC. ODB will fill the order, ship the order to the local dealer for pre-delivery inspection and test, the local dealer will then deliver the unit, train on the unit and ODB will invoice the item to the Member. The local dealer will receive the proceeds of the sale in their prospective territory: this will encourage dealer contract participation. DuCo will be the single source, "quarterback" for the Sourcwell Contract sale and reporting the sales to Sourcwell as required.	*

30	Describe in detail the process and procedure of your customer service program, if applicable. Include your response-time capabilities and commitments, as well as any incentives that help your providers meet your stated service goals or promises.	ODB's customer service process is designed to provide comprehensive support through robust inventory management, active engineering involvement, and forward-looking digital tools: 1. Inventory and Shipping: ODB has heavily invested in a well-stocked parts inventory and a same-day shipping program. This ensures rapid response and fulfillment for customers, reducing downtime and maximizing productivity. Both our factory and dealer network maintain parts levels that meet our customers' needs, supported by incentives that encourage deep discounts on stock orders. This includes customer discounts for maintaining their own parts inventories. 2. Self-Reliant Manufacturing: ODB manufactures 80% of our leaf vacuum components in-house, reducing dependence on third-party suppliers and maintaining consistent availability for parts and equipment. During supply chain disruptions like the pandemic, ODB's self-reliance allowed them to continue delivering machines and parts without delays, minimizing downtime for end users. 3. Engineering Field Support and Continuous Improvement: When complex issues arise that go beyond standard sales support, ODB's engineering team steps in to assist. Engineers travel to the field to address technical challenges directly, bridging the gap between customer needs and product design. This hands-on feedback loop allows ODB's team to incorporate insights from field performance directly into the production facility, ensuring ODB's designs evolve for better support and usability. 4. Digital Parts Management with eCommerce Launch: ODB is rolling out an eCommerce platform featuring individualized build sheets for each machine. These online build books streamline the process by integrating with a unified parts database, removing the need for redundant parts book updates and enhancing accuracy. This system references consistent part numbers across service parts, with increasing clarity and detail as the database grows.	*
31	Describe your ability and willingness to provide your products and services to Sourcewell participating entities.	ODB currently commands the majority market share throughout the United States and is willing to provide products, parts and service to all Sourcewell participating entities.	*
32	Describe your ability and willingness to provide your products and services to Sourcewell participating entities in Canada.	ODB currently holds the majority market share throughout Canada utilizing the Canoe contract process in Canada and is willing to provide products, parts and service to all Canadian Sourcewell participating entities.	*
33	Identify any geographic areas of the United States or Canada that you will NOT be fully serving through the proposed agreement.	ODB expects to sell, service and support their products within all the United States and Canada and does not anticipate any geographic area that will not be fully serviced.	*
34	Identify any account type of Participating Entity which will not have full access to your Solutions if awarded an agreement, and the reasoning for this.	ODB expects to sell, service and support their products to all participating entities.	*
35	Define any specific requirements or restrictions that would apply to our participating entities in Hawaii and Alaska and in US Territories.	There will be no restrictions in sales, service and support to Hawaii, Alaska and in US Territories other than the expense and time allowance for shipping. All quotations will show the costs involved prior to a Member issuing a Purchase Order so there are no surprise fees after the sales.	*
36	Will Proposer extend terms of any awarded master agreement to nonprofit entities?	ODB will consider and evaluate individual requests for extended terms on a case by case basis.	*

Table 4: Marketing Plan (100 Points)

Line Item	Question	Response *	
-----------	----------	------------	--

37	Describe your marketing strategy for promoting this opportunity. Upload representative samples of your marketing materials (if applicable) in the document upload section of your response.	ODB's marketing strategy for this cooperative purchasing contract combines dedicated training, strong visual branding, and targeted outreach to increase awareness and accessibility of Sourcewell's benefits: 1. Comprehensive Sales Training: ODB provides extensive training for both their sales team and dealer networks, collaborating with DuCo, our Contract Administrator, and leveraging Sourcewell's robust resources. Through a mix of group sessions and tailored virtual meetings, DuCo's seasoned approach—shaped by over a decade of successful training in contract sales—ensures ODB's teams are well-versed in Sourcewell benefits. Additionally, ODB motivates their sales staff and dealers to participate in Sourcewell's regional training events, helping to deepen their knowledge and response capabilities. 2. Distinct Sourcewell Branding: ODB's Sourcewell partnership is highlighted prominently across multiple platforms. The Sourcewell Awarded Contract logo is consistently incorporated into ODB's brochures, website, and product materials to make clear their commitment to this exclusive contract. At trade shows, Sourcewell-branded banners signal to customers that ODB provides seamless, contract-based procurement options, allowing buyers to readily identify ODB as a Sourcewell supplier. 3. Industry Presence and Strategic Outreach: ODB's marketing extends to the most influential trade shows, including APWA's PWX, WasteExpo, and ConExpo, as well as key trade publications such as The Municipal and American Infrastructure. These channels allow ODB to reach a broad municipal audience and emphasize Sourcewell's streamlined purchasing benefits. 4. Customer Support and Education: To ensure ODB's customers fully understand Sourcewell's value, ODB encourages regular engagement with their dedicated Sourcewell Supplier Development Executive, who offers expert guidance and answers any questions about Sourcewell's procurement advantages. This dedicated support is central to ODB's commitment to a seamless, informative buying process for all Sourcewell members.
----	---	---

38	Describe your use of technology and digital data (e.g., social media, metadata usage) to enhance marketing effectiveness.	ODB leverages a range of digital marketing strategies to optimize its marketing performance and enhance customer engagement. The following outlines the key techniques utilized: 1. Website: ODB provides interactive features on its website, allowing customers to find answers to their queries or connect with ODB representatives by completing a simple request form on product pages. These inquiries are directed to sales or service teams and logged in the company's CRM system. Additionally, ODB utilizes Google Analytics to monitor user behavior, track how visitors access the website, and optimize the site's effectiveness accordingly. 2. Search Engine Optimization (SEO): ODB optimizes its online content to improve visibility on search engines like Google. By targeting keywords related to debris vacuum products, ODB aims to secure top positions in search results, increasing its online exposure. 3. Content Marketing: ODB fosters strong relationships with its target audience by consistently delivering high-quality, relevant content. This approach builds trust and positions ODB as a valuable resource for its customers. 4. Search Engine Marketing (SEM): ODB engages in search engine marketing through Google AdWords, bidding for ad placements in Google's sponsored search links. This ensures that when users search for keywords related to ODB's offerings, relevant ads are prominently displayed. 5. Social Media Marketing: ODB actively promotes its products and services through social media channels, both organically and through paid advertisements. The company utilizes platforms such as Facebook, LinkedIn, and YouTube to enhance brand recognition, foster customer loyalty, and drive traffic to its website. 6. Email Marketing: ODB uses email as an efficient tool for customer service, enabling quick responses to specific needs or inquiries. Through targeted email campaigns, such as monthly sales newsletters, dealer product bulletins, and service updates, ODB maintains a strong presence with customers and prospects who have expressed interest in ongoing communication. 7. Re-marketing: ODB employs re-marketing strategies to target individuals who have previously visited its website. Using cookie technology, ODB ensures that ads for the products these visitors researched appear on other websites they visit, reinforcing brand recall and encouraging return visits. 8. Business-to-Business Software (GenAlpha): ODB has introduced a dedicated B2B platform, GenAlpha, where customers, dealers, and municipalities can order parts, brooms, and even configure and purchase complete products. The software also manages warranty information, serial numbers, and model details for future claims, streamlining the post-purchase experience. 9. Targeted Digital Marketing Program: ODB has implemented a focused digital marketing initiative aimed at re-engaging past customers who have not made a purchase in the last three years. This program is designed to re-establish relationships and encourage repeat business. 10. Government Bid Notifications: ODB has expanded its presence on digital platforms that notify the company of open government bids relevant to its products. This proactive approach ensures ODB remains competitive and informed about new opportunities in the public sector. By employing these advanced digital marketing tactics, ODB continues to enhance its market reach, engage with its audience effectively, and drive business growth.
----	---	--

