CITY OF ANN ARBOR
INVITATION TO BID

Barton, Argo, & Superior Gate Repair

ITB No. 4668

Due Date: Friday, April 16, 2021 at 10:00AM (Local Time)

Public Services Area/Water Treatment Services Unit
Administering Service Area/Unit

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

TABLE OF CONTENTS

ATTACHMENTS

Appendix 1:
City of Ann Arbor Prevailing Wage Declaration Form
City of Ann Arbor Living Wage Forms
City of Ann Arbor Vendor Conflict of Interest Disclosure Form
City of Ann Arbor Non-Discrimination Ordinance Declaration Form and Notice

Appendix 2:
Lead Paint Test Results

NOTICE OF PRE-BID CONFERENCE

A **highly recommended** online pre-bid conference for this project will be held on Thursday, March 25, 2021 at 10:00AM **via Microsoft Teams.**

Please email Mac Gills (mac.gills@stantec.com) to receive an invite to the meeting no later than 24 hours prior to the scheduled meeting time.

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

The Barton and Argo sites are open for visiting independently. Please make request as required for visiting Superior Dam.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **April 5, 2021 by 5:00PM** and should be addressed as follows:

Specification/Scope of Work questions emailed to **mac.gills@stantec.com**
Bid Process and Compliance questions emailed to cspencer@a2gov.org

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of Mac Gills at **mac.gills@stantec.com** after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **Friday, April 16, 2021 at 10:00 AM (local time).** Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must **submit one (1) original Bid and four (4)** Bid copies in a sealed envelope clearly marked: **ITB No. 4668.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48104

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document must be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

Bids that fail to provide these forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.

Hand delivered bids may be dropped off in the Purchasing drop box located in the Ann Street (north) vestibule/entrance of City Hall which is accessible to the public at all hours. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with

consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

Each bid must be accompanied by a certified check or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of one hundred and twenty (120) days

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-2, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a "living wage" to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: beta.SAM.gov.

For the purposes of this ITB the Construction Type of Heavy will apply.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred,

suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the "Freedom of Information Act." The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by any prospective bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that goes into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

(a) For any period of time while the Commercial Vehicle is unoccupied; or

(b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except

when it is providing power or electrical energy to equipment or a tool that is actively in use.

Environmental Commitment

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 202_.

_____	_____
Bidder's Name	Authorized Signature of Bidder
_____	_____
Official Address	(Print Name of Signer Above)
_____	_____
Telephone Number	Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

_____

_____

_____

_____

_____

* An individual, whose signature with address, is affixed to this Bid: __ _____
(initial here)

Authorized Official

_____ **Date** _____**,** 202_

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone ( ) _____ Fax ( ) _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Company: _____

Project: **Barton, Argo, and Superior Gate Repair**

Unit Price Bid

Item Description	Estimated Quantity	Unit	Unit Price	Total Price
General Conditions, Insurance, Bonds	1	LS		
Allowance for Stoplog Repair and Reconditioning	1	ALWNC	$10,000	$10,000
Traffic Control Set Up and Maintenance	12	MO		
Superior				
Mobilization	1	LS		
Preparatory Blast of Gate Steel For Inspection	1	EA		
Recoat Gate, Hoist Cover, Base, and Torque Tube	1	EA		
Replace Bottom Seals and Hardware	1	EA		
Replace Side Seals and Hardware	2	EA		
Replace Side Roller	4	EA		
Gate Sill Replacement	1	EA		
Add Drain Holes in Girders	18	EA		
Barton				
Mobilization	1	LS		
Preparatory Blast of Gate Steel Inspection	10	EA		
Recoat Gate, Hoist Cover, Base, and Torque Tube	10	EA		
Replace Bottom Seals and Hardware	10	EA		
Replace Side Seals and Hardware	20	EA		
Rebuild Hoist Machine Cover	5	EA		

Argo				
Mobilization	1	LS		
Preparatory Blast of Gate Steel Inspection	6	EA		
Recoat Gate, Hoist Cover, Base, and Torque Tube	6	EA		
Replace Bottom Seals and Hardware	6	EA		
Replace Side Seals and Hardware	12	EA		
Gate Sill Replacement	6	EA		
Add Drain Holes in Girders	240	EA		
Paint Bay Numbers on Hoists	16	EA		
Demobilization and Project Closeout	1	EA		
Certified Payroll Compliance and Reporting	18	EA		
Allowance for Unspecified Steel Repairs, Materials	2500	LB		
Allowance for Unspecified Steel Repairs, Cutting and Welding	2000	IN		
Miscellaneous Project Allowance	1	ALWNC	$25,000	$25,000
Paint Testing and Inspection Allowance	1	ALWNC	$30,000	$30,000

ESTIMATED BASE BID ITEMS TOTAL **$** _____

Item Description	Estimated Quantity	Unit	Unit Price	Total Price
Alternate Bid Items - Superior				
Replace Hoist Anchor Bolts	4	EA		
Replace of Trunnion Pin and Bushing	2	EA		
Mobilization for Trunnion Pin Replacement	2	EA		
Replace Gate Chain and Shackles	2	EA		
Alternate Bid Items - Barton				
Replace Hoist Anchor Bolts	10	EA		
Replace Bottom Beam	3	EA		
Replace Bottom Edge	3	EA		
Replace of Trunnion Pin and Bushing	6	EA		
Mobilization for Barton Trunnion Pin Replacement	6	EA		
Replace Barton Gate Chain and Shackles	20	EA		
Alternate Bid Items - Argo				
Replace Hoist Anchor Bolts	10	EA		
Replace Beams H1 & H4 - Argo	3	EA		
Replace Beams H2 & H3 - Argo	3	EA		
Replace of Trunnion Pin and Bushing	2	EA		
Mobilization for Argo Trunnion Pin Replacement	2	EA		
Replace Argo Gate Chain and Shackles	12	EA		

ESTIMATED ALTERNATE BID ITEMS TOTAL **$** _____

BID FORM

Section 2 – Material, Equipment and Environmental Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

Item Number	Description	Add/Deduct Amount

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

Subcontractor (Name and Address)	Work	Amount

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder_____ Date _____

BID FORM

Section 5 – References

Include a minimum of three (3) references from similar project completed within the past five (5) years.

[Refer also to Instructions to Bidders for additional requirements, if any]

1) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

2) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

3) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

BID FORM

Section 6 – Contractor Information and Responsible Contractor Criteria

Backup documentation may be requested at the sole discretion of the City to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the bid being considered non-responsive and will not be considered for award.

Failure to provide responses to all questions may result in being deemed non-responsive.

Attach additional pages as needed if space below is insufficient.

Pursuant to Sec 1:312(20) of the City Code which sets forth requirements of a responsible bidder, Bidder is required to submit the following:

1. Organization Name:_____

Social Security or Federal Employer I.D. #:_____

Address:_____

City:_____ State:_____ Zip:_____

Type of Organization (circle one below):

Individual Partnership Corporation Joint Venture Other

If "Other" please provide details on the organization:

_____

Year organization established: _____

2. Current owners/principals/members/managing members/partners of the organization:

_____

3. Assumed Names, "doing business as" d/b/a, and/or former organization names(s), if applicable: ___

Explanation of any business name changes:

_____

4. If applicable, please provide a list of all bidder's litigation and arbitrations currently pending and within the past five years, including an explanation of each (parties, court/forum, legal claims, damages sought, and resolution).

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5. Qualifications of management and supervisory personnel to be assigned by the bidder:

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6. State and local licenses and license numbers held by the bidder:

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7. Will all subcontractors, employees and other individuals working on the construction project maintain current applicable licenses required by law for all licensed occupations and professions?

Yes No

8. Will contractors, subcontractors, employees, and other individuals working on the construction project be misclassified by bidder as independent contractors in violation of state or federal law?

Yes No

9. Submit a statement as to what percentage of your work force resides within the City of Ann Arbor, and what percentage resides in Washtenaw County, Michigan, and the same information for any major subcontractors.

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10. Submit documentation as to employee pay rates.

11. Submit a statement whether bidder provides health insurance, pension or other retirement benefits, paid leave, or other benefits to its employees.

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12. Submit a statement explaining bidder's Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses along with supporting documentation or other evidence.

_____

13. Has bidder had any violations of state, federal or local laws or regulations, including OSHA or MIOSHA violations, state or federal prevailing wage laws, wage and hour laws, worker's compensation or unemployment compensation laws, rules or regulations, issued to or against the bidder within the past five years?

Yes No

If you answered "yes" to the question above, for each violation provide an explanation of the nature of the violation, the agency involved, a violation or reference number, any other individual(s) or party(ies) involved, and the status or outcome and resolution.

14. Does bidder have an existing Fitness for Duty Program (drugs and alcohol testing) of each employee working on the proposed jobsite?

Yes No

15. By attachment, please provide the following:

- Disclosure of any debarment by any federal, state or local governmental unit and/or findings of non-responsibility or non-compliance with respect to any public or private construction project performed by the bidder. Proof of insurance, including certificates of insurance, confirming existence and amount of coverage for liability, property damage, workers compensation, and any other insurances required by the proposed contract documents.

16. Does bidder have an on-going MIOSHA-approved safety-training program for employees to be used on the proposed job site?

Yes No

17. Does bidder have evidence of worker's compensation Experience Modification Rating ("EMR")?

Yes No

EMR = _____

18. Can bidder provide a ratio of masters and journeypersons to apprentices proposed to be used on the construction project job site, documentation of master or journeyperson certification or status and the source for same, and if not, the qualifications of employees who will be assigned to work on the project?

Yes No

If, yes, Ratio = _____

19. Can bidder provide documentation that it participates in a Registered Apprenticeship Program (RAP) that is registered with the United States Department of Labor Office of Apprenticeship or by a State Apprenticeship Agency recognized by the Office of Apprenticeship?

Yes No

If bidder answered "yes" to the question above and is selected for this project, bidder will be required to submit the RAP to the City.

If bidder answered "no" to the question above, please provide details on how your organization assess the skills and qualifications of any employees who do not have master or journeyperson certification or status, or are not participants in a Registered Apprenticeship Program identified above.

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20. Will bidder comply with all applicable state and federal laws and visa requirements regarding the hiring of non-US citizens, and disclosure of any work visas sought or obtained by the bidder, any of the bidder's subcontractors, or any of the bidder's employees or independent contractors, in order to perform any portion of the project?

Yes No

21. Can bidder provide audited financial information current within the past twelve (12) months, such as a balance sheet, statement of operations, and bonding capacity?

Yes No

(Evidence that bidder has financial resources to start up and follow through on the project(s) and to respond to damages in case of default as shown by written verification of bonding capacity equal to or exceeding the amount of the bidder's scope of work on the project. The written verification must be submitted by a licensed surety company rated "B+" (or better) in the current A.M. Best Guide and qualified to do business within the State of Michigan, and the same audited financial information for any subcontractor estimated to be paid more than $100,000.00 related to any portion of the project.)

22. Can bidder provide evidence of a quality assurance program used by the bidder and the results of any such program on the bidder's previous projects?

Yes No

SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

Administrative Use Only
Contract Date: _____

CONTRACT

THIS CONTRACT is between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ _____("Contractor")

_____
(An individual/partnership/corporation, include state of incorporation) (Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled Barton, Argo, and Superior Gate Repair, ITB No. 4668 in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

Non-discrimination and Living Wage Declaration of Compliance Forms (if applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means **Public Services Area/Water Treatment Unit**

Project means **Barton, Argo, and Superior Gate Repair, ITB No. 4668**

Supervising Professional means the person acting under the authorization of the manager of the Administering Service Area/Unit. At the time this Contract is executed, the Supervising Professional is: **Paul Malocha** whose job title is **Senior Project Engineer**. If there is any question concerning who the Supervising Professional is, Contractor shall confirm with the manager of the Administering Service Area/Unit.

Contractor's Representative shall be _____

whose job title is _____.

ARTICLE III - Time of Completion

(A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.

(B) The entire work for this Contract shall be completed by June 1, 2024. Additionally, the site work at the noted dams shall meet the following milestone dates:

Phase	Start Date	Finish Date	Liquidated Damages.
Superior	July 1, 2021	June 1, 2022	$500/day
Argo	July 1, 2022	June 1, 2023	$500/day
Barton	July 1, 2023	June 1, 2024	$500/day

(C) Failure to complete all the work of each phase by the Completion Date indicated, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount as specified in the above table for each phase. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Form for the estimated **BASE BID** total of:

_____Dollars ($_____)

Additionally, the City shall pay the Contractor for the performance of the elected Alternates the unit prices given in the Bid Form. The estimated **ALTERNATE BID** total is:

_____Dollars ($_____)

The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under

this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this Contract, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this Contract.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor's behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it

supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party's failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

ARTICLE XI – Electronic Transactions

The City and Contractor agree that signatures on this Contract may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Contract. This Contract may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

FOR CONTRACTOR

By_____

Its:_____

FOR THE CITY OF ANN ARBOR

By_____
Christopher Taylor, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____

City Administrator

By_____

Services Area Administrator

Approved as to form and content

_____
Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____
of _____(referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for $ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City entitled _____ _____ _____, for ITB No. 4668 and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the Contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

(6) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_.

_____
(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

_____
Stephen K. Postema, City Attorney

_____
(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Name and address of agent:

_____
_____
_____

LABOR AND MATERIAL BOND

(1) _____

of _____(referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of $ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City entitled _____

_____

_____

____, for ITB No. 4668 _____; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;

(3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.

(4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

(5) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_

_____
(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

_____
Stephen K. Postema, City Attorney

_____
(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Name and address of agent:

_____

_____

_____

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of

subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a “covered employer” as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Contract a “living wage,” as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Contract are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor’s employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work

assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in

the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the City may remove them and, if the removed material has value, may store the material

at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

(1) The consent of the surety to payment of the final estimate;
(2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

(1) unsettled liens;
(2) faulty work appearing within 12 months after final payment;
(3) hidden defects in meeting the requirements of the plans and specifications;
(4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the

written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

(1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of any work under this contract, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the required policies and endorsements. The certificates of insurance endorsements and/or copies of

policy language shall document that the Contractor satisfies the following minimum requirements. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).

Required insurance policies include:

(a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - $500,000 each accident
Bodily Injury by Disease - $500,000 each employee
Bodily Injury by Disease - $500,000 each policy limit

(b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 04 13 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.
$2,000,000	Per Project General Aggregate
$1,000,000	Personal and Advertising Injury
$2,000,000	Products and Completed Operations Aggregate

(c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 10 13 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

(d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

(2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City for any insurance listed herein.

(3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and un-qualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company(s); name and address of the agent(s) or authorized representative(s); name(s), email address(es), and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which may be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.

(4) Any Insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.

(5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.

(6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

(1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
(2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20___, to _____, 20 , performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor,_____, represents that on _____, 20___, it was awarded a contract by the City of Ann Arbor, Michigan to_____ under the terms and conditions of a Contract titled _____. The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 20__
_____ , _____ County, Michigan
Notary Public
_____ County, MI
My commission expires on:

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx

DETAILED SPECIFICATIONS

SECTION 01000

PROJECT REQUIREMENTS

PART 1 – GENERAL

1.1 CONTRACT DOCUMENTS

A. The Work to be done is shown on the set of Drawings entitled Argo, Barton, and Superior Gate Repairs. The numbers and titles of all Drawings appear on the cover sheet of the Drawings. All Drawings so enumerated shall be considered an integral part of the Contract Documents as defined herein.

B. Certain Document Sections refer to Divisions of the Contract Specifications. Sections are each individually numbered portions of the Specifications (numerically). The term Division is used as a convenience term meaning all Sections within a numerical grouping.

C. Where references in the Contract Documents are made to CONTRACTORs for specific disciplines of work (e.g., Electrical Contractor, etc.), these references shall be interpreted to be the single prime CONTRACTOR when the project is bid or awarded as a single prime contract.

D. The prime CONTRACTOR shall be responsible for all Work in the Contract Documents regardless of the division of disciplines.

1.2 CONSTRUCTION PERMITS, EASEMENTS AND ENCROACHMENTS

A. The OWNER shall obtain or cause to be obtained all permanent and temporary construction easements required. No easements are anticipated for this project.

B. The CONTRACTOR shall obtain, keep current and pay all fees for any other necessary construction permits from those authorities, agencies, or municipalities having jurisdiction over land areas, utilities, or structures which are located within the Contract limits and which will be occupied, encountered, used, or temporarily interrupted by the CONTRACTOR's operations unless otherwise stated. CONTRACTOR shall pay plan review fees and any other fees for required permits. Record copies of all permits shall be furnished to the ENGINEER and OWNER.

C. When construction permits are accompanied by regulations or requirements issued by a particular authority, agency, or municipality, it shall be the CONTRACTOR's responsibility to become familiar with and comply with such regulations or requirements as they apply to CONTRACTOR’s operations on this Project.

D. The CONTRACTOR will be required to follow the requirements established by all permits necessary for the construction of this project. The following is a list of all permits that must be obtained prior to the beginning of construction:

1. EGLE Joint Permit (Part 315 and other sections as required)

2. Applicable City Building Permits (all trades).

E. The EGLE joint permit will be applied for and obtained by the OWNER through the Michigan Department of Environment, Great Lakes, and Energy. The CONTRACTOR shall obtain a copy of this permit from the ENGINEER prior to construction.

F. The permits for the various trades shall be applied for and paid for by the CONTRACTOR.

1.3 ADDITIONAL ENGINEERING SERVICES

A. In the event that the ENGINEER is required to provide additional engineering services as a result of substitution of materials or equipment which are not "or equal" by the CONTRACTOR, or changes by the CONTRACTOR in dimension, weight, power requirements, etc., of the equipment and accessories furnished, or if the ENGINEER is required to examine and evaluate any changes proposed by the CONTRACTOR for the convenience of the CONTRACTOR, then the ENGINEER's charges in connection with such additional services shall be charged to the CONTRACTOR by the OWNER.

B. Structural design shown on the Contract Drawings is based upon typical weights for major items of equipment as indicated on the Contract Drawings and specified. If the equipment furnished exceeds the weights of said equipment, the CONTRACTOR shall assume the responsibility for all costs of redesign and for any construction changes required to accommodate the equipment furnished, including the ENGINEER's expenses in connection therewith.

C. In the event that the ENGINEER is required to provide additional engineering services as a result of CONTRACTOR's errors, omissions, or failure to conform to the requirements of the Contract Documents, or if the ENGINEER is required to examine and evaluate any changes proposed by the CONTRACTOR solely for the convenience of the CONTRACTOR, then the ENGINEER's charges in connection with such additional services shall be charged to the CONTRACTOR by the OWNER.

1.4 ADDITIONAL OWNER'S EXPENSES

A. In the event the Work of this Contract is not completed within the time set forth in the Contract or within the time to which such completion may have been extended in accordance with the Contract Documents, the additional engineering or inspection charges incurred by the OWNER may be charged to the CONTRACTOR and deducted from the monies due the CONTRACTOR. Extra work or supplemental Contract work added to the original Contract, as well as extenuating circumstances beyond the control of the CONTRACTOR, will be given due consideration by the OWNER before assessing engineering and inspection charges against the CONTRACTOR.

B. Charges for additional OWNER's expenses shall be in addition to any liquidated damages assessed in accordance with the Contract.

1.5 CONSTRAINTS REGARDING SPILLWAY

A. The proposed tainter gates shall be repaired, painted, tested, and put into operation while the existing dams and other gates remain in service.

B. The following restraints shall be noted for the three dams:

1. At Superior, the CONTRACTOR is responsible for managing the river flow if flow exceeds turbine capacity or if the turbine is shut down. As there is only one gate, it may be taken out of service for the duration of the project. The CONTRACTOR may remove the flashboards as necessary to manage the flow with the understanding that the pond level will be held at or near normal level.

2. At Barton, two gates, connected by a single hoist, may be taken out of service at a time.

3. At Argo, two gates, connected by a single hoist, may be taken out of service at a time.

The gates may only be taken out of service for the duration of active work in that bay. The OWNER shall reserve the right to call for re-opening a bay(s) if it is determined that there is no substantial work progress or if there is a need for spillway capacity.

C. Argo Dam and Barton Dam are situated in public parks, and the bridges are commonly used for pedestrian crossing. The CONTRACTOR shall maintain open access to the bridges as possible during the project. If shutdowns are required, the CONTRACTOR shall notify the OWNER and ENGINEER a minimum of three days in advance. On days of closure, the CONTRACTOR shall place closure and detour signage as indicated on the DRAWINGS and otherwise as required to notify the public and maintain safety.

1.6 EQUIPMENT LOCKOUTS AND OPERATION

A. Power feed to tainter gates shall be locked out jointly by the CONTRACTOR and OWNER.

B. Lockouts shall not be removed without agreement by the CONTRACTOR and OWNER.

C. All gates that are in service shall be operated only by the OWNER's personnel.

1.7 PROTECTION OF WORK

A. Unless otherwise specifically permitted, all work that would be subject to damage shall be stopped during inclement, windy, or freezing weather. Only such work as will not suffer injury to workmanship or materials will be permitted.

B. CONTRACTOR shall carefully protect the work against damage or injury from the weather, and when work is permitted during freezing weather, CONTRACTOR shall provide and maintain approved facilities for heating the materials and for protecting the finished work.

1.8 SURVEYS AND LAYOUT

A. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as directed by the ENGINEER or OWNER. Elevation of existing ground and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake out survey shall be referred immediately to the ENGINEER for interpretation or correction.

B. All survey work for construction control purposes, staking, and all related work shall be performed by the CONTRACTOR.

C. CONTRACTOR shall have the responsibility to carefully preserve the benchmarks, reference points and stakes, and in the case of destruction thereof by the CONTRACTOR or resulting from CONTRACTOR's negligence, the CONTRACTOR shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such benchmarks, reference points and stakes.

D. The OWNER or ENGINEER may check all, or any portion of the work and the CONTRACTOR shall afford all necessary assistance to the OWNER and ENGINEER in carrying out such checks. Any necessary corrections to the work shall be immediately made by the CONTRACTOR. Such checking by the OWNER or ENGINEER shall not relieve the CONTRACTOR of any responsibilities for the accuracy or completeness of CONTRACTOR's work.

1.9 RESIDENT PROJECT REPRESENTATIVE

A. If the OWNER authorizes the ENGINEER, the ENGINEER shall provide a resident project representative to assist the ENGINEER in carrying out his responsibilities at the site. The resident may not be full-time on-site, and the CONTRACTOR shall be responsible for coordination with the ENGINEER.

B. The furnishing of such resident project representatives shall not make the ENGINEER responsible for the CONTRACTOR's construction means, methods, techniques, sequences, or procedures or for any safety precautions or programs in connection with the work. The CONTRACTOR shall remain solely responsible for meeting the requirements of the Contract Documents.

C. The CONTRACTOR shall provide access and fall protection for the ENGINEER's representative to make up-close inspections of the gates.