39	In your view, what is Sourcewell's role in promoting agreements arising out of this RFP? How will you integrate a Sourcewell-awarded agreement into your sales process?	Sourcewell has proven expertise in promoting their contracts which has been reflected in the growth of Sourcewell Contract Sales. ODB's team has a strong working relationship with Sourcewell's team members responsible for managing the existing contract, and they value the shared commitment to customer service that underpins the long-standing partnership. ODB appreciate Sourcewell's presence at trade shows, "Getting to Know You" events, and Sourcewell University events, which strengthen ODB's visibility and engagement in the cooperative purchasing space. Additionally, Sourcewell has supported educational webinars and informational sessions to keep members informed. ODB's Commitment to the Sourcewell Buying Concept: ODB fully supports the Sourcewell contract buying model, which ODB sees as the future of their industry. At their National Dealer Meetings, ODB dedicates training sessions exclusively to Sourcewell sales education, covering how to effectively leverage the contract, address questions, and highlight success stories from dealers. ODB has embraced the flexibility of Sourcewell contracts, and most of the dealers now lead with this contract in the buying process. To further support this initiative, ODB has sent senior management to events like the H2O Conference annually and subsidized contract fees to make the Sourcewell contract even more appealing to the dealer network. ODB's growth in contract sales, almost 10% a year over the last three years is a testament to the aligned commitment between Sourcewell and ODB to provide top-tier products, service, and discounts to ODB's customers and Sourcewell Members. Additional Sales Integration Efforts ODB has also established Breakout Sessions at ODB's National Dealer Meetings, focusing on pricing strategy to ensure consistency and competitiveness. To support the dealers, ODB has developed a secure "Dealer Only" website that houses essential Sourcewell contract documents, pricing, fees, and terms and conditions, giving them easy access to everything they need to sell through this contract.	*
40	Are your Solutions available through an e-procurement ordering process? If so, describe your e-procurement system and how governmental and educational customers have used it.	ODB is launching an e-procurement site GenAlpha. This site was initially launched for parts ordering for the dealers. A product configurator option will be launched for dealers to aid in efficient and accurate order entry. Currently, ODB has not launched a site for use by end customers.	*

Table 5A: Value-Added Attributes (100 Points)

Line Item	Question	Response *	
41	Describe any product, equipment, maintenance, or operator training programs that you offer to Sourcewell participating entities. Include details, such as whether training is standard or optional, who provides training, and any costs that apply.	ODB provides a thorough training initiative for their products. Immediately upon delivery of a unit an end user, an ODB authorized dealer will provide training on site during the time of delivery. This consists of operations and maintenance. If a member would like more extensive training, they can initiate that request to their local delivering dealer. Many independent dealers offer maintenance agreements for the products they represent and those services can be negotiated directly with that prospective dealer. ODB has training DVD's, and YouTube Videos that include operations, maintenance and safety available at no charge. There can also be video conferencing organized upon customer request.	*

42	Describe any technological advances that your proposed Solutions offer.	ODB's Commitment to Technological Advancement and Innovation: ODB (Old Dominion Brush Company) has been a leader in municipal equipment innovation for over a century, consistently advancing technology to meet evolving industry needs. With several technical innovations and pending patents, ODB continues to set the standard in debris collection and street sweeping. CAN-Controlled Engines and In-Cab CAN Controls: ODB utilizes Controller Area Network (CAN) technology to streamline operations, incorporating CAN controls on its 74HP John Deere diesel, 87HP Kubota gas, and 99HP John Deere diesel engines. This setup simplifies wiring and enables enhanced features such as remote throttle control, safety interlocks, and automatic shutdowns like clutch disengagement. The DCL800SM model, for instance, features in-cab CAN controls that allow for single-person operation, engine diagnostics, and critical safety functions—all from the safety of the truck cab. Eco Mode: ODB's Eco Mode is an innovative, patented feature that enhances efficiency by monitoring equipment status. It automatically adjusts RPM based on boom position or leaf presence in the intake duct, maximizing productivity while reducing fuel consumption by idling down when full power isn't needed. This helps reduce total energy consumption by 30-50%, particularly important given that fan horsepower demand increases exponentially with speed. Turn-Key Hooklift Package for Year-Round Flexibility: In collaboration with Alamo Snow and Ice, ODB now offers a turnkey hooklift package that adapts easily for all-season use, including leaf collection, snow and ice management, and general hauling. ODB has engineered the truck configuration to simplify setup for municipalities, minimizing costly configuration errors and speeding up acquisition. Impeller and Shredder Fan Innovations: ODB has continually refined its impeller and fan designs to improve longevity, performance, and maintenance ease. The company's redesigned fans feature fewer parts and reduced weld requirements, thanks to finite element analysis (FEA). Additionally, the impellers now incorporate a shredding capability with scalloped and toothed blade ends, allowing for smaller debris particles and higher compaction rates. This means more efficient debris collection and fewer trips to disposal sites. To support maintenance, ODB recently introduced a fan removal tool, which, combined with swing-away maintenance access, reduces fan replacement time from 8 hours to 1.5 hours on models like the DCL1000. Virtual Dual Steer System: In response to the rising cost of dual-steering setups, ODB developed a high-definition camera system that provides drivers with a curb-side perspective without requiring a dual-steer installation. This "virtual" dual steer has increased chassis compatibility for ODB equipment, easing integration and enhancing safety. Proportional CAN Boom Controls: The DCL800SM25 model uses proportional joysticks that communicate with power distribution via CAN messaging, enabling smooth, precise boom control. This CAN-based approach allows for easier operation and fine-tuned handling of the boom, increasing both productivity and user control. Efficient Hydraulic Systems: ODB's advanced hydraulic systems include a closed-loop hydrostatic fan drive on models like the DCL1000, reducing hydraulic oil usage and boosting efficiency. The hydraulic valves are non-proprietary and pressure-compensated, ensuring precise, proportional control and long-term reliability. Efficient Fan Production Process: ODB's commitment to innovation extends to manufacturing, where redesigned fans now require fewer parts and welds, lowering production costs and energy usage. Robotically welded, stress-relieved, and dynamically balanced, these fans are built to ensure high quality and long-lasting performance. By focusing on customer needs and investing in cutting-edge technology, ODB remains committed to delivering efficient, reliable, and versatile equipment for municipalities across the country.
----	---	---

43	Describe any "green" initiatives that relate to your company or to your Solutions, and include a list of the certifying agency for each.	ODB integrates numerous "Green Initiatives" into the design of their equipment, enhancing recycling and composting programs for yard waste. ODB's vacuum debris collectors are designed to minimize landfill contributions and promote effective composting. Optimized Impeller ODB's impellers are precisely matched to the horsepower of the engine in the debris system. They optimize their weight, airflow inertia, and size to achieve the most efficient performance throughout the engine's power range. Efficient Impeller Production: ODB impellers are laser-cut from metal, ensuring minimal wear and distortion. They are weighed, sorted, and robotically welded to create a balanced fan. ODB's robotic welding delivers highly consistent results, while dynamic balancing with custom hardware and software ensures optimal engine life. ODB's use a sub-harmonic vibratory stress-relief process, which avoids the thermal side effects common in traditional heat-treating methods. This green alternative, endorsed by the U.S. Department of Energy, cuts carbon emissions and energy consumption by up to 98% and significantly reduces weld cracking. This process enhances the durability of our equipment, which is crucial for withstanding the demanding conditions of leaf season. Load Sense: Our Load Sense feature helps prevent overloading, removing the risk of operator error and reducing the energy required to transport an overloaded unit. Height Sense: The Height Sense system automatically adjusts the boom height over debris, while the operator controls two axes with a joystick. This ensures optimal positioning and a more consistent flow through the system, reducing energy consumption by 10-30% and minimizing operator error. Shredding Fan: ODB's shredding impeller grinds debris into a 30% finer mulch using the same energy as a standard impeller. This finer mulch accelerates the decomposition process, making it ready for use as mulch or compost. Star Impeller: Our Star Impeller design reduces the number of parts needed, requiring less energy for cutting, welding, and positioning. This design also allows for robotic welding and creates a more durable impeller that resists fatigue. Single Operator Units: ODB is pioneering technology that allows our equipment to be operated by a single person, compared to the previous requirement of a four-person crew. Features like right-side drive and full in-cab operation enhance visibility and efficiency. Hook Lift Units: Our debris collectors are versatile, using a hook lift system to switch between various configurations such as dump trucks or spreaders. This allows the same chassis to be used year-round for multiple applications. Value Engineering: ODB invests in its engineering team to redesign weldments and assemblies, reducing parts and energy use while maintaining or improving structural integrity. For example, a weldment used in 70% of our machines was streamlined from 32 parts to just two. Environmental Commitment: ODB's products use auxiliary engines that meet the highest EPA emissions standards. Their manufacturing facility actively participates in steel and cardboard recycling programs and utilizes LED lighting to further reduce their environmental impact. Patents 8/2020: U.S. Patent Application for Efficient Engine Operation: This system optimizes energy consumption by over 70% for vacuuming debris, using advanced sensors and logic to determine the precise vacuum needed. It is featured in several 2020 models and has received positive feedback from users. · 10/21/2020: U.S. Patent Application for Non-CDL Patent: This innovation addresses the challenges of transporting bulky material collection equipment by creating a compact, efficient system that can be operated by a light-duty vehicle, reducing energy consumption and eliminating the need for a commercial driver's license. Newsweek awarded Alarm Group, ODB's parent company, as one of the Greenest Companies in America 2025. See attached document hyperlink. ODB and Alamo Group are committed to sustainable power, 20% of ODB's energy consumption is generated from wind and solar courtesy of Duke Power.
----	--	--