1.10 EXISTING FACILITIES ACCESS

A. It shall be the responsibility of the CONTRACTOR to obtain any permits required from the Michigan Department of Transportation and City of Ann Arbor and pay all associated fees.

B. The CONTRACTOR shall be responsible for removal of snow in areas of the CONTRACTOR's work.

C. The CONTRACTOR will not disturb the OWNER's operation and maintenance of the dam without a written and approved plan.

1.11 CONSTRUCTION UTILITIES

A. Water for construction is not available from the OWNER.

B. 110V single phase power is available for use. The CONTRACTOR will be responsible for providing all connections.

1.12 WORK SCHEDULE

A. The CONTRACTOR shall provide a work schedule. The schedule shall be complete and shall show in detail the way he proposes to complete the work under this Contract and approximate monthly billing of the Contract. The purpose of the schedule is to assist the OWNER in notifying the public of inconveniences and to anticipate cash-flow on the job, and to determine if the CONTRACTOR is reasonably proceeding with the work to assure completion within the specified time.

B. Work hours shall be restricted to Monday through Friday, 7 AM to 8 PM. Work shall not be conducted on City holidays or Sundays. Exceptions to work hour limits (i.e., Saturday work) shall by only by written permission of the OWNER.

1.13 CONSTRUCTION SEQUENCE

A. The CONTRACTOR shall coordinate and schedule his work with the OWNER.

B. Prior to commencing the work, the CONTRACTOR shall provide the ENGINEER a detailed schedule of the proposed work. The schedule shall include a list of tasks required to complete the work; their relevancy to each other; expected duration; and completion dates.

C. The CONTRACTOR is responsible for presenting a sequence with schedule to the OWNER/ENGINEER for review. All proposed improvements shall be constructed only in accordance with an approved schedule.

D. The CONTRACTOR shall give the OWNER a minimum of 7 days' notice to coordinate closure of a bay for construction work.

1.14 PROJECT PROGRESS MEETINGS

A. The CONTRACTOR shall be available for meetings, which will be held as often as twice a month, as necessary.

B. It shall be the responsibility of the CONTRACTOR to have a representative, including key subcontractors, present at each meeting.

1.15 FIRE PROTECTION

A. CONTRACTOR shall take all necessary precautions to prevent fires at or adjacent to the work and shall provide adequate facilities for extinguishing fires which do occur. Burning of debris is not permitted on the project site.

B. When fire or explosion hazards are created in the vicinity of the work as a result of the locations of fuel tanks, or similar hazardous utilities or devices, the CONTRACTOR shall immediately alert the local Fire Marshal, the ENGINEER, and the OWNER of such tank or device. The CONTRACTOR shall exercise all safety precautions and shall comply with all instructions issued by the Fire Marshal and shall cooperate with the OWNER of the tank or device to prevent the occurrence of fire or explosion.

C. Fire protection alarm and detection systems shall comply with the Michigan International Building Code 2009 and NFPA standards.

D. Hydrants must be maintained in service and approved during all phases of work.

E. Storage area for construction materials must not interfere with fire/emergency site access.

F. All material demolished from site should not be stored on location.

1.16 CHEMICALS

A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, or reactant of other classification, must show approval of either the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with all applicable rules and regulations.

B. Post on site Safety Data Sheets (SDS) for all chemicals and provide copies to the OWNER.

1.17 FIRST AID FACILITIES AND ACCIDENTS

A. First Aid Facilities

1. The CONTRACTOR shall provide at the site such equipment and supplies as are necessary to supply first aid to any of CONTRACTOR's personnel who may be injured in connection with the work.

2. First aid equipment and supplies shall be kept up-to-date and in good condition.

3. The CONTRACTOR shall notify employees of the location of First Aid facilities and provide any necessary training.

B. Accidents

1. The CONTRACTOR shall promptly report, in writing, to the ENGINEER and OWNER all accidents in connection with the performance of the work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses.

2. If death, serious injuries, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the OWNER and the ENGINEER.

3. If any claim is made by anyone against the CONTRACTOR or a Subcontractor on account of any accidents, the CONTRACTOR shall promptly report the facts, in writing, to the ENGINEER and OWNER, giving full details of the claim.

1.18 PROTECTION OF RIVER FROM CONTAMINATION

A. The CONTRACTOR shall take all reasonable measures to prevent introduction into the waterway of debris, chemicals, blast media, metal shavings, oil products, or any construction debris from entering the resulting from his operations. The CONTRACTOR's personnel shall not deposit cigarette butts or other garbage into the river.

B. The CONTRACTOR shall be responsible to immediately remove and mitigate any materials entering the river as a consequence of his activities or those of his personnel.

C. Accidental releases of chemicals shall be promptly reported to EGLE and/or EPA in accordance with the requirements of the law. The CONTRACTOR shall be responsible for initiating and carrying out required remediation and/or cleanup measures, and for all reporting and fines that may result from the release.

D. The OWNER shall have the authority to order work stopped or prohibited that would, in his opinion, result in harm to the river, park areas or public.

E. After any damage to the existing facilities by the CONTRACTOR's Work that, in the opinion of the OWNER, constitutes an emergency, the CONTRACTOR shall be immediately available to provide services for the repair of damage and mitigation of the emergency.

1.19 LIMITS OF WORK AREA

A. The CONTRACTOR shall confine the construction operations within the Contract limits shown on the Drawings and/or property lines and/or fence lines. Storage of equipment and materials, or erection and use of sheds outside of the Contract limits, if such areas are the property of the OWNER, shall be used only with the OWNER's approval. Such storage or

temporary structures, even within the Contract's limits, shall be confined to the OWNER's property and shall not be placed on properties designated as easements or rights-of-way unless specifically permitted elsewhere in the Contract Documents.

B. If water access is required, the Contractor shall use approved docks. The CONTRACTOR shall include in their safety plan appropriate measures for working from boats.

1.20 WEATHER CONDITIONS

A. No work shall be done when the weather is unsuitable. The CONTRACTOR shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment from damage or deterioration due to floods, driving rain, or wind, and snowstorms. The OWNER reserves the right to order that additional protection measures over and beyond those proposed by the CONTRACTOR, be taken to safeguard all components of the Project. The CONTRACTOR shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the OWNER for damage to the work from weather elements.

C. The ENGINEER shall have permissive authority over the work which is proposed to be done during the winter months. The CONTRACTOR shall provide adequate weather protection, temporary heating, ground thawing equipment and take any other measures which are necessary to insure that the work performed during the winter months is properly installed and protected against damage from freezing.

D. Any and all work performed during adverse conditions shall adhere to the applicable Codes and Standards (i.e., ACI, ASTM, etc.).

1.21 USE OF FACILITIES BEFORE COMPLETION

A. The OWNER reserves the right to enter and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract. However, only those portions of the facilities which have been completed to the OWNER’s satisfaction, as evidenced by issuing a Certificate of Partial Completion covering that part of the work, shall be placed in service.

B. It shall be the OWNER's responsibility to prevent premature usage of or to use of any portion of the installed facilities by private or public parties, persons, or groups of persons, before the OWNER issues the Certificate of Partial Completion covering that portion of the work to be placed in service.

C. Consistent with the approved progress schedule, the CONTRACTOR shall cooperate with the OWNER, his agents, and the ENGINEER to accelerate completion of those facilities, or portions thereof, which have been designated for early use by the OWNER.

1.22 DELIVERY, STORAGE, AND HANDLING

A. All materials, supplies and equipment, whether furnished by the CONTRACTOR or by the OWNER, shall be delivered, stored, and handled as to prevent the inclusion of foreign materials and/or damage by water, freezing, breakage or other causes. The ENGINEER may require the CONTRACTOR to provide an enclosed storage shed for the storage of the above-mentioned materials, supplies and equipment.

B. Packaged materials shall be delivered in the original unopened containers and shall be stored until ready for use. All materials which have been stored shall meet the requirements of the Specifications at the time they are used in the project.

1.23 DIGITAL PHOTOGRAPHIC RECORD

A. The CONTRACTOR shall furnish to the OWNER a digital photographic record for all areas where work is undertaken, including parts and components of inspections and repairs. Photographs shall be taken before equipment disassembly and after re-assembly. Parts and components shall be identified with in-photo labels or signs.

B. The photographs shall be stored on a CD or DVD of such quality to accurately show the existing conditions.

C. The photographic record shall include date, time, and location at appropriate intervals. The location shall be easily referenced to the Contract Drawings.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY OF WORK

A. Work under this Contract consists of:

1. Transport existing stoplogs from storage at City Facilities to the project site and remove to previous locations after completion of project.

2. Preparatory blast of the gates at Barton, Argo, and Superior Dams for inspection. Provision of platforms and fall protection for ENGINEER to make close-up inspection of gates.

3. Steel repairs on gates at all three dams include removal of old parts and provision of new material and welding of new. Note: a quantity estimate is presented in the bid form for each of these items. Actual quantity will be field determined by the ENGINEER at the time of construction.

4. Miscellaneous unspecified steel repairs on gates. Paid by weight of steel replaced of specified grade and of same shape as removal, and length of cut/weld. Weight and cut/weld quantities are estimated assuming partial replacement of sections of gate skin in locations as needed. Actual quantities will be field determined at the time of construction.

5. Recoating of spillway gates.

6. Blasting and repainting spillway torque tubes and hoist base housing as directed by the ENGINEER.

7. Replacing seals on all gates.

8. Painting of the bay numbers on the torque tube housing at each gate.

B. Welding shall conform to AWS D1.1 requirements.

C. The foregoing descriptions shall not be construed as a complete description of all work required.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. GENERAL

1. The method of measurement and the basis of payment for each item in the Proposal will be as specified in the schedule attached. The items are generally grouped by the section of the Specifications under which the particular unit of work is detailed. There will be no payment allowed for any unit of work not specifically mentioned in the Proposal as a bid item, and any such unit of work not mentioned in the Proposal, but necessary for the completion of the Project, will be considered as incidental to the construction of the Project**.**

B. MEASUREMENT

1. Quantities of work completed under the Contract will be measured by the ENGINEER according to the United States standard measures. Where measurements are specified to be "in place," they will be taken along the actual surface of the completed item to obtain lineal, area, or volume measurements.

C. PAYMENT

1. In each and every instance in the following Measurement and Payment Schedule, where a Basis of Payment is specified, it shall be understood to be prefaced by the following statement, "**The contract unit price bid in the Proposal will be payment in full for all labor, materials, and equipment necessary to do the following according to the Plans and Specifications**." Payment shall be made on the basis of the actual quantity of the item completed and accepted at the unit price for such item named in the Proposal.

BID ITEMS

ITEM	ITEM IN PROPOSAL	METHOD OF MEASUREMENT	BASIS OF PAYMENT
1	General Conditions, Insurance, Bonds	By the unit lump sum (LS).	The complete cost of insurance, bonds, and other requirements of General Conditions. Includes offices, stored materials and equipment, conveniences, and other temporary facilities, safety requirements, scaffolding, security and whatever means the CONTRACTOR deems necessary for accessing the work; organizing the project; coordination with OWNER, ENGINEER, third parties and sub-contractors; Shop Drawings and other administrative work; management of job; and all related work. Any costs assumed to be above and beyond the value of this pay item shall be incidental to other pay items in the Contract. The maximum amount of this item shall be 5% of the bid price.
2	Allowance for Stoplog Repair and Reconditioning	By the unit Allowance (ALWNC).	Necessary repairs and routine maintenance to the stop logs used in the completion of the work. Cost incurred for the work will be reimbursed and shall not exceed the noted allowance. All other costs shall be included in Mobilization bid items.
3	Traffic Control Set Up and Maintenance	By the unit month (MO)	Construction, installation, maintenance, and use of traffic control devices to prevent pedestrian access.

ITEM	ITEM IN PROPOSAL	METHOD OF MEASUREMENT	BASIS OF PAYMENT
SUPERIOR DAM			
4	Mobilization	By the unit lump sum (LS)	Moving equipment, materials and stop logs to project site, temporary facilities, installation of equipment platforms. Transporting and installation of stop logs. Temporary removal and reattachment of gate chains, chain guards and all other requirements. Erection of scaffolding, work platforms, fall protection, and containment for the sand blasting and painting of the gates at Superior Dam. The amount shall not exceed 10% of the total Superior Dam bid items.
5	Preparatory Blast of Gate for Steel Inspection	By the unit each (EA).	Abrasive blast gate. Includes containment and air handling for operation. Disposal of contaminated materials.
6	Recoat Gate, Hoist Cover, Base, and Torque Tube	By the unit each (EA).	Surface preparation (separate from initial blast for inspection), recoating all cleaned steel, including offsite painting. Air handling and filtration, containment.
7	Replace Bottom Seals and Hardware	By the unit each (EA).	Remove and dispose of existing seal clamp bars and fasteners. New seal clamp bars and fasteners. Testing and adjustment.
8	Replace Side Seals and Hardware	By the unit each (EA).	Remove and dispose of existing seal clamp bars and fasteners. New seal clamp bars and fasteners. Testing and adjustment.
9	Replace Side Roller	By the unit each (EA).	Remove and replace side rollers, shims, seals fasteners. Testing and adjustments.
10	Gate Sill Replacement	By the unit each (EA).	Removal and replacement of gate sill. Testing and adjustment.
11	Add Drain Holes in Girder	By the unit each (EA).	Cut drain hole in existing girder flanges.

ITEM	ITEM IN PROPOSAL	METHOD OF MEASUREMENT	BASIS OF PAYMENT
BARTON DAM			
12	Mobilization	By the unit lump sum (LS)	Moving equipment, materials and stop logs to project site, temporary facilities, installation of equipment platforms. Transporting and installation of stop logs. Temporary removal and reattachment of gate chains, chain guards and all other requirements. Erection of scaffolding, work platforms, fall protection, and containment for the sand blasting and painting of the gates at Barton Dam. The amount shall not exceed 10% of the total Barton Dam bid items.
13	Preparatory Blast of Gate for Steel Inspection	By the unit each (EA).	Abrasive blast gate. Includes containment and air handling for operation. Disposal of contaminated materials.
14	Recoat Gate, Hoist Cover, Base, and Torque Tube	By the unit each (EA).	Surface preparation (separate from initial blast for inspection), recoating all cleaned steel, including offsite painting. Air handling and filtration, containment.
15	Replace Bottom Seals and Hardware	By the unit each (EA).	Remove and dispose of existing seal clamp bars and fasteners. New seal clamp bars and fasteners. Testing and adjustment.
16	Replace Side Seals and Hardware	By the unit each (EA).	Remove and dispose of existing seal clamp bars and fasteners. New seal clamp bars and fasteners. Testing and adjustment.
17	Rebuild Hoist Base Cover	By the unit each (EA).	Removal of corroded steal. Installation of new plate(s).
ARGO DAM			
18	Mobilization	By the unit lump sum (LS)	Moving equipment, materials and stop logs to project site, temporary facilities, installation of equipment platforms. Transporting and installation of stop logs. Temporary removal and reattachment of gate chains, chain guards and all other requirements. Erection of scaffolding, work platforms, fall protection, and containment for the sand blasting and painting of the gates at Argo Dam. The amount shall not exceed 10% of the total Argo Dam bid items.

ITEM	ITEM IN PROPOSAL	METHOD OF MEASUREMENT	BASIS OF PAYMENT
19	Preparatory Blast of Gate for Steel Inspection	By the unit each (EA).	Abrasive blast gate. Includes containment and air handling for operation. Disposal of contaminated materials.
20	Recoat Gate, Hoist Cover, Base, and Torque Tube	By the unit each (EA).	Surface preparation (separate from initial blast for inspection), recoating all cleaned steel, including offsite painting. Air handling and filtration, containment.
21	Replace Bottom Seals and Hardware	By the unit each (EA).	Remove and dispose of existing seal clamp bars and fasteners. New seal clamp bars and fasteners. Testing and adjustment.
22	Replace Side Seals and Hardware	By the unit each (EA).	Remove and dispose of existing seal clamp bars and fasteners. New seal clamp bars and fasteners. Testing and adjustment.
23	Replace Side Roller	By the unit each (EA).	Remove and replace side rollers, shims, seals fasteners. Testing and adjustments.
24	Gate Sill Replacement	By the unit each (EA).	Removal and replacement of gate sill. Testing and adjustment.
25	Add Drain Holes in Girders	By the unit each (EA).	Cut drain hole in existing girder flanges.
26	Paint Bay Numbers on Hoists	By the unit each (EA).	Stencil, paint, touch up.
27	Demobilization and Project Closeout	By the unit lump sum (LS)	Complete cleanup, restoration, and demobilization from jobsite. Record drawings and final documentation.
28	Certified Payroll Compliance and Reporting	By the unit each (EA).	Documentation preparation to verify compliance with payroll laws.
29	Allowance for Unspecified Steel Repairs, Material	By the weight in pounds (LB).	Weight of new steel. Remove and dispose of old steel and replace with new of the same shape and dimensions.
30	Allowance for Unspecified Steel Repairs, Cutting and Welding	By the unit inch (IN).	Length of new weld. Complete cutting of old metal and welding of new steel as specified. For skip welded installations, the length of actual weld will be counted.

ITEM	ITEM IN PROPOSAL	METHOD OF MEASUREMENT	BASIS OF PAYMENT
31	Miscellaneous Project Allowance	By the unit Allowance (ALWNC).	Only for items that are pre-approved by the OWNER, which are not covered by other items in the Schedules.
32	Paint Testing and Inspection Allowance	By the unit Allowance (ALWNC).	3rd party testing and inspection of cleaned steel and painting.
ALTERNATE BID ITEMS – SUPERIOR			
33	Replace Hoist Anchor Bolts	By the unit each (EA).	Replace corroded anchor bolts as noted by ENGINEER on-site.
34	Replacing Trunnion Pin and Bushing	By the unit each (EA).	Remove existing hub, demolish concrete, cut, and remove existing pin, install new pin with concreting and new bushing.
35	Mobilization for Trunnion Pin Replacement	By the unit each (EA).	All remaining additional costs, such as additional mobilization, equipment, transportation, etc. associated with replacing a trunnion pin.
36	Replace Gate Chain and Shackles	By the unit each (EA).	Remove and replace gate chain, connecting links and shackles. Greasing equipment.
ALTERNATE BID ITEMS – BARTON			
37	Replace Hoist Anchor Bolts	By the unit each (EA).	Replace corroded anchor bolts as noted by Engineer onsite.
38	Replace Bottom Beam	By the unit each (EA).	Cut and remove existing beam. Fabrication, testing, and installation of new.
39	Replace Bottom Edge	By the unit each (EA).	Cut and remove existing edge. Fabrication, testing, and installation of new.
40	Replace Trunnion Pin and Bushing	By the unit each (EA).	Remove existing hub, cut, and remove existing pin, install new pin with concreting and new bushing.
41	Mobilization for Trunnion Pin Replacement	By the unit each (EA).	All remaining additional costs, such as additional mobilization, equipment, transportation, etc. associated with replacing a trunnion pin.
42	Replace Gate Chain and Shackles	By the unit each (EA).	Remove and replace gate chain, connecting links and shackles. Greasing equipment.

ITEM	ITEM IN PROPOSAL	METHOD OF MEASUREMENT	BASIS OF PAYMENT
ALTERNATE BID ITEMS – ARGO			
43	Replace Hoist Anchor Bolts	By the unit each (EA).	Replace corroded anchor bolts as noted by Engineer onsite.
44	Replace Beams H1 & H4	By the unit each (EA).	Cut and remove existing beam. Fabrication, testing, and installation of new.
45	Replace Beam H2 & H3	By the unit each (EA).	Cut and remove existing beam. Fabrication, testing, and installation of new.
46	Replacing Trunnion Pin and Bushing	By the unit each (EA).	Remove existing hub, demolish concrete, cut, and remove existing pin, install new pin with concreting and new bushing.
47	Mobilization for Trunnion Pin Replacement	By the unit each (EA).	All remaining additional costs, such as additional mobilization, equipment, transportation, etc. associated with replacing a trunnion pin.
48	Replace Gate Chain and Shackles	By the unit each (EA).	Remove and replace gate chain, connecting links and shackles. Greasing equipment.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01210

ALLOWANCES

PART 1 - GENERAL

1.1 DEFINITIONS

A. Cash Allowance: A monetary sum that includes, as part of the Contract Price, the associated costs and requirements to complete the specified allowance.

1.2 SUBMITTALS

A. In advance of beginning additional work, the CONTRACTOR shall submit a detailed proposal to indicate the work to be performed.

B. The OWNER will review the proposal within 10 days, and determine whether or not to authorize the additional work.

1.3 OWNER'S INSTRUCTIONS

A. Before commencement of additional proposed work, the CONTRACTOR shall notify the OWNER of additional scope.

B. Allowances will be used only as directed by the OWNER for his purposes, and only by Change Orders which designate amounts to be charged to the allowance.

C. If the actual price for the specified allowance is more or less than the stated allowance, the Contract Price shall be adjusted accordingly by Change Order. The adjustment in Contract Price shall be made in accordance with the General Conditions.

D. At project closeout, any amounts remaining in allowances will be credited to OWNER by Change Order.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related construction activities.

3.2 CASH ALLOWANCE

A. Include in the Contract Price a cash allowance of $25,000 for additional unanticipated work.

B. Include in the Contract Price a cash allowance of $10,000 for repairing the stop logs prior to use.

C. Include in the Contract Price a cash allowance of $30,000 for paint testing and inspection.

D. The cash allowance will not be applied to any items identified in the Drawings or Specifications, or to related items that are required to provide a finished and complete product as specified.

END OF SECTION

SECTION 01290

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 01330, Submittal Procedures

1.2 SCHEDULE OF VALUES

A. Submit typed schedule for review and approval. The approved schedule of values will be used to prepare future Applications for Payment.

B. Submit Schedule of Values in triplicate to the ENGINEER within 15-days after date of OWNER-CONTRACTOR Agreement for approval.

C. Format: Identify each line item with number and title of the major specification Section.

D. Include within each line item, a direct proportional amount of CONTRACTOR's overhead and profit.

E. Revise schedule to list approved Change Orders, with each Application for Payment.

F. Include the following Project Identification on the Schedule of Values:

1. Project Name and Location

2. Name of ENGINEER

3. Project Number

4. CONTRACTOR's Name and Address

5. Date of Submittal

G. Arrange Schedule of Values in a tabular form to match the items listed in the Project Bid Form (Section BF in the City Invitation to Bid). Bid items may be separated into more than one item if deemed necessary by the CONTRACTOR but may not be combined.

H. Provide a breakdown of the Contract Price in sufficient detail to facilitate continued evaluation of Application for Payment and progress reports. Break principal subcontract amounts down into several line items.