44	Identify any third-party issued eco-labels, ratings or certifications that your company has received for the Solutions included in your Proposal related to energy efficiency or conservation, life-cycle design (cradle-to-cradle), or other green/sustainability factors.	ODB's fans have been certified by two of their national partners, Kubota and John Deere. These certifications confirm that the performance curves of ODB's fans enhance engine efficiency and contribute to reducing operational costs. ODB also has its Fan Balancing equipment certified annually to guarantee that every fan meets high-quality standards, whether it is shipped with a debris collector or sold as an aftermarket part. The engines used by ODB are EPA CARB certified. CARB-compliant equipment generates fewer harmful emissions, toxins, and particulates, leading to cleaner and safer air quality. ODB utilizes fuel tanks produced by Domestic, LLC, which have been certified by the California Air Resources Board under Executive Order RM-17-012B for Spark-Ignition Marine Watercraft Evaporation Emissions. (ca.gov) Chassis purchased by ODB (Freightliner, International, Peterbilt, Isuzu) are "Certified Clean Idle." This certification ensures that the engines produce minimal pollutants while idling, helping to reduce overall environmental impact and maintain better air quality. ODB has built a unit utilizing 100% EV chassis. This unit is in test and expected to be offered on contract in early 2025.
----	--	--

*

45	What unique attributes does your company, your products, or your services offer to Sourcewell participating entities? What makes your proposed solutions unique in your industry as it applies to Sourcewell participating entities?	Since 1910, Old Dominion Brush (ODB) Company has been a trusted leader in municipal equipment manufacturing, with over a century of expertise in street sweepers and debris collection solutions. ODB's depth of knowledge and commitment to excellence set it apart in the industry. They continuously innovate to develop products that meet and exceed their customers' evolving needs. Through a well-established dealer network, each Sourcewell member can depend on dedicated service to keep their equipment running reliably. Unlike other manufacturers in the field, ODB offers an unmatched product portfolio. Rather than simply selling what's available, ODB's goal is to recommend the right debris collector tailored to each customer's unique application. With a range of 12 models—including both truck-mounted and trailer-mounted options—ODB is equipped to address a wide array of customer needs. As a proud U.S. manufacturer, ODB builds 90% of its products domestically, reinforcing their commitment to quality and local production. ODB's Latest Innovations Include: Eco Mode: This feature reduces energy consumption automatically when full power isn't needed, without requiring operator input. Since fan horsepower is the primary energy draw, and its demand increases exponentially with fan speed, Eco Mode minimizes fan speed as needed, reducing total energy consumption by 30-50%. EV chassis from utilized the newest CARB requirements. ODB now makes products that meet requirements for the entire US and plans to offer this to Sourcewell Members in early 2025. No other supplier of debris equipment offers this wide a variety of products to meet Sourcewell Members needs. Turn-Key Hooklift Package: In partnership with Alamo Snow and Ice, ODB now offers a year-round, all-season hooklift solution. This package enables municipalities to easily switch between attachments for leaf collection, snow and ice management, and flat or dump beds. ODB has done the engineering work, simplifying acquisition and reducing the chance of costly setup errors. Impeller Design Improvements: ODB continues to refine its impeller for greater durability, performance, and ease of maintenance. A recently introduced fan removal tool significantly reduces replacement time, particularly in the DCL1000 model, where fan replacement now takes just 1.5 hours instead of 8, thanks to a swing-away access to the fan housing. Virtual Dual Steer: This high-definition camera system gives drivers a curb-side perspective without the need for traditional dual-steering installation, which is becoming prohibitively expensive. This innovation has made it easier to source compatible chassis each year. Efficient Hydraulic Systems: ODB's DCL1000 model features a closed-loop hydrostatic fan drive that reduces hydraulic oil usage and maximizes efficiency. Across all models, ODB uses a reliable, pressure-compensated, non-proprietary hydraulic valve for precise control and optimal performance. After identifying the market needs of equine centers for quicker, labor-saving, and safer stall shavings clean-outs, ODB assessed their product portfolio for a suitable base model to adapt. The DCL8031E self-contained trailer was selected as it meets these requirements due to its narrow design, which allows it to fit down stable aisles, and its cost-effectiveness to align with the generally lower capital budgets of equine facilities compared to other units. To further tailor it to equine operations, ODB added a 25-foot extension hose for enhanced reach into stalls and a specialized maneuverable nozzle designed for efficient operation within confined spaces—features that are not typically necessary for municipal leaf collection. These adaptations make the 8031E an ideal solution for the equine stall clean-out market. The acquisition of ARM's Leaf and Debris Vacuum product line enhances ODB by creating synergies across product lines, which reduces lead times and lowers costs through shared inventory management, combined sales efforts, and optimized fixed costs. This integration enables ODB to provide greater value to a broader customer base. ARM TruckCorp LLC sold its Leaf and Debris Vacuum product line to ODB. ODB will continue to manufacture and sell the trailer, roll-off, and chassis-mount machines in the product line, including spare parts and service support, under the ARM name. For Sourcewell, this means that ODB can now offer a more versatile range of products, catering to distinct market segments with tailored solutions. While the ODB line is feature-rich, allowing for cost-effective maintenance with replaceable parts, the ARM line offers a simpler design with larger weldments, making it ideal for municipalities that prefer to perform in-house repairs. This distinction allows ODB to meet varied customer needs, from municipalities seeking robust, easy-to-maintain equipment to those needing cost-effective solutions with adaptable service options.
----	---	---

46	Describe the safety features your equipment offers such as emergency stop, operator presence control, roll over protection systems, guarding, noise reduction, stability controls, warning lights, etc.	ODB designs its equipment with operator and public safety as a top priority, drawing from customer feedback, industrial best practices, and sound engineering principles. The equipment includes several safety features designed to enhance operator control, reduce risks, and simplify maintenance. ODB sells 50% of its products as a single person operated unit. These units are mounted on a chassis with dual steering to keep the operator out of harms way and in an environmentally and climate controlled cab with all safety features of seat belts, roll over protections, HIPA filters and noise reduction and vibration reduction systems installed. Safety Interlocks: the units are equipped with interlocks that ensure the machine is in the correct configuration before engaging key functions, such as operating the fan, initiating the dump cycle, or performing maintenance tasks. Emergency Stop Functionality: On truck-mounted units, emergency stop buttons are available for remote shutdown from the cab, allowing operators to disable the machine quickly and safely if needed. Comprehensive Guarding: Guarding is applied around areas with potential pinch points and rotating shafts to prevent accidental contact where possible. Enhanced Visibility: Each unit comes with stock strobe lights and conspicuity tape on moving parts to increase visibility and alert others to the machine's presence. Improved Maintenance Safety: New features, such as a door prop, allow operators to secure the door without needing additional assistance. Additionally, bottom exhaust screens are designed for tool-free cleaning, simplifying the process and eliminating the need to remove parts. Ground-Level Maintenance Access: The DCL1000 model is designed for maintenance tasks to be performed from ground level, reducing the need for operators to climb or use ladders for routine part replacements. Dust Suppression System: Included as a standard feature on the DCL1000 and as an option on other models, the dust suppression system redirects dust downward, minimizing airborne particles as the material leaves the collection box and improving air quality around the unit. Through these safety features, ODB ensures that its equipment is built for safe, efficient operation, prioritizing both operator well-being and public safety.
47	Describe any ergonomic features your equipment has such as anti-vibration, suspension and swivel seating, adjustable handles, ergonomic control layout for ease of reach, padded shoulder straps or harnesses, easy pull-start cords, etc.	ODB designs its equipment with operator comfort and ease of use in mind, incorporating a range of ergonomic features to enhance productivity and reduce fatigue. Integrated Joystick Mounting: The operator's joystick is mounted on the armrest inside the truck cab, moving seamlessly with the air-ride seat. This "Deluxe" seat offers full adjustability, robust support, and advanced air suspension, promoting comfort over long shifts. Upgraded Dual Steer System: With the latest Freightliner M2 Plus, ODB's premium dual steer system provides increased legroom and greater space for the operator to maneuver the steering wheel, creating a more comfortable driving environment. Secure Access with Enhanced Safety: All equipment includes strategically placed grab handles to enable three points of contact at all times. Operator steps are wide and grated, ensuring stable footing and reducing foot pressure, even in wet conditions. Optional Wireless Bellypack for Remote Operation: For remote control, a wireless bellypack is available as an upgrade, allowing the operator to run the machine from the comfort of the truck cab. This option provides a quiet, climate-controlled environment protected from external elements. Ergonomically Designed Nozzle Controls: ODB's nozzle controls have evolved to ensure easy operation with minimal strain. The in-cab joystick features a low-pressure deadman trigger, allowing operators to maintain a secure grip throughout the day without experiencing hand fatigue. By prioritizing ergonomics, ODB delivers equipment that not only enhances operational efficiency but also promotes the long-term well-being of its operators.