I. For each part of the Work where an Applicant for Payment may include materials for equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

J. Update and resubmit schedule of values when change orders result in a change in the contract price.

K. Schedule of Valves shall be submitted as a Shop Drawing for OWNER approval.

1.3 INITIAL APPLICATION FOR PAYMENT

A. Administrative actions and submittals that must precede submittal of the first Application for Payment include the following:

1. List of Subcontractors

2. List of Principal Suppliers and Fabricators

3. Schedule of Values

4. CONTRACTOR's Construction Schedule (preliminary not final)

5. Submittal Schedule (preliminary if not final)

1.4 APPLICATIONS FOR PAYMENT

A. Applications may be submitted in PDF format provided they are of good resolution and bundled into a single PDF file for each application. Multiple separate files for each application will not be acceptable.

B. Content and Format: Utilize Schedule of Values and Change Orders for listing items in Application for Payment.

C. Payment Period: Payments made according to the schedule described in the General Conditions and or in accordance with the OWNER's requirements.

D. With each copy of the applications submit Waiver of Lien from all subcontractors or suppliers for work included in Application for Payment, other than the first pay application.

E. Submit a completed CONTRACTOR's Declaration with each Application for Payment.

1.5 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

A. Following issuance of Certificate of Substantial Completion, submit an Application for Payment.

B. Administrative actions and submittals that shall proceed or coincide with this application include:

1. Occupancy permits and similar approvals.

2. Warranties (guarantees) and maintenance agreements.

3. Test records.

4. Maintenance instructions.

5. Start-up performance reports and inspection reports.

6. Changeover information related to OWNER's occupancy, use, operation, and maintenance.

7. Final cleaning.

8. Application for reduction of retainage, and consent of surety.

9. Advice on shifting insurance coverage.

10. List of incomplete work, recognized as exceptions to ENGINEER's Certificate of Substantial Completion.

11. As-Built Drawings.

1.6 FINAL PAYMENT APPLICATION

A. Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project Closeout requirements.

2. Completion of items specified for completion after Substantial Completion.

3. Assurance that unsettled claims will be settled.

4. Assurance that work not complete and accepted will be completed without undue delay.

5. Proof that taxes, fees, and similar obligations have been paid.

6. Removal of temporary facilities and services.

7. Removal of surplus materials, rubbish, and similar elements.

8. CONTRACTOR's waivers of liens for project.

9. Written description of how all punch list items were addressed.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUBMITTAL PROCEDURES

A. Package each submittal appropriately for shipping and handling. This shall include an index either on the transmittal or within the submittal itself. Transmit each submittal from CONTRACTOR to ENGINEER using a transmittal form. Submittals received from sources other than CONTRACTOR will be returned without action. Use separate transmittals for items from different specification sections. Number each submittal consecutively. Resubmittals should have the same number as the original, plus a letter designation for each Resubmittal (i.e., 7-A, 7-B, etc.)

B. Indicate on the transmittal relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include CONTRACTOR's certification that information complies with Contract Document requirements. On Resubmittal, all changes shall be clearly identified for ease of review. Resubmittals shall be reviewed for the clearly identified changes only. Any changes not clearly identified will not be reviewed and original submittal shall govern.

C. Include the following information on the label for processing and recording action taken.

1. Project name.

2. Date.

3. Name and address of ENGINEER.

4. Name and address of CONTRACTOR.

5. Name and address of subcontractor.

6. Name and address of supplier.

7. Name of manufacturer.

8. Number and title of appropriate specification sections.

9. Drawing number and detail references, as appropriate.

D. Schedule submittals to expedite the Project and deliver to ENGINEER at business address. Coordinate submission of related items. Coordinate related activities that require sequential activity.

E. Submit a schedule of Shop Drawing submittals.

F. Review and approve Shop Drawings, project data, and samples before submitting them.

G. Verify field measurements, field construction criteria, catalog numbers, and similar data. Indicate on the submission exactly what was verified.

H. Any markings done by CONTRACTOR shall be done in a color other than red. Red is reserved for ENGINEER's marking.

I. The number of copies to be submitted will be determined at the pre-construction conference. Reproducible may be submitted and will be marked and returned to CONTRACTOR. Blue or black line prints shall be submitted in sufficient quantity for distribution to ENGINEER and OWNER recipients. In general, PDF submittals are acceptable provided they have clear resolution, and each submittal is bundled into a single file including cover sheet. Submitting multiple PDF files for each submittal will not be acceptable.

J. Coordinate each submittal with the requirements of the Contract Documents.

K. Provide space for CONTRACTOR and ENGINEER review comments.

L. Apply CONTRACTOR's approval, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the work and Contract Documents.

M. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed work.

N. No claim will be allowed for damages or extension of time because of delays in the work resulting from rejection of material or from revision and resubmittal of Shop Drawings, project data, or samples.

O. No extension of contract time will be authorized because of failure to transmit submittals to ENGINEER sufficiently in advance of the work to permit processing.

P. ENGINEER reserves the right to withhold action on a submittal required coordination with other submittals until related submittals are received.

Q. Do not install materials or equipment which requires submittals until the submittals are returned with ENGINEER's/OWNER's review indicating approval. The OWNER shall have final approval authority.

R. CONTRACTOR's responsibility of errors, omissions, and deviations from requirements of Contract Documents in submittals is not relieved by the ENGINEER's review.

S. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with requirements.

T. Do not use Shop Drawings without ENGINEER comments indicating action taken in connection with construction.

U. Submittals not in conformance with this Specification may be rejected at the discretion of the ENGINEER.

V. Revise and resubmit as required, identify all changes made since the previous submittal.

W. In the event that more than two re-submittals of any submittal is necessary to achieve conformance to the Contract requirements, CONTRACTOR shall be charged for excess engineering. The OWNER shall deduct these charges from the CONTRACTOR's final payment. Charges will be $160/hr., for each additional submittal of an item. A tabulated record of such charges will be provided for the CONTRACTOR's review prior to the processing of the final payment.

X. Submit new project data and samples when the initial submittal is rejected.

1.2 CERTIFICATIONS

A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the CONTRACTOR to ENGINEER, in quantities specified for Product Data.

B. Indicate that the material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certifications may be recent or previous test results of the material or product but must be acceptable to ENGINEER.

1.3 SHOP DRAWINGS

A. Shop Drawings: Submit to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with Paragraph 1.1 - Submittal Procedures.

B. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the project is not considered Shop Drawings.

C. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates, and similar Drawings. Include the following information:

1. Dimension.

2. Identification of products and materials included.

3. Compliance with specified standards.

4. Notation of coordination requirements.

5. Notation of dimensions established by field measurements.

D. Nameplate data for equipment including electric motors shall be included on Shop Drawings. Electric motor data shall state the manufacturer, horsepower, service factor, voltage, enclosure type, oversize wiring box, etc.

E. Shop Drawings shall indicate shop painting requirements to include type of paint and manufacturer.

F. Standard manufactured items in the form of catalog work sheets showing illustrated cuts of the items to be furnished, scale details, sizes, dimensions, quantity, and all other pertinent information should be submitted and approved in a similar manner.

G. Measurements given on Shop Drawings or standard catalog sheets, as established from Contract Drawings, and as approved by ENGINEER, shall be followed. When it is necessary to verify field measurements, they shall be checked and established by CONTRACTOR. The field measurements so established shall be followed by CONTRACTOR and by all affected trades.

H. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.4 PRODUCT DATA

A. Product Data: Submit to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with Paragraph 1.1 - Submittal Procedures.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.5 SAMPLES

A. Submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers or materials, color range sets, and swatches showing color, texture, and pattern.

B. Mount, display, or package samples in the manner specified to facilitate review of qualities indicated. Prepare samples to match ENGINEER’s sample. Include the following:

1. Generic description of the sample.

2. Sample source.

3. Product name or name of manufacturer.

4. Compliance with recognized standards.

5. Availability and delivery time.

C. Submit samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

D. Refer to other specification sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

E. Preliminary Submittals:

1. Where samples are for selection of color, pattern, texture, or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

2. Preliminary Submittals will be reviewed and returned with ENGINEER's mark indicating selection and other action.

F. Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three sets; one will be returned marked with the action taken.

G. Maintain sets of samples, as returned, at the site, for quality comparisons throughout the course of construction.

H. Unless noncompliance with Contract Document provisions is observed the submittal may serve as the final submittal.

I. Sample sets may be used to obtain final acceptance of the construction associated with each set.

1.6 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.7 MANUFACTURER'S FIELD REPORTS

A. Submit reports for the OWNER.

B. Submit report in duplicate, within seven days of observation, to ENGINEER and OWNER for Information.

C. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

1.8 CONSTRUCTION SCHEDULE

A. Bar Chart Schedule:

1. Prepare a fully developed, horizontal bar chart type construction schedule. Submit color copies of the schedule within 30 days of the date established for commencement of the work.

2. Provide a separate item bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated on schedule of values.

3. Prepare schedule of sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for entire construction period.

4. Secure time commitments for performing critical elements of the work from parties involved. Coordinate each element on schedule with other construction activities; include minor elements involved in the sequence of the work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the work.

5. Coordinate construction schedule with schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other schedules.

6. Indicate completion in advance of the date established for substantial completion. Indicate substantial completion of schedule to allow time for ENGINEER's procedures necessary for certification of substantial completion

B. Schedule Updating: Provide an updated construction schedule at each progress meeting. Color copies of the updated schedule shall be prepared for all attendees. The original schedule, and each update, shall include date of Issue, prominently located.

1.9 SUBMITTAL SCHEDULE

A. After development and acceptance of the construction schedule, prepare a complete schedule of submittals. Submit schedule within ten days of the date required for establishment of construction schedule.

B. Coordinate submittal schedule with the list of subcontracts, schedule of values, and the list of products as well as construction schedule.

C. Prepare schedule in chronological order; include submittals required during the first 90 days. Provide the following information:

1. Scheduled date for the first submittal.

2. Related section number.

3. Submittal category.

4. Name of subcontractor.

5. Description of the part of the work covered.

6. Scheduled date for Resubmittal.

7. Scheduled date ENGINEER's final release or approval.

D. The submittal schedule shall reflect critical path shop drawings that must be expedited.

E. Following response to initial submittal, print and distribute copies to ENGINEER, OWNER, subcontractors, and other parities required to comply with submittal dates indicated. Post copies in the project meeting room and field office.

F. When revisions are made, distribute to the same parities and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

G. Schedule Updating: Provide an updated submittal schedule at each progress meeting.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 ENGINEER'S ACTION

A. Except for submittals for record, information, or similar purposes, where action and return is required or requested, ENGINEER will review each submittal, mark to indicate action taken, and return promptly. Compliance with specified characteristics is CONTRACTOR's responsibility.

B. Action Categories: ENGINEER will mark each submittal with uniform, self-explanatory response categories. The marked response will indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken" that part of the work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents; final acceptance will depend upon the compliance.

2. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted" that part of the work covered by the submittal may proceed, provided it complies with notation or correction on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Resubmittal: When submittal is marked "Rejected" or "Revise and Resubmit" do not proceed with the part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity.

    a. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary, to obtain a different action mark.

    b. Do not permit submittals marked "Rejected" or "Revise and Resubmit" to be used at site, or elsewhere where work is in progress.

4. Additional Information Needed: When submittal is marked "Submit Specified Item" CONTRACTOR shall submit requested information.

5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Receipt Acknowledged".

6. The approval of ENGINEER shall not relieve CONTRACTOR of responsibility for errors on Drawings or submittals as ENGINEER's checking is intended to cover compliance with Drawings and Specifications and not enter into every detail of the shop work.

END OF SECTION

SECTION 01370

LEAD-BASED PAINT REMEDIATION

PART 1 – GENERAL

1.1 SUMMARY

A. This Section specifies requirements for working with lead-containing materials (LCM), during any of the following operations:

1. Demolition of Lead-Containing Materials (LCM): Includes razing any portion existing equipment with LCM.

2. Incidental Removal or Disturbance of Lead-Based Paint (LBP): This includes activities such as ancillary chipping and scraping.

3. Removal of Lead-Based Paint (LBP):Complete removal of LBP from substrate.

B. Extent of LCM is assumed to include all existing paint coatings, except the following:

1. Argo hoist chain guards.

2. Argo hoist machine covers.

3. Superior Gate.

1.2 DEFINITIONS

A. The term “Lead-Based Paint” (LBP) is identified as paint or other surface coating such as varnish, sealer or stain containing lead in any detectable amount.

B. The term "Incidental Removal or Disturbance of Lead-Based Paint" indicates one or more of the following operations:

1. Scraping, chipping, or otherwise removing loose LBP from existing surfaces.

C. The term “Demolition of LCM” refers to cutting, drilling, abrading, demolishing, or otherwise disturbing structural elements coated with LBP or containing lead.

D. The term “Lead-Containing Materials” (LCM) is identified as construction debris coated with lead-based paint or other materials containing lead.

E. The term "Critical Barrier" indicates the perimeter of the enclosure within which lead disruption/removal work takes place. Critical Barriers may include existing floor, wall, and ceiling structures, as well as constructed partitions, closures and seals.

F. The term "Project Site" indicates the limits of the Project Site as indicated on drawings or by provisions of this specification.

G. The term "Work Area" indicates the area within the Critical Barrier.

H. The term “Action Level” means exposure to an airborne concentration of lead of 30 micrograms per cubic meter of air calculated as an 8-hour time-weighted average (TWA).

I. The term “Exposure Assessment” means a determination of employee exposures for a given task measured by air monitoring. The Assessment must meet the criteria for objective data as outlined in the MIOSHA/OSHA Lead in Construction Standard (MIOSHA Part 603, R325.51992 and 29 CFR 1926.62).

J. The term “OSHA PEL” stands for the Permissible Exposure Limit established by the Occupational Safety and Health Administration for lead exposure. The OSHA PEL refers to an airborne concentration of lead of 50 micrograms per cubic meter of air calculated as an 8-hour time-weighted average (TWA).

K. The abbreviation “TCLP” stands for Toxicity Characteristic Leaching Procedure and refers to one of the tests to determine if waste is considered a Hazardous Waste or non-hazardous solid waste.

L. The term “Hazardous Waste” refers to a listed waste or any solid or liquid waste with one or more of the following characteristics: toxic, corrosive, flammable, explosive, combustible, oxidizer, pyrophoric, unstable (reactive) or water - reactive.

M. The term “Non-Hazardous Waste” refers to any solid or liquid waste not exhibiting characteristics of Hazardous Waste.

1.3 SUBMITTALS

A. Written Compliance Plan: Submit to OWNER OR ENGINEER a Written Compliance Plan incorporating all requirements in the MIOSHA Lead in Construction Standard. Also indicate type of containment and method of liquid waste capture to be established if water is utilized for removal.

B. Health and Safety Requirements: Submit to OWNER or ENGINEER the following information for each employee that will conduct lead disturbance on the job site:

1. Respiratory Protection Program.

2. Proof of current fit test for respirator that will be worn on Project Site.

3. Proof of medical surveillance for respirator usage and lead work.

4. Proof of lead awareness or higher level of training.

1.4 QUALITY ASSURANCE

A. Personnel involved in the disturbance of LCM shall be trained in accordance with the requirements of the MIOSHA Lead in Construction Standard, including:

1. The content of the MIOSHA Lead in Construction Standard and its appendices;

2. The specific nature of the operations which could result in exposure to lead above the action level;

3. The purpose, proper selection, fitting, use, and limitations of respirators;

4. The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant);

5. The engineering controls and work practices associated with the employee's job assignment including training of employees to follow relevant good work practices;

6. The contents of any compliance plan in effect;

7. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician; and

8. The employee's right of access to records under 29 CFR 1910.20.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.1 HEALTH AND SAFETY REQUIREMENTS

A. Engage one of the following Environmental Consulting firms to perform environmental / industrial hygiene testing as required:

1. Nova Environmental (734)-930-0995

2. Cardno ATC (248)-669-5140

3. TEK Environmental (810)-355-1580

B. When performing lead-based paint removal:

1. Conduct an initial exposure assessment at the start of the project to determine employee exposure to lead in air as required in MIOSHA Lead in Construction Standard.

2. Collect a minimum of one area air sample per day outside of the work zone in an adjacent interior space to ensure that the action level is not exceeded outside of the work area. A minimum of 1,200 liters of air shall be collected for each air sample.

3. Upon completion of removal and clean-up operations, collect a minimum of two air samples within the work area to ensure that airborne lead concentrations are below the action level prior to allowing general occupancy of the space. A minimum of 1,200 liters of air should be collected for each air sample.

4. Provide a copy of the Environmental Consulting firm report and analytical testing results to OWNER.

C. Job requirements: When the CONTRACTOR does not have an Exposure Assessment, or the Assessment is determined to be insufficient, the CONTRACTOR must conduct personal air monitoring in accordance with the MIOSHA Lead in Construction Standard and follow the requirements below which are outlined by job task until monitoring determines otherwise:

1. Manual demolition and ancillary scraping and chipping:

a. Use of 1/2 mask respirator with HEPA filters.
b. PPE.
c. Medical surveillance.
d. Use of changing room.
e. Use of handwashing facilities.
f. Provision of lead awareness training.

2. Abrasive blasting, welding, using cutting torch, burning:

a. Supplied air respirator or SCBA.
b. PPE
c. Medical surveillance.
d. Use of changing room.
e. Use of handwashing facilities.
f. Provision of lead awareness training.

3.2 PREPARATION

A. General: Prepare Work Areas in a manner that will protect OWNER's personnel and property, and the visiting public, from contact with LCM. Prior to beginning work, confirm starting date and time with OWNER. Do not begin work that will disturb LCM without OWNER's approval.

B. Preparing Work Area Exteriors: Ensure adequate measures are in place to limit airborne lead content below the Action Level of 30 ug/m^3 (micrograms per cubic meter) adjacent to the Work Area.

1. Erect barricades and install warning tape or signs as necessary to prevent inadvertent exposure of passersby to LCM in all forms, including, but not necessarily limited to dust, particles, and fumes.

2. Completely cover ground and vegetation adjacent to the work area with minimum 8-mil thick polyethylene sheets with joints between sheets lapped and taped; with one edge taped to adjacent building surfaces below area of work; and with free ends secured in position with stakes, tie-down lines, or weights. Cover sufficient ground area to capture wind-blown chips, dust, and particles.

C. Work Area Preparation. Adequate measures shall include, but are not necessarily limited to, construction of Critical Barriers and/or establishment of negative pressure within Work Area.

1. Seal off openings and penetrations into the Work Area. Provide temporary dust barriers consisting of at least polyethylene plastic sheet on wood studs. Lap and tape joints of plastic sheeting to prevent dust, particles, fumes, and other forms of lead debris from leaving the enclosed area.

2. Post warning signs at all entrances to the Work Area that state the following, as required in MIOSHA Lead in Construction Standard:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

D3.3 WORK PRACTICES

A. General: Perform any removal, demolition or disturbance of LCM in compliance with the following requirements:

1. Restrict access to Work Area to essential personnel.

2. Use moist-removal methods and/or HEPA vacuuming where applicable. Do not over-saturate the Work Area.

3. Any debris generated must be cleaned up immediately before it can be tracked into other areas.

4. Remove contaminated clothing and personal protective equipment before leaving the Work Area, or Work Area enclosure, as applicable.

5. If the Action Level is exceeded outside the Work Area, discontinue work, and modify Critical Barrier, or perform other modifications of methods or materials as required to reduce the lead contamination below the Action Level.

6. Prohibit eating, drinking, and smoking in the Work Area.

B. Incidental Removal of LBP: Remove paint from surfaces by hand scraping and chipping; or through the use of fluid-applied chemical strippers designed to dry into a solid polymeric sheet and peel off with paint encapsulated. Hand-scraping and chipping must be used in conjunction with moist-removal methods using misted water. Leave moist paint dust and chips in place to air dry before collection.

1. Wet methods (including power-washing) that use amounts of water that can drip, spill, or leak onto the ground, or onto or into other adjacent surfaces are prohibited unless approved by OWNER.

2. Dry removal methods (including sand blasting, power sanding, and other methods relying on high velocity mechanical abrasion) that create airborne fine particulate waste materials are prohibited unless specifically reviewed and approved by OWNER.

3. Prior to torch-cutting structural elements containing LBP, remove paint within 4-inches of centerline of cut in accordance with requirements of this Section.

3.4 DISPOSAL

A. Lead Painted Demolition Debris and Lead Paint Chips: In order to determine proper disposal of waste removed from the site, perform Toxicity Characteristic Leaching Procedure (TCLP) testing of LCM waste. If TCLP testing shows the waste to be nonhazardous, the waste can be disposed of as normal construction demolition debris. If waste is classified as Hazardous dispose of material as hazardous waste at an accepting landfill.

1. When storing waste containers on-site, ensure that soil, ground water, and drains or sewers within the storage area are protected from possible contamination. Keep containers secure and tightly closed at all times, except when adding waste.

2. Keep lead waste segregated from other waste. Do not co-mingle waste. **DO NOT MIX LIQUID AND SOLID WASTE**.

3. Place appropriate labels on all containers. Provide all information required on the label; mark labels using indelible ink.

3.5 CLEAN UP

A. Upon completion of LCM or LBP removal and disposal operations, clean all surfaces within the Work Area before it can be tracked into other areas, including, but not necessarily limited to the following:

1. Catwalk structures.

2. Gate sill and adjoining rollway concrete.

3. Walls.

4. Ledges and projections.

5. Ground adjacent to the containment and other work/storage areas.

B. Remove and dispose of wash water and HEPA filters as Hazardous Waste.

C. Field Testing: The OWNER may visually inspect and/or test the Project Site for evidence of remaining lead contamination. Return to Project Site and, at no additional cost to OWNER, re-clean areas found to be contaminated.

END OF SECTION

SECTION 01420

REFERENCES

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. Applicability of Standards: Except where the contract documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the contract documents by reference.

B. 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.

1. Applicable Codes – Latest adopted editions of:

a. Michigan Building Code / International Building Code.

b. The National Electrical Code, NFPA 70, with amendments.

c. International Fire Code.

d. International Code Council (ICC) ANSI A117.

e. Michigan Mechanical and Plumbing Codes.

C. Conform to reference standard by date of issue current on date of Contract Documents.

D. Should specified reference standards conflict with Contract Documents, request clarification from ENGINEER before proceeding.