48	Describe features your equipment offers that positively impact the environment such as low-emission engines, battery powered and electric, eco-mode settings, biodegradable fuel use, water conservation technology, solar powered charging capability, smart technology, auto-shut off/no-idling systems, etc.	ODB is committed to reducing environmental impact through innovative technology and energy-efficient design in their equipment. Eco-Mode for Energy Efficiency: ODB's pioneering Eco-Mode technology automatically reduces fan speed when active input isn't needed, resulting in energy savings of 30-50%. This seamless feature conserves fuel and reduces emissions without requiring operator intervention. Single-Engine Configuration: ODB's single-engine models eliminate the need for an additional auxiliary engine, reducing both fuel consumption and maintenance demands. This design improvement minimizes the equipment's overall carbon footprint and streamlines operation. Electric Chassis Option: ODB's offer models with fully electric chassis, eliminating the need for a traditional diesel-powered engine for propulsion. This electric option reduces greenhouse gas emissions and supports municipalities striving to meet sustainability goals. Through these features, ODB continues to lead in environmentally conscious design, providing municipalities with effective solutions that reduce resource consumption and emissions
49	Describe the serviceability of the products included in your proposal (parts availability, warranty and technical support, etc.)	ODB prioritizes their customers' ability to have sustainable, serviceable, productive equipment and operational efficiency. Their in-stock parts availability is second to none. They have 90% of parts shipped within 48 hours and 80% within 24 hours. All of the product manuals are posted to the ODBco.com website and, with additional log-in credentials, Sourcewell Members have access online to: ·Hydraulic schematics ·Electrical schematics ·Dealer territory maps ·Parts price list ·Warranty claim forms ·Parts Return Authorization Forms ·Product literature ·Long-term and cold-weather storage guides for both John Deere and Kubota engines ·Winterization and general maintenance materials ·Kubota/John Deere warranty information ·Isuzu extended warranty information ·Unit Wear Item Quick List Comprehensive E-Commerce and Technical Support: ODB's e-commerce platform captures the knowledge of our service team, allowing customers and dealers to search for parts by serial number to ensure accuracy. It also includes access to technical service bulletins, making it a valuable resource for troubleshooting and product maintenance. Dedicated Customer Service and Technical Support Team: ODB's support team includes three dedicated customer service representatives, three warranty administrators, and five engineers available for complex service and warranty issues. This team provides expert assistance to keep equipment running smoothly and addresses technical concerns as they arise. On-Site and Dealer Training Programs: When needed, their service team conducts on-site training to ensure optimal use and maintenance of equipment. Additionally, we host annual sales and service training for dealership partners, enhancing their knowledge of new equipment features and best practices for field support. With these features, ODB provides an unmatched level of service and support, ensuring our customers and dealer partners can rely on them for quick, reliable assistance and streamlined parts access.

Table 5B: Value-Added Attributes

Line Item	Question	Certification	Offered	Comment
-----------	----------	---------------	---------	---------

50	Select any Women or Minority Business Entity (WMBE), Small Business Entity (SBE), or veteran owned business certifications that your company or hub partners have obtained. Upload documentation and a listing of dealerships, HUB partners or resellers if available. Select all that apply.		☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC, to administer any awarded Sourcewell Contract.	*
51		Minority Business Enterprise (MBE)	☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC to administer any awarded Sourcewell Contract.	*
52		Women Business Enterprise (WBE)	☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC to administer any awarded Sourcewell Contract.	*
53		Disabled-Owned Business Enterprise (DOBE)	☐ Yes ☒ No	N/A	*
54		Veteran-Owned Business Enterprise (VBE)	☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC to administer any awarded Sourcewell Contract.	*
55		Service-Disabled Veteran-Owned Business (SDVOB)	☐ Yes ☒ No	N/A	*
56		Small Business Enterprise (SBE)	☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC to administer any awarded Sourcewell Contract.	*
57		Small Disadvantaged Business (SDB)	☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC to administer any awarded Sourcewell Contract.	*

58		Women-Owned Small Business (WOSB)	☒ Yes ☐ No	Most of the local dealers that will be involved in this process are SBE, MBE, WMBE, HUB Zone or Veteran owned businesses. The actual participation of each will be dictated by the customer's delivery area. The actual local entity status will be provided to the customer upon request prior to the order being placed. ODB is also utilizing a Small Disadvantaged Woman Owned Business, DuCo, LLC to administer any awarded Sourcewell Contract.	*
----	--	-----------------------------------	--	---	---

Table 6: Pricing (400 Points)

Provide detailed pricing information in the questions that follow below.

Line Item	Question	Response *	
59	Describe your payment terms and accepted payment methods.	Payment terms are net 30 unless otherwise arranged prior to purchase on a case-by-case basis.	*
60	Describe any leasing or financing options available for use by educational or governmental entities.	ODB does utilize municipal and non-profit leasing through third party vendors if there is Member interest. ODB does not quote rates or terms for leasing, however it should be known to Members that we have this service available to them. ODB will work with other Sourcewell Awarded Vendors or any leasing agency of the Members Choice.	*
61	Describe any standard transaction documents that you propose to use in connection with an awarded agreement (order forms, terms and conditions, service level agreements, etc.). Upload all template agreements or transaction documents which may be proposed to Participating Entities.	See the attached Sample Sourcewell Quote	*
62	Do you accept the P-card procurement and payment process? If so, is there any additional cost to Sourcewell participating entities for using this process?	ODB will accept the P-Card or credit cards for all members with no fees for parts. P-card will not be acceptable for leaf vac units.	*
63	Describe your pricing model (e.g., line-item discounts or product-category discounts). Provide detailed pricing data (including standard or list pricing and the Sourcewell discounted price) on all of the items that you want Sourcewell to consider as part of your RFP response. If applicable, provide a SKU for each item in your proposal. Upload your pricing materials (if applicable) in the document upload section of your response.	It is ODB's intent to offer a percentage discount from the manufacturer's base unit list price on every model to Sourcewell Members. ODB mounts some of their products on commercial truck chassis. In order to provide the customer with convenience, faster delivery times and the best pricing available, ODB will offer these truck chassis with no profit associated or a a Pass-Through price. This will enable the Member to utilize quantity discounts that are offered by the chassis manufacturer to body manufacturers. ODB purchases chassis with substantial quantity discounts because they use the buying power of all Alamo Group Companies (Alamo is the parent company of 13 manufacturers including ODB). ODB will allow the customer to supply their own chassis in which to mount the body also.	*
64	Quantify the pricing discount represented by the pricing proposal in this response. For example, if the pricing in your response represents a percentage discount from MSRP or list, state the percentage or percentage range.	ODB is proposing a 4% discount from the base model unit MSRP for all of their models.	*
65	Describe any quantity or volume discounts or rebate programs that you offer.	ODB is proposing an additional discount for volume purchases. There will be an additional 1% discount off the base unit price for a single purchase order for 4 or more units. ODB does not offer any rebate programs at this time.	*
66	Propose a method of facilitating "sourced" products or related services, which may be referred to as "open market" items or "non-contracted items". For example, you may supply such items "at cost" or "at cost plus a percentage," or you may supply a quote for each such request.	It is ODB's intention to cover all items available on their commercial price lists. ODB does realize, from time to time, there may be individual member requirements that will not be listed. ODB will provide any items "specific" to Sourcewell Member's needs that they are able to. If a Member's specific need is a type of product, ODB will handle such items as a SOR (Special Order Request). The pricing for SOR items will be cost plus 25%. Each SOR request may require engineering, design and/or require technical review. These items will be priced as labor hours added into the cost of the item. Prior to accepting an order with Open Market items from a Sourcewell Member, ODB will discuss the availability and price of a specific item. Any documentation of cost that ODB can provide for these items will be presented on an individual basis when requested.	*