E. 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.

1.2 ABBREVIATIONS AND ACRONYMS

A. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

AASHTO American Association of State Highway and Transportation Officials
444 North Capitol St, NW, Suite 249
Washington DC, 20001

ACI American Concrete Institute
Box 19150
Redford Station
Detroit, MI 48219

AGC Associated General Contractors of America
1957 E Street, N.W.
Washington, DC 20006

AISC American Institute of Steel Construction
400 North Michigan Avenue
Eighth Floor
Chicago, IL 60611

AISI American Iron and Steel Institute
1000 16th Street, N.W.
Washington, DC 20036

ANSI American National Standards Institute
1430 Broadway
New York, NY 10018

ASME American Society of Mechanical Engineers
345 East 47th Street
New York, NY 10017

ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

AWS American Welding Society
550 LeJeune Road, N.W.
Miami, FL 33135

AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

CFR Code of Federal Regulations
Office of the Federal Register
National Archives and Records Administration
Washington, DC 20408

CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Road
Schaumburg, IL 60195

EJCDC Engineers' Joint Contract Documents Committee
American Consulting Engineers Council
1015 15th Street, N.W.
Washington, DC 20005

FM Factory Mutual System
1151 Boston-Providence Turnpike
P.O. Box 688
Norwood, MA 02062

FS Federal Specification
General Services Administration
Specifications and Consumer Information
Distribution Section (WFSIS)
Washington Navy Yard, Bldg. 197
Washington, DC 20407

ICBO International Conference of
Building Officials
5360 S. Workman Mill Road
Whittier, CA 90601

IEC International Electrochemical Commission
446 Main Street, 16th
Worcester, MA 01608

IEEE Institute of Electrical and Electronics Engineers
345 East 47th Street
New York, NY 10017

IMIAC International Masonry Industry All-Weather Council
International Masonry Institute
815 15th Street, N.W.
Washington, DC 20005

ISA The Instrumentation, Systems, and Automation Society
67 Alexander Drive
P.O. Box 12277
Research Triangle Park
North Carolina 27709

MBMA Metal Building Manufacturers Association
1300 Summer Ave
Cleveland, OH 44115-2851

NAAMM National Association of Architectural Metal Manufacturers
221 North LaSalle Street
Chicago, IL 60601

NCMA National Concrete Masonry Association
P.O. Box 781
Herndon, VA 22070

NEMA National Electrical Manufacturers' Association
2101 'L' Street, N.W.
Washington, DC 20037

NFPA National Fire Protection Association
Battery March Park
Quincy, MA 02269

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077

PCI Prestressed Concrete Institute
201 North Wells Street
Chicago, IL 60606

PS Product Standard
U. S. Department of Commerce
Washington, DC 20203

SSPC Steel Structures Painting Council
4400 Fifth Avenue
Pittsburgh, PA 15213

UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

B. Government Agencies: Names and titles of state and Federal government standard or specification producing agencies are frequently abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard or specification producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of the date of the Contract Documents.

CFR Code of Federal Regulations
(Available from the Government Printing Office)
N. Capitol Street between G and H St. NW

DOT Department of Transportation
400 Seventh Street, SW
Washington, DC 20590

EDA Economic Development Administration
US Department of Commerce
121 N Canal Street, Suite 855
Chicago, IL 60606

EPA Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

EGLE Michigan Department of Environment, Great Lakes, & Energy

MDOT Michigan Department of Transportation

MIOSHA State of Michigan OSHA

OSHA Occupational Safety and Health Administration
(US Department of Labor)
Government Printing Office
Washington, DC 20402

USACE US Army Corps of Engineers
Chief of Engineers - Referral
Washington, DC 20314

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 TEMPORARY ELECTRICITY

A. A single 120V outlet is available at each project site for the CONTRACTOR's use. Electrical needs beyond this shall be provided for by the CONTRACTOR.

B. CONTRACTOR SHALL provide and pay for additional power service required from utility source as needed for construction operation.

C. Provide temporary electric feeder from electrical service at location as required. Provide all necessary meters, disconnections, transformers, etc. A separate meter shall be installed by the CONTRACTOR for the purpose of establishing compensation for electrical power usage.

D. Complement existing power service capacity and characteristics as required.

E. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

F. Provide main service disconnect and over-current protection at convenient location.

1.2 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. As required, provide, and maintain incandescent lighting for construction operations.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lighting and provide routine repairs.

1.3 TEMPORARY WATER SERVICE

A. Potable water is not available at the construction site. CONTRACTOR shall provide his own water source as needed.

B. River water may be used for rinsing, dust control or other general use but shall not be mixed with anything to be incorporated into the permanent work.

1.4 TEMPORARY SANITARY FACILITIES

A. At the time of project mobilization, provide and maintain required sanitary facilities. Provide chemical toilets and provisions for replacement of chemicals and disposal of wastes for the duration of the Contract.

B. The sites generally are accessible to the public, so it is recommended to lock the portable toilet and anchor it down.

C. Portable facility may be omitted at Argo during warm months, where there is a public facility available.

1.5 DUST CONTROL

A. No dust migration off site shall be permitted.

B. All haul roads, detour roads, and other public and private roads, driveways and parking lots used by the CONTRACTOR must be maintained in a dust free condition for the duration of this Contract. The control of the dust shall be accomplished by the application of dust control materials and methods of application as approved and as directed by the ENGINEER. Such dust control materials shall be applied as often as is necessary to control the dust.

C. Should the CONTRACTOR be negligent of his duties in providing dust control, the OWNER may, with or without notice, cause the same to be done and deduct the cost of such work from any monies due or to become due the CONTRACTOR under this Contract, but the performance of such work by the OWNER, or at his insistence, shall service in no way to release the CONTRACTOR from his liability for dust control.

D. Dust Palliative may be any of the following:

1. Water, as required.

2. Other methods as approved by the ENGINEER.

E. Street Cleaning

1. CONTRACTOR shall provide street cleaning with water for City roads, sidewalks, park paths, and parking areas affected by spillage of excavated material or other material associated with the work.

2. CONTRACTOR shall provide pathway, parking areas, sidewalks, and street cleaning by the end of each workday when spillage has occurred, and upon request by OWNER.

3. CONTRACTOR shall sweep and clean City streets, sidewalks, park pathways, and parking areas adjacent to project sites when there is visible dust or debris on the surfaces that came from the construction site, from vehicles coming to or from the construction site, or is in any way associated with CONTRACTOR's work on this Contract.

1.6 BARRIERS

A. Provide barriers to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide protection for plant life designated to remain. Replace damaged plants.

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

D. Provide barriers to prevent pedestrian access during dam closures.

1.7 PROTECTION OF INSTALLED WORK

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 minimize damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect walkways, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic from landscaped areas.

1.8 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.9 PEDESTRIAN ACCESS

A. Argo and Barton dams are highly trafficked by pedestrians. To maintain safety, the CONTRACTOR shall close the dam to pedestrian access during any work other than site inspection. The CONTRACTOR may only close one dam to pedestrian access at a time.

B. The spillway of Superior Dam is accessed by anglers, particularly during off hours. Closure shall be implemented as appropriate.

C. The CONTRACTOR shall erect a kiosk as shown in the Contract Drawings. Prior to closing the dam, the CONTRACTOR shall indicate on the sign the closed dam and set up detour signs along the pedestrian route. At the end of each shift, the CONTRACTOR shall remove the signs, update the kiosk noting the open dam, and remove all pedestrian barricades.

PART 2 - PRODUCTS

2.1 TRAFFIC CONTROL

A. All traffic control devices shall be in accordance with the Michigan Manual of Uniform Traffic Control Devices (MMUTCD).

B. The notification kiosk shall be constructed in a manner that will last the duration of the project. Any damage to the kiosk shall be repaired immediately.

PART 3 - EXECUTION

3.1 TRAFFIC CONTROL DEVICES

A. Prior to the start of work, the CONTRACTOR shall erect the notification kiosk at the Bandemer Park parking lot. The kiosk shall provide information regarding the project scope, project duration, and expected closures. The ENGINEER will provide documents to be posted on the kiosk. The CONTRACTOR shall place the documents on the kiosk in a manner that prevents against damage. The CONTRACTOR shall replace any damaged notifications at no cost to the OWNER.

B. The CONTRACTOR shall include a metal sign noting the status of bridge access across both Barton and Argo Dam. The signs shall confirm if the bridge crossings are Open or Closed and shall be affix in a manner that is tamper proof. Prior to closing either bridge crossing, the corresponding sign shall be switched to notify the public of the closure and all detour signage shall be installed. Immediately upon reopening the bridge, the detour signage shall be removed.

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 BASIC PRODUCT REQUIREMENTS

A. Provide products of qualified manufacturers suitable for intended use. Provide products of each type by a single manufacturer unless specified otherwise.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

C. Provide interchangeable components of the same manufacturer for similar components.

1.2 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Provide off-site storage and protection when site does not permit on-site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation and degradation of Products.

G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained under acceptable condition.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01740

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 GENERAL

A. Execute cleaning, during progress of the work, and at completion of the work.

B. Adequate periodic cleaning will be a condition for recommendation of progress payments.

C. Waste Disposal

1. Properly dispose all waste materials, surplus materials, debris, and rubbish off the Project Site.

2. Provide suitable containers for storage of waste materials and debris.

3. Do not burn or bury rubbish and waste materials on the Project Site.

4. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

5. Do not discharge wastes into streams or waterways.

6. Comply with all federal, state, and local anti-pollution laws, ordinances, codes, and regulations when disposing waste materials, debris, and rubbish.

1.2 PROGRESS CLEANING

A. CONTRACTOR shall periodically clean the work site, at least once weekly.

B. Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.

C. Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended.

D. Remove debris from concealed spaces before enclosing the space.

E. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials.

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

H. Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces and will not contaminate building systems or electrical or control panels.

1.3 FINAL CLEANING

A. Complete the following cleaning and waste-removal operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

1. Clean and remove from the Project rubbish, waste material, debris, and other foreign substances.

2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

3. Hose clean sidewalks and loading areas.

4. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

5. Leave watercourses, gutters, and ditches open and clean.

6. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.

7. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of spatter, grease, stains, fingerprints, films, and similar foreign substances.

8. Clean, wax and polish wood, vinyl, and painted floors.

9. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, and similar spaces.

10. Remove tags and labels that are not permanent.

11. Touch-up and otherwise repair and restore chipped, scratched, dented, or otherwise marred surfaces to specified finish and match adjacent surfaces. 1) Do not paint over “UL” or similar labels, including mechanical and electrical nameplates.

12. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

13. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

B. Maintain the cleaning until OWNER occupies the Project or portion thereof.

C. Leave Project clean and in a neat and orderly condition satisfactory to ENGINEER.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property, and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUBSTANTIAL COMPLETION

A. Substantial completion shall be the date as certified by the ENGINEER when the construction of the Project, or a specified part thereof, is sufficiently completed, in accordance with the Contract Documents, so that the Project, or specified part, can be fully utilized for the purposes for which it was intended.

B. Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the work claimed as substantially complete. Include supporting documents for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the contract price.

2. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the work is not complete.

3. Advise OWNER of pending insurance changeover requirements.

4. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.

5. Obtain and submit releases enabling OWNER unrestricted use of the work and access to services and utilities; include occupancy permits, operating certificate, and similar releases.

6. Complete final cleanup requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

7. Provide all required demonstration and training sessions.

C. Inspection Procedures: On receipt of a request for inspection, ENGINEER will either proceed with inspection or advise CONTRACTOR of unfilled requirements.

1. ENGINEER will prepare the Certificate of Substantial Completion following inspection, or advise CONTRACTOR of construction that must be completed or corrected before the certificate will be issued.

2. ENGINEER will repeat inspection when requested and assured that the work has been substantially completed.

3. Results of completed inspection will form the basis of requirements for final acceptance.

4. Date of Substantial Completion will begin the warranty period unless noted otherwise.

1.2 FINAL ACCEPTANCE

A. Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the contract price.

3. Submit a copy of ENGINEER's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance. The list shall be endorsed and dated by the ENGINEER.

4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion, or when OWNER took possession of and responsibility for corresponding elements of the work.

5. Submit consent of surety to final payment.

6. Submit a final liquidated damages settlement statement.

7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

8. Submit record Drawings, maintenance manuals, damage or settlement survey, property survey, and similar final record information.