67	Identify any element of the total cost of acquisition that is NOT included in the pricing submitted with your response. This includes all additional charges associated with a purchase that are not directly identified as freight or shipping charges. For example, list costs for items like pre-delivery inspection, installation, set up, mandatory training, or initial inspection. Identify any parties that impose such costs and their relationship to the Proposer.	There are several costs not included in the pricing submitted in this proposal. These costs are listed below: Freight and Delivery: Freight costs will be pre-paid and added to the Members Quote and Invoice. Small items will be, in most cases, delivered by UPS. Other freight carriers may be utilized in shipments, i.e. Federal Express, DHL, common carrier for truck freight and drive-a-way service. Because of the quantity of items shipped by ODB, ODB receives a substantial discount. Members will be able to utilize this discount if requesting shipment to their location. Members may also use their own transportation. Minimal handling fees may be added where special packaging is required. The Member will be notified of these charges if applicable prior to order placement. Federal Excise Tax: ODB is required by law to collect Federal Excise Tax on any truck mounted unit rated above 33,000 GVW. This tax will be added to the customer invoice as a separate line item. ODB will pay this tax directly to the Internal Revenue Service. The rate of tax is calculated at 12%. Most municipal and non-profit entities are exempt from this tax. If ODB is provided a Federal Excise Tax Exemption Certificate, they will not be required to collect this tax. Mounting Fee: This fee is charged to the customer when ordering a truck mounted or hook lift type unit. Mounting fees cover the cost of the mounting of the body on the desired truck chassis or hook lift. Federally Mandated Items: The cost of any federally mandated items will be passed on to the Member. ODB's pricing includes any federally mandated items that are mandated at the time of this proposal. Should there be a Federal Mandate after the date of this proposal, any cost incurred to meet the requirements of this mandate will be passed on to the member. Any costs applicable will be provided to the Member prior to any Purchase Order being issued. This fee would typically be charged to meet any future EPA standards that may arise. An example of such costs would be in meeting Federal Emission Standards. Local Dealer Pre-Delivery Inspection, On Site Training, and Local Delivery Fees: These costs are charged by local dealers to inspect, test, in service the unit, local extended delivery and follow up training. These costs are a pass through cost to the member from the local dealer.	*
68	If freight, delivery, or shipping is an additional cost to the Sourcewell participating entity, describe in detail the complete freight, shipping, and delivery program.	All freight charges are pre-paid and added to the Member quotation for convenience. Members always have the choice of picking up the units at the factory or retain a 3rd party of their choice to deliver the equipment. ODB has negotiated quantity-discounted shipping rates that members can take advantage of. Most offered items are custom built to customer specification. Anticipated delivery of items ordered on a stock chassis or customer supplied chassis is expected to be 45-90 days after receipt of order or customer chassis. Anticipated delivery of an item ordered on a "special order" chassis is expected to be 120-180 days after receipt of order; however, this time can vary greatly depending upon chassis manufacturer back log. Delivery of truck mounted units will be pre-paid and added to Member Quotation and Invoice. Both "Drive-A-Way" service and common carrier service will be used.	*
69	Specifically describe freight, shipping, and delivery terms or programs available for Alaska, Hawaii, Canada, or any offshore delivery.	The shipping and delivery charges for Canada, Alaska and Hawaii and any other off shore location are the same as the previously stated delivery programs for the contiguous US. The shipping charges to the port location will be calculated in the same manner. If the customer wishes ODB to deliver via ocean transport, ODB will pass on the negotiated shipping rates that they will pay to the ocean transport carrier to the Member. It has been their experience that the customers in these locations usually have their own negotiated rates with shipping carriers. If this is the case, ODB will provide the customer shipping to their desired port and provide the customer with the appropriate documentation required. ODB strives to provide the equipment as customer specified and to their satisfaction upon delivery.	*

70	Describe any unique distribution and/or delivery methods or options offered in your proposal.	As stated above, ODB does have negotiated, competitively bid freight pricing. Most of the ODB Dealers do have units in stock and Member's can purchase those units to enhance delivery times and in some cases better prices for any previous year's inventory.	*
71	Specifically describe any self-audit process or program that you plan to employ to verify compliance with your proposed agreement with Sourcewell. This process includes ensuring that Sourcewell participating entities obtain the proper pricing.	ODB builds in an automatic audit process. DuCo, LLC, being the proposed Contract Administrator and single source for Sourcewell quotations, allows for this self-audit process. ODB will not have to rely on multiple reports from individual dealerships for an accurate accounting of sales. DuCo will have the ability to account for every sale at time of order. There is no after-the-fact gathering of information. DuCo prepares the quotation for each Member under the Contract guidelines. Every Sourcewell Member quotation delineates the Sourcewell Contract Number. When a Purchase Order is received, ODB will require the Purchase Order to reference the contract number. This process makes it clear for all personnel to recognize that it is a Sourcewell contract sale. The sale, when received, is booked and accounted for on the Sourcewell sales spreadsheet. This makes the end of quarter reporting complete at the actual end of quarter. As a secondary check, when ODB receives a payment for a unit, ODB will verify the contract used for its purchase. This ensures the correct accounting for the sale on a second level.	*
72	If you are awarded an agreement, provide a few examples of internal metrics that will be tracked to measure whether you are having success with the agreement.	ODB values the ability to service Sourcewell Members with their products. In order for ODB to ensure they are providing a product that Sourcewell Members want, they will be evaluating the sales, Quarterly and Annually, to ensure growth. ODB will respond accordingly to specific regional performance through Dealer Training as well as participation in Sourcewell training classes. As a member of the Alamo Group, ODB is expected to increase their sales each year. ODB operates with an annual marketing plan to ensure that they maximize their outreach to potential customers, including Sourcewell Members in order to achieve their goal. It is ODB's goal to not only increase its company sales to Sourcewell Members each year but increase their market share to Sourcewell Members. If they are able to see a measured increase in Sourcewell market share when compared to other companies in their product category, they feel this is a strong measurement of success with the Sourcewell Contract.	*
73	Provide a proposed Administration Fee payable to Sourcewell. The Fee is in consideration for the support and services provided by Sourcewell. The propose an Administrative Fee will be payable to Sourcewell on all completed transactions to Participating Entities utilizing this Agreement. The Administrative Fee will be calculated as a stated percentage, or flat fee as may be applicable, of all completed transactions utilizing this Master Agreement within the preceding Reporting Period defined in the agreement.	ODB proposes an administrative fee of 1%. The fee will be calculated on the member price less chassis cost, sales tax (if applicable), and dealer prep/delivery fees.	*

Table 7: Pricing Offered

Line Item	The Pricing Offered in this Proposal is: *	Comments	
74	The pricing offered is as good as or better than pricing typically offered through existing cooperative contracts, state contracts, or agencies.	ODB fully recognizes the value of the national Sourcewell Contract and as such gives the best discounts available to Sourcewell Members	*

Table 8A: Depth and Breadth of Offered Solutions (200 Points)

Line Item	Question	Response *	
75	Provide a detailed description of all the Solutions offered, including used, offered in the proposal.	ODB Debris Collector Equipment: Truck Mounted Units: The Truck Mounted Debris Collector units are a, chassis mounted, fully automated one person operational design. All units are equipped with in cab controls to create a safe and efficient way to collect debris. Truck mounted	

debris collectors are offered within 4 different cubic yard models; the 14, 20, 25, & 30, all standard with the Kubota 3.8L Gasoline 87HP engine, 28" suction impeller with steel blades, electronic engine controls with safety shut downs, 3 axis hose boom, Urethane suction hose with steel nozzle, and many more additional standard features. Our new EV unit chassis will meet the highest environmental requirements of CARB states. ODB will offer this in a standard 25 yard capacity unit in early 2025.

Hook-Lift units: These units have a Hook – lift hook mounted between the frame rails that can lift a framed standard vacuum unit. These units are chassis mounted, fully automated one-person operational design. All units are equipped with in-cab controls to create a safe and efficient way to collect debris. Truck mounted debris collectors are offered within 4 different cubic yard models; the 14, 20, 25, & 30, all standard with the Kubota 3.8L Gasoline 87HP engine, 28" suction impeller with steel blades, electronic engine controls with safety shut downs, 3 axis hose boom, Urethane suction hose with steel nozzle, and many more additional standard features.

Single Engine Chassis mounted units: The single engine unit is a chassis mounted unit, fully automated one person operation. All units are equipped with dual steering and in cab mounted controls for efficiency in debris collection. This unit comes with a 25-yard hopper and is powered off of the chassis engine through a VPD (Variable Power Divider) that drives both a PTO and a hydraulic pump. This allows the unit to transfer about 150 horsepower from the chassis engine to the operation of the fan for vacuum and the hydraulics to operate the boom to pick up the debris. This unit has 30 less maintenance points and is the highest horsepower unit in the industry.

Combo Unit: This unit is a standard hook-lift unit, lift hook mounted between the frame rails that can lift a framed standard vacuum unit. These units are chassis mounted, fully automated one-person operational design. All units are equipped with in-cab controls to create a safe and efficient way to collect debris. Truck mounted debris collectors are offered within 4 different cubic yard models; the 14, 20, 25, & 30, all standard with the Kubota 3.8L Gasoline 87HP engine, 28" suction impeller with steel blades, electronic engine controls with safety shut downs, 3 axis hose boom, Urethane suction hose with steel nozzle, and many more additional standard features. In addition, it also comes with a V body spreader mounted on a hook lift as well as front frame rails extended for accepting a mounting platform for a snowplow with full length trip mechanism. This package is sold as a total package with all of the hydraulic (Force America) controls in place for all attachments.

Self-Contained Unit: The Self Contained Debris Collection category is a trailer mounted debris collection system with a hydraulic dumping box container available in 14, 20, 25 and 30 cubic yard capacities. Combining the power of the Kubota 87HP Gas Engine or the John Deere 4-cylinder 74HP diesel engine with a six blade impeller, the engine is covered by a custom sheet metal enclosure constructed of 16-gauge steel and has front and rear access doors with stamped louvers for optimum ventilation. The Self Contained units have a large 16" diameter x 100" long 3/8" thick wire reinforced rubber hose on the intake. This heavy duty hose is raised and lowered hydraulically by an electric/hydraulic hose boom. The boom swivels on two 1.5" diameter flange bearings connected to the barrel style inlet allowing for nearly effortless movement of the intake hose.

Non CDL Unit: The Non CDL unit is a compact version of the self-contained debris collector line offered by ODB. This unit offers a 16 cubic yard hopper mounted on an Isuzu NRR diesel, 215HP non-cdl Chassis, powered by an environmentally friendly 3- cylinder Kubota Diesel 24HP engine with dual steer. This unit is designed as a one person operation, equipped with in cab controls to create a safe and effective work environment. Some of the standard options for The Non CDL include the direct belt drive, Eco Mode, 3 axis boom, 20" impeller, and the 12" urethane suction hose, to only name a few.

Tow behind Units: The tow behind units are trailer mounted, belt driven units created to tow behind a work vehicle to collect debris, shred and blow out into a dump bed, or box. ODB offers 4 different versions of tow behinds to ensure customer satisfaction including the LCT600, LCT6000, LCT650, and LCT450. These units come standard with many options, some of which are the rubber intake hose with steel nozzle, rubber exhaust hose, LED lights and amber flashers, 6 blade impeller, 13" clutch assembly, Electronic Engine controls with engine safety shut down system, as well as many others to add. These units are heavy duty and designed for the toughest jobs.

ARM Brand Overview

The ARM brand complements the ODB product line by offering truck-mounted units and debris collection systems designed with simplicity and affordability in mind, making them accessible to a broader market. The ARM product line also leverages a separate dealer network, effectively expanding ODB's footprint and creating more opportunities through cooperative purchasing programs like Sourcewell. Key product

		offerings include: Truck-Mounted Units ARM truck-mounted debris collectors feature a 25-cubic-yard hopper powered by a 74HP Diesel Kohler engine. These units utilize a direct-drive system, reducing complexity and providing easier operation and maintenance for operators and mechanics. The simpler design results in a cost-effective solution for customers while maintaining the durability and functionality expected in debris collection equipment. Self-Contained Units ARM's self-contained debris collection units are available in 17, 20, 25, and 30-cubic-yard capacities. These trailer-mounted systems provide reliable performance and versatility, allowing municipalities to choose the model that best suits their operational needs. Leaf Loader The ARM brand offers a specialized leaf loader for municipalities seeking a lower-cost, less capital-intensive leaf collection system. This unit is designed to meet seasonal needs efficiently without requiring the investment associated with larger, more complex debris collection equipment. By catering to markets that demand simplicity and affordability, the ARM product line expands ODB's reach and aligns with the company's commitment to serving diverse customer needs. ODB also manufactures a complete line of Sweeper brooms: Gutter brooms, main brooms, strip brooms and wafer brooms for all manufactures in the United States.
76	Within this RFP category there may be subcategories of solutions. List subcategory titles that best describe your products and services.	Subcategories of Solutions 1. Leaf Collection Equipment - Truck-Mounted Debris Collectors - Self-Contained Trailer-Mounted Debris Collectors - Non-CDL Debris Collection Units 2. Stormwater Management Solutions - Equipment for Clearing Storm Drains and Runoff Areas - Tools for Removing Litter from Stormwater Systems 3. Litter and Debris Collection - Highway Litter Collection Systems (Departments of Transportation) - Municipal Litter Collection Along Roadways and at Transfer Stations - Event Cleanup Equipment for Festivals and Urban Areas 4. Landfill and Transfer Station Solutions - Yard Waste Collection Systems - Wood Chip and Mulch Collection Equipment - Equipment for Litter Collection at Municipal and Private Landfills 5. Snow and Ice Management - Hooklift-Compatible Equipment: Plows, V-Body Spreaders, and Brining Systems 6. Shoreline and Waterway Cleanup - River, Pond, Lake, and Reservoir Litter Collection Systems - Surface and Shoreline Cleaning Equipment 7. Equestrian and Agricultural Applications - Extended Wander Hose Systems for Cleaning Animal Stalls - Livestock and Equine Show Stall Cleaning Solutions 8. Urban Maintenance Solutions - Equipment for Augmenting Street Sweeper Fleets - Debris Collectors for Festival and Event Cleanup 9. Higher Ed and K-12 grounds and parking lot debris cleaners.

Table 88: Depth and Breadth of Offered Solutions

Indicate below if the listed types or classes of Solutions are offered within your proposal. Provide additional comments in the text box provided, as necessary.

Line Item	Category or Type	Offered *	Comments	
77	Lawn and garden equipment for all types of lawn, field and turf care, golf course, landscape, sidewalk, walking path, and parking lot maintenance, and snow removal	☒ Yes ☐ No	ODB has demonstrated and repeated success for lawn care companies, golf courses, neighborhoods, sidewalks, walking paths and parking lot maintenance.	*
78	Irrigation and aeration equipment, systems, parts, and installation	☐ Yes ☒ No	N/A	*
79	Beach and waterfront maintenance equipment and accessories	☒ Yes ☐ No	ODB has several units installed for beach litter collection. Several waterside towns have purchased these units to vacuum debris from the water surface and the shoreline. Many units operate daily from a boat to pick up debris.	*

Exceptions to Terms, Conditions, or Specifications Form

Only those Proposer Exceptions to Terms, Conditions, or Specifications that have been accepted by Sourcewell have been incorporated into the contract text.

Documents

Ensure your submission document(s) conforms to the following:

1. Documents in PDF format are preferred. Documents in Word, Excel, or compatible formats may also be provided.
2. Documents should NOT have a security password, as Sourcewell may not be able to open the file. It is your sole responsibility to ensure that the uploaded document(s) are not either defective, corrupted or blank and that the documents can be opened and viewed by Sourcewell.
3. Sourcewell may reject any response where any document(s) cannot be opened and viewed by Sourcewell.
4. If you need to upload more than one (1) document for a single item, you should combine the documents into one zipped file. If the zipped file contains more than one (1) document, ensure each document is named, in relation to the submission format item responding to. For example, if responding to the Marketing Plan category save the document as "Marketing Plan."

- [Pricing](#) - ODB SW Pricing 11_25_24.xlsx - Tuesday November 26, 2024 12:04:31
- [Financial Strength and Stability](#) - Financial Strength Doc.zip - Saturday November 23, 2024 08:58:11
- [Marketing Plan/Samples](#) - Marketing and Awards.zip - Saturday November 23, 2024 08:58:46
- WMBE/MBE/SBE or Related Certificates (optional)
- [Standard Transaction Document Samples](#) - EXAMPLE SW 031121 ODB QUOTE .pdf - Saturday November 23, 2024 08:59:05
- [Requested Exceptions](#) - Master Agreement_Grounds_Maintenance_Eqt_RFP_112624 Clarification to Spec Article 2 number 11.pdf - Monday November 25, 2024 14:29:07
- [Upload Additional Document](#) - Additional Documents.zip - Saturday November 23, 2024 09:00:01

Addenda, Terms and Conditions

PROPOSER AFFIDAVIT OF COMPLIANCE

I certify that I am an authorized representative of Proposer and have authority to submit the foregoing Proposal:

1. The Proposer is submitting this Proposal under its full and complete legal name, and the Proposer legally exists in good standing in the jurisdiction of its residence.
2. The Proposer warrants that the information provided in this Proposal is true, correct, and reliable for purposes of evaluation for award.
3. The Proposer certifies that:
 - (1) The prices in this Proposal have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other Proposer or competitor relating to-
 - (i) Those prices;
 - (ii) The intention to submit an offer; or
 - (iii) The methods or factors used to calculate the prices offered.
 - (2) The prices in this Proposal have not been and will not be knowingly disclosed by the Proposer, directly or indirectly, to any other Proposer or competitor before award unless otherwise required by law; and
 - (3) No attempt has been made or will be made by Proposer to induce any other concern to submit or not to submit a Proposal for the purpose of restricting competition.
4. To the best of its knowledge and belief, and except as otherwise disclosed in the Proposal, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest. An organizational conflict of interest is created when a current or prospective supplier is unable to render impartial service to Sourcewell due to the supplier's: a. creation of evaluation criteria during performance of a prior agreement which potentially influences future competitive opportunities to its favor; b. access to nonpublic and material information that may provide for a competitive advantage in a later procurement competition; c. impaired objectivity in providing advice to Sourcewell.
5. Proposer will provide to Sourcewell Participating Entities Solutions in accordance with the terms, conditions, and scope of a resulting master agreement.
6. The Proposer possesses, or will possess all applicable licenses or certifications necessary to deliver Solutions under any resulting master agreement.
7. The Proposer will comply with all applicable provisions of federal, state, and local laws, regulations, rules, and orders.
8. Proposer its employees, agents, and subcontractors are not:
 1. Included on the "Specially Designated Nationals and Blocked Persons" list maintained by the Office of Foreign Assets Control of the United States Department of the Treasury found at: <https://www.treasury.gov/ofac/downloads/sdnlist.pdf>;
 2. Included on the government-wide exclusions lists in the United States System for Award Management found at: <https://sam.gov/SAM/>; or
 3. Presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from programs operated by the State of Minnesota; the United States federal government, as applicable; or any Participating Entity. Vendor certifies and warrants that neither it nor its principals have been convicted of a criminal offense related to the subject matter of this solicitation.

☒ By checking this box I acknowledge that I am bound by the terms of the Proposer's Affidavit, have the legal authority to submit this Proposal on behalf of the Proposer, and that this electronic acknowledgment has the same legal effect, validity, and enforceability as if I had hand signed the Proposal. This signature will not be denied such legal effect, validity, or enforceability solely because an electronic signature or electronic record was used in its formation. - M.J. DuBois, Contract Administrator, Old Dominion Brush Company, LLC

The Proposer declares that there is an actual or potential Conflict of Interest relating to the preparation of its submission, and/or the Proposer foresees an actual or potential Conflict of Interest in performing the obligations contemplated in the solicitation proposal.

☒ Yes ☐ No

The Bidder acknowledges and agrees that the addendum/addenda below form part of the Bid Document.

Check the box in the column "I have reviewed this addendum" below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
Addendum 6 Grounds Maintenance Eqpt RFP Tue November 12 2024 03:29 PM	☒	1
RFP 112624 Grounds Maintenance Equipment Pre-Proposal Recording Link Mon November 11 2024 08:17 AM	☒	1
Addendum 5 Grounds Maintenance Eqpt RFP Fri November 8 2024 10:31 AM	☒	2
Addendum 4 Grounds Maintenance Eqpt RFP Mon November 4 2024 04:03 PM	☒	1
Addendum 3 Grounds Maintenance Eqpt RFP Mon October 28 2024 03:53 PM	☒	2
Addendum 2 Grounds Maintenance Eqpt RFP Wed October 16 2024 08:40 AM	☒	2
Addendum 1 Grounds Maintenance Eqpt RFP Wed October 9 2024 07:54 AM	☒	2



Date:

10/07/2025

Offered By:

Michael O'Connor
Sales Representative
312.208.5012

Equipment Provided for:

Village of Oak Brook
3003 Jorie Blvd.
Oak Brook, IL 60523

Equipment Quote



Stock Image of New Model

Standard Equipment is pleased to present Village of Oak Brook with the following quotation for a ODB LCT6000 Tow-Behind Debris & Leaf Loaders.





Dealership Information

Family-owned and operated since 1969, Standard Equipment Company provides environmental equipment solutions for municipalities, contractors, and companies. We have built a reputation for excellence by offering the finest new equipment, a large selection of parts, excellent service, and unparalleled customer support. We customize environmental equipment solutions for every situation by putting our customer's needs first. Standard's greatest ability is dependability.



Manufacturer Information

A member of the Alamo Group, ODB is building on our 110-year tradition of producing high-quality, cost-effective street sweeper brooms, debris collectors, and replacement parts.

ENGINEERED FOR A GREEN PLANET™

- Committed to sustainability measures in our products and processes.

FOCUS ON CUSTOMER VALUE

- Industry-leading innovative designs for form, function, and style.

COMMITMENT TO QUALITY

- Rigorous controls and quality testing resulting in the lowest warranty rate in the market.

SPEED AND EFFICIENCY

- Best on-time delivery in the market.

Product Description

Year - 2026

Make – ODB

Model – LCT6000 Tow-Behind Debris & Leaf Loaders

Standard Features

- **Electronic engine controls with engine safety shut down systems**
- **44 gallon polyethylene fuel tank**
- **13" clutch assembly with 2.25" dia PTO shaft**
- **Suction impeller with (6) 3/8" thick T-1 steel blades**
- **John Deere upgrade includes block heater and remote oil drain standard**
- **16" x 120" Rubber suction hose with steel nozzle**
- **90 degree inlet elbow for curbside pickup (LCT450/650)**
- **1/4" thick trailer deck with channel members on ends**
- **HD height adjustable pintle eye with three pins**
- **Parking jack with 5" swivel castor wheel**
- **Electric brakes with break-away actuator**
- **Electric over Hydraulic front parking jack**
- **3 Axis Boom 600**
- **LCT600019 WITH 139 HP J.D. DIESEL ENGINE w/ 38" impeller**
- **Upgrade to proportional controls - Electronic Wireless Belly Pack and Receiver**

Unit Pricing



Standard Equipment and ODB are proud holders of a Sourcewell competitively bid procurement contract. Sourcewell allows for government agencies to control cost of procurement and ensure that they are getting the equipment they want at a competitively bid price. For more information about Sourcewell, you can find them on the web at www.sourcewell-mn.gov.

Quotes include all Tax, Title, and License Fees if applicable.

- Price include title or plating fees.
- Quote is valid for 7 days from the date 10/07/2025
- Please note that the prices quoted are subject to applicable tariffs and duties, which may affect the final cost.

Unit Purchase Price: \$155,657.00

I/we have read and understand the terms outlined below and on the reverse and agree to them as part of this order as if they were printed above my/our signature(s). The above and the terms below and on the reverse shall comprise the entire agreement affecting this purchase and no other agreement, understanding, representation, condition or warranty either expressed or implied by law or otherwise is part of this transaction. Unless otherwise specified the Purchase price is payable in cash on the date of delivery of the Equipment to the carrier. It is understood and agreed that the Purchase Price is subject to increase at anytime without notice by JJE to the extent that JJE has incurred increased cost between the date hereof and the delivery date caused by increases in manufacturers' list prices, government regulations, freight rates, labour costs and other causes beyond JJE's control. The Purchaser acknowledges having received a true copy hereof. This agreement is not subject to annulment or cancellation by the Purchaser without prior written consent of JJE.

Village of Oak Brook

X

Signature

Name: _____

Date: _____

Standard Equipment Company

X

Signature

Name: Greg Zukowski

Date: 10/07/2025

Terms and Conditions

1. Payment in full is required at time of delivery. The sale price specified on page one of this Agreement does not include taxes or shipping and other transportation charges. Unless otherwise specified, all shipments are F.O.B. Elmhurst IL. The Purchaser shall pay all insurance, taxes, shipping charges, and other costs or expenses relating to the sale and transfer of the Equipment, it being the intent that the sales price shall be net to the JJE of any and all costs or expenses. In the event of cancellation of this agreement, the Purchase shall assume all costs associated with the cancellation. All Purchaser supplied chassis must meet the requirements of the body manufacturer and Joe Johnson Equipment ("JJE"). The costs of any chassis modifications or repairs shall be borne by the Purchaser. All warranty work is F.O.B. JJE, Elmhurst IL.
2. RISK OF LOSS. After delivery of the Equipment in good order to the Carrier of Purchaser's choice, risk of loss shall be with the Purchaser and JJE's responsibility shall cease. As long as JJE remains unpaid it shall have a lien on the Equipment and shall have a right to repossession and disposal of the Equipment notwithstanding delivery to the Carrier.
3. SHIPPING. a) If shipment is delayed beyond the time stipulated pursuant to this Agreement by any cause beyond the control of JJE, the delivery date shall be extended for a period equal to the delay due to such cause. JJE will in no way be held liable for loss or damages, direct or consequential, due to delays in delivery cause by events outside our direct control. B) If shipment is delayed by fault of the Purchaser, payment of the Purchase Price shall not be delayed thereby and the Equipment shall be at the Purchaser's risk of damage or loss from any cause whatsoever and any expense incurred in handling, storage or insuring the Equipment shall be paid by the Purchaser.
4. WAIVER OF CLAIMS. Acceptance of the Equipment by the Purchaser from the Carrier will constitute a waiver of all claims against JJE for damage or delay from any cause.
5. TITLE. Title to the Equipment and to all repairs, replacements of and accessions to the Equipment shall not pass to the Purchaser after delivery but shall remain in JJE until payment in full of the Purchase Price together with all other amounts due hereunder.
6. DEFAULT. If the Purchaser defaults in compliance with any term or condition of this Agreement, or defaults in payment of any installment of the Purchase Price or any applicable taxes or charges relating to the Equipment, or uses the Equipment for an illegal purpose, or if levy is made upon the Equipment, or if any bankruptcy, receivership, winding-up or insolvency proceedings are instituted by or against the Purchaser, or if at any time JJE deems itself insecure in respect of the foregoing then and in any such events the entire balance of the Purchase Price and all notes given therefore together with all expenses, costs and solicitors fees incurred by JJE in the collection of the Purchase Price shall become immediately due and payable on account of the Purchase Price shall remain the property of JJE as payment for the use and depreciation of the Equipment and not as a penalty.
7. REPOSSESSION AND REMEDIES. Subject to the applicable laws:
 - a) JJE, in addition to all remedies available at law or hereunder, may take possession of the Equipment without notice or demand and without legal process and for the purpose of taking possession of and removing the Equipment JJE or its assigns or agents may enter into or upon the Purchaser's lands and premises using such forces as is necessary in the circumstances. The Purchaser hereby waives all claims for damages arising out of the re-possession, removal or re-sale of the Equipment as against to Purchaser or Purchaser's assigns.
 - b) If the Equipment comes into possession of JJE through the re-possession, voluntary surrender thereof by the Purchaser or otherwise, JJE may at its option sell the Equipment for its own account or may re-sell the Equipment on behalf of the Purchaser either at a public or private sale in such manner and for such amount and upon such terms as JJE may deem proper with or without notice, and prior to any sale JJE may house or store the Equipment and repair or re-condition the same; and JJE may bid and purchase on any sale. From the proceeds of any sale JJE may deduct all expenses for the re-taking, housing, storing, repairing, re-conditioning and selling of the Equipment including the costs of JJE's solicitors as between solicitor and client.
 - c) JJE shall also have the right to sue the Purchaser for any amount which is due and unpaid and such rights shall not be affected by the re-possession and sale of the Equipment nor shall the right of re-possession and sale be merged in any judgment JJE may recover on any notes given for the Purchase Price for any security therefore. The execution and delivery of promissory notes or the entry of judgment for any amount which is due and unpaid or the taking of additional security therefore shall not constitute payment or a waiver of any term, provision or condition herein contained. JJE shall have the right to enforce one or more remedies successively or concurrently and such action shall not operate to stop or prevent JJE from pursuing any other remedy which it may have.
8. LIABILITY AND INDEMNIFICATION. JJE shall not be held liable or responsible for any damages, whether on account of personal injuries or otherwise suffered or sustained in the operation of the Equipment, nor for any damages resulting to Purchaser by reason of any delays or any alleged failure of the Equipment to operate. Purchaser shall defend, indemnify and hold harmless JJE, its subsidiary and affiliated companies, their officers, agents and employees, from and against all loss liability, claim, action or expense including reasonable attorney's fees by reason of bodily injury including death, and property damage, sustained by any person or persons, including but not limited to employees of Purchaser, as a result of the maintenance, ownership, use, operation, storage, erection, dismantling, servicing or transportation of Equipment or Purchaser's failure to comply with this order.
9. INTERPRETATION / CHOICE OF LAW. The Purchaser and JJE agree that this Agreement shall be interpreted, construed and be governed by and in accordance with the laws of the State of Illinois. The Purchaser and JJE further agree that should any term or condition, or any part thereof, contained in this Agreement be unenforceable or prohibited by present or future provincial or federal laws, then such term or condition, or part thereof, shall be ineffective to the extent of such unenforceability or prohibition. Failure at any time by JJE to exercise any of its rights under this Agreement shall not constitute a waiver thereof nor prejudice JJE's right to enforce it thereafter.
10. ENTIRE AGREEMENT. It is acknowledged and agreed that this Agreement constitutes the entire agreement between JJE and Purchaser and there are no representations, warranties, conditions or guarantees, expressed or implied, statutory or otherwise, other than contained herein.
11. DISCLAIMER. Except as may be expressly set out in the Description of Equipment term of this Agreement there are no expressed or implied warranties on the part of JJE as to the quality, merchantability, capability or fitness for a particular purpose of the equipment which is the subject of this agreement.
12. INTEREST. Interest or any overdue payment shall be at the rate of eighteen (%) percent per annum, without prejudice to any other conditions of this Agreement.
13. INSURANCE. The Purchaser hereby undertakes to keep the Equipment fully insured against loss by reason of accident, fire, theft and all other risks to an amount not less than the amount owed to JJE, such insurance being payable to JJE, until the Purchase Price of the Equipment together with all interest and costs which may have been incurred, have been paid. The Purchaser undertakes to supply evidence of such insurance satisfactory to JJE upon demand. If the Purchaser does not place such insurance on the Equipment, JJE shall have the right to affect such insurance at the expense of the Purchaser, who hereby undertakes to pay the premium for the same.
14. TRADE-INS. The Purchaser hereby warrants and represents that all equipment and machinery granted, sold or assigned to JJE in connection with this Agreement in satisfaction of the Purchase Price or otherwise shall be free and clear of all liens, levies, charges and encumbrances. The Purchaser further agrees to indemnify and hold harmless JJE from and against liens, levies, charges and encumbrances that the Purchaser may be required to pay or discharge in respect of such machinery or equipment.
15. FURTHER ASSURANCES. This Agreement may be assigned by JJE without notice to Purchaser. Purchaser may not assign this Agreement without JJE's consent, which may be withheld at JJE's sole discretion. The Purchaser hereby authorizes JJE to file such financing statements and do such acts, matters and effects as JJE may deem appropriate to protect its interests in the Equipment until payment in full of the Purchase Price together with all amounts due hereunder.



ITEM 7.B.1.

BOARD OF TRUSTEES MEETING
SAMUEL E. DEAN BOARD ROOM
BUTLER GOVERNMENT CENTER
1200 OAK BROOK ROAD
OAK BROOK, ILLINOIS
630-368-5000

AGENDA ITEM

Board of Trustees Regular Meeting
of
October 28, 2025

SUBJECT: Confirmation of Appointments/Reappointments - Sports Core Advisory Committee

FROM: Laurence Herman, President

BUDGET SOURCE/BUDGET IMPACT: N/A

RECOMMENDED MOTION: I move to confirm President Herman's recommendation to reappoint Chairman John Anos, Kathy Miller, Frank Scarpiniti, and Mike Stevens to the Sports Core Advisory Committee for two-year terms that will expire in May 2027; and

I move to approve President Herman's recommendation to appoint Marianna Bannos, Jean Gonzalez, Manish Shah, Dr. Mark Rabbat, and Salman Azam to fill the vacant or unappointed positions on the Sports Core Advisory Committee, with terms expiring in May 2027.

Background/History:

The Sports Core Advisory Committee was established by former Village President Lalimalani in November 2017 to provide guidance to the Village President and Board regarding Sports Core operations. At that time, there was no dedicated Village staff managing the Sports Core.

Over the past few years, the Village has built a capable Sports Core management team, including a full-time, dedicated Sports Core Director who has been driving significant progress. With this structure now in place, the Committee's primary role is now focused on offering advice on how to enhance the user experience and increase resident engagement with the Sports Core.

The selected Committee members are active participants in some aspect of the Sports Core, or represent constituencies that are not yet fully engaged with it.

Recommendation:

President Herman recommends to reappoint Chairman John Anos, Kathy Miller, Frank Scarpiniti, and Mike Stevens to the Sports Core Advisory Committee for two-year terms that will expire in May 2027 and to appoint Marianna Bannos, Jean Gonzalez, Manish Shah, Dr. Mark Rabbat, and Salman Azam to

fill the vacant or unappointed positions on the Sports Core Advisory Committee, with terms expiring in May 2027.

Attachments:

None