9. Deliver tools, spare parts, extra stock, and similar items.

10. Make final changeover of permanent locks and transmit keys to OWNER. Advise OWNER's personnel of changeover in security provisions.

11. Complete commissioning and training of OWNER's personnel.

12. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

13. Complete final cleaning in accordance with Section 01740, Cleaning and Waste Management.

B. Reinspection Procedure: ENGINEER will inspect the work upon receipt of notice that work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the ENGINEER.

1. Upon completion of reinspection, ENGINEER will prepare a certificate of final acceptance, or advise CONTRACTOR of work that is incomplete or of obligations that have not been fulfilled bet are required for final acceptance.

2. If necessary, reinspection will be repeated.

1.3 REQUEST FOR FINAL PAYMENT

A. Submit request for final payment in accordance with the Agreement and General Conditions, as may be modified by the Supplementary Conditions, using procedure specified in Section 01290, Payment Procedures.

B. Request for final payment shall include:

1. Documents required for progress payments in Section 01290, Payment Procedures.

2. Documents required in the General Conditions, as may be modified by the Supplementary Conditions.

3. Releases or Waivers of Lien Rights:

   a. When submitting releases or waivers of Lien rights, provide release or waiver by CONTRACTOR and each Subcontractor and Supplier that provided CONTRACTOR with labor, material, or equipment.

   b. Provide list of Subcontractors and Suppliers for which release or waiver of Lien is required.

   c. Each release or waiver of Lien shall be signed by an authorized representative of entity submitting release or waiver to CONTRACTOR, and shall include Subcontractor's or Supplier's corporate seal if applicable.

   d. Release or waiver of Lien may be conditional upon receipt of final payment.

4. Consent of Surety.

5. Documentation that all punch list items are complete.

6. Warranties.

7. Operation and Maintenance Manuals.

8. Record Drawings being maintained by the CONTRACTOR.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 PROJECT RECORD DOCUMENTS

A. Maintain on-site one clean, undamaged 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. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured depths and elevations.
2. Measured horizontal and vertical locations.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
4. Measured horizontal and vertical locations of all concealed and exposed electrical conduits. Conduits shall be shown in plain view on the Record Drawings with their size and contents indicated.
5. Field changes of dimension and detail.
6. Details not on original Contract Drawings.

F. Indicate the date of revisions to the plans in the appropriate box on the plans.

G. Submit documents to ENGINEER with claim for final Application for Payment.

1.2 WARRANTIES AND BONDS

A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers. All warranties shall begin at the Date of Substantial Completion, or at the date of acceptance by the OWNER, whichever is later.

B. Execute and assemble all transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers into one binder.

C. Verify that documents are in proper form, contain full information, and are notarized. Manufacturer's warranties shall be in the name of the OWNER.

D. Provide Table of Contents and assemble in a single PDF file.

E. Submit prior to Final Application for Payment.

F. Time of submittals:

1. Make warranty submittal within ten days after Date of Substantial Completion, prior to final Application for Payment.

2. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty or bond period.

G. Rejection of Warranties: OWNER reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

H. Submit warranties per Section 01330, Submittal Procedures for review. Where warranty requirements in the specified section supersede the requirements of the general conditions, the warranty requirements in the specified section shall apply.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01800

CERTIFIED PAYROLL COMPLIANCE AND REPORTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Specification covers administrative requirements, payroll reporting procedures to be followed by CONTRACTORS performing work on City-sponsored public improvements projects, and other miscellaneous and incidental costs associated with complying with the applicable Sections of the City of Ann Arbor Code of Ordinances with regard to payment of prevailing wages and its Prevailing Wage Compliance policy.

B. This Specification is **not** intended to include the actual labor costs associated with the payment of prevailing wages as required. Those costs should be properly incorporated in all other items of work bid.

1.2 GENERAL

A. The CONTRACTOR is expected to comply with all applicable Sections of Federal and State prevailing wage laws, duly promulgated regulations, the City of Ann Arbor Code of Ordinances, and its Prevailing Wage Compliance Policy as defined within the Contract documents. The CONTRACTOR shall provide the required certified payrolls, city-required declarations, and reports requested elsewhere in the Contract documents within the timeline(s) stipulated therein.

B. The CONTRACTOR shall also provide corrected copies of any submitted documents that are found to contain errors, omissions, inconsistencies, or other defects that render the report invalid. The corrected copies shall be provided when requested by the Supervising Professional.

C. The CONTRACTOR shall also attend any required meetings as needed to fully discuss and ensure compliance with the Contract requirements regarding prevailing wage compliance. The CONTRACTOR shall require all employees engaged in on-site work to participate in, provide the requested information to the extent practicable, and cooperate in the interview process. The City of Ann Arbor will provide the needed language interpreters in order to perform wage rate interviews or other field investigations as needed.

D. Certified Payrolls may be submitted on City-provided forms or forms used by the CONTRACTOR, as long as the CONTRACTOR'S forms contain all required payroll information. If the CONTRACTOR elects to provide their own forms, the forms shall be approved by the Supervising Professional prior to the beginning of on-site work.

1.3 UNBALANCED BIDDING

A. The City of Ann Arbor will examine the submitted cost for this item of work prior to Contract award. If the City determines, in its sole discretion, that the costs bid by the CONTRACTOR for complying with the Contract requirements are not reasonable, accurately reported, or may contain discrepancies, the City reserves the right to request additional documentation that fully supports and justifies the price as bid. Should the submitted information not be determined to be reasonable or justify the costs, the City reserves the right to pursue award of the Contract to the second low bidder without penalty or prejudice to any other remedies that it may have or may elect to exercise with respect to the original low-bidder.

B. The Contract Completion date will not be extended as a result of the City's investigation of the as-bid amount for this item of work, even if the anticipated Contract award date must be adjusted. The only exception will be if the CONTRACTOR adequately demonstrates that their costs were appropriate and justifiable. If so, the City will adjust the Contract completion date by the number of calendar days commensurate with the length of the investigation, if the published Notice to Proceed date of the work cannot be met. The Contract unit prices for all other items of work will not be adjusted regardless of an adjustment of the Contract completion date being made.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01810

TESTING AND MATERIALS INSPECTION

PART 1 - GENERAL

1.1 DEFINITIONS

A. Dry Testing: Testing of the repaired gates performed by the CONTRACTOR without introducing water to the gates. This generally includes checks for fit and smooth operation in the gate slot with the stoplogs in place.

B. Wet Testing: Testing of the repaired gates performed by the CONTRACTOR utilizing river water introduced between the stoplogs and gate. This generally includes the checks performed during dry testing and leakage test.

C. Performance Testing: Testing similar to the wet testing performed by the CONTRACTOR except that the stoplogs are removed.

D. Start-up: Start-up shall be defined as the operation of gate using river water as necessary to demonstrate the operation of the equipment. Start-up shall be performed by the CONTRACTOR, manufacturer, and local equipment representative.

E. System: A “system” includes all required items of equipment, devices, and appurtenances connected so that their operation or function compliments, protects, or controls the operation or function of the others.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 GATE TESTING

A. The CONTRACTOR shall notify the ENGINEER a minimum of 3 days prior to gate testing.

B. The CONTRACTOR shall perform all testing as required to ascertain proper fit and operation of each repaired Tainter gate installation.

C. The following procedures shall serve as a guideline for the CONTRACTOR’s testing activities, but the CONTRACTOR shall perform additional testing as required to ensure a proper functioning gate.

1. Dry testing shall be performed for each repaired gate to ensure specified clearances and tolerances are maintained and the gate motion is smooth and unimpeded throughout its full range of travel. Each gate shall be stroked for its full travel range using the existing hoist at least three times.

2. Wet testing of each repaired gate shall include leakage test with the stop logs installed on the upstream side and the space between the gate and the stoplog filled with water up to the normal operating level. Seals shall be adjusted as needed. Smooth opening and closing under static head shall be checked. The gate shall be opened and closed at least three times under initial static head, then

moving through the full range of motion. Water may need to be refilled to maintain the required level.

3. Performance testing shall be completed with the stoplogs removed. The gate shall be checked for smooth operation and flow control.

D. The OWNER's operating and maintenance staff shall be allowed to observe for the purposes of familiarization and training. The OWNER'S Staff will operate all gates but may grant permission for the CONTRACTOR to operate gates for positioning when not under load.

E. Modifications to the equipment and unit process systems required to meet testing requirements shall be provided, and all retesting shall be performed at no additional cost to the OWNER.

F. CONTRACTOR shall provide fuel, compressed air, temporary conduit, cable, and wire, piping and appurtenances, and all other items and work as required for testing.

3.2 GATE START-UP

A. The CONTRACTOR shall inspect equipment and systems prior to each startup and verify their readiness for start-up. Conditions hazardous to equipment or personnel shall be corrected by the CONTRACTOR prior to start-up of equipment.

B. Use of repair parts during start-up operations shall not be permitted, except in such situations where the actual on-site verification of such repair parts' operability is specified.

C. The CONTRACTOR shall verify that all initial copies of the maintenance and operating instructions have received, from the ENGINEER, an acceptable disposition as defined in Section 01330, Submittal Procedures, and the only outstanding item is the field verification of the maintenance and operating instructions.

D. CONTRACTOR shall compare and make adjustments to conform to the Manufacturer's recommendations. Unusual sounds or alignment defects in the bushing assemblies (trunnions and guide rollers) or seals that manifest during testing must be corrected by the CONTRACTOR.

3.3 MATERIALS TESTING AND INSPECTION

A. Shop Inspection

1. Shop inspection may be required by the OWNER at his own expense. The CONTRACTOR shall give ample notice to the ENGINEER and OWNER prior to the beginning of any fabrication work so that inspection may be provided. The CONTRACTOR shall furnish all facilities for the inspection of materials and workmanship in the shop and the inspectors shall be allowed free access to the necessary parts of the work. Inspectors shall have the authority to reject any materials or work which do not meet the requirements of these Specifications. Inspection at the shop is intended as a means of facilitating the work and avoiding errors but is expressly understood that it will in no way relieve the CONTRACTOR from his responsibility for furnishing proper materials or workmanship under this Specification.

B. Paint Inspection

1. See Section 09900, Painting for Independent Inspection requirements.

2. Testing related to lead-based paint remediation is specified separately under Section 01370, Lead-Based Paint Remediation.

C. Weld Examination

1. All welds inspection and acceptance criteria shall be in accordance with AWS D1.1 and D1.6, as applicable. All welds found to be defective shall be repaired prior to stress relieving. Where stress relieving is required, non-destructive examination shall be performed after stress relieving.

2. The CONTRACTOR shall maintain an approved inspection system and perform required inspections in accordance with the CONTRACTOR's approved welding procedures. Welding shall be subject to inspection by the OWNER/ENGINEER to determine conformance with applicable requirements as stated below.

3. Qualified Non-Destructive Testing Personnel

   a. The nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds shall be performed by at least Level II inspectors certified by ANST standard SNT-TC-1A to perform such inspections in accordance with the requirements of AWS QC-1.

   b. The Level II inspectors shall be supervised by a Level III inspector.

4. Non-Destructive Testing Documentation: The CONTRACTOR shall maintain documentation of all visual and non-destructive weld testing. The documentation shall show that applicable sections of the Specifications are met. Ultrasonic equipment qualification and weld inspection forms that document ultrasonic weld inspection shall be included. All non-destructive testing results shall be submitted for information and shall become the property of the OWNER. The documentation shall include corrective action taken to correct the defective welds.

5. Required Non-Destructive Testing: The following non-destructive testing shall be performed on all components specified in this section.

   a. All welds shall be inspected 100 percent of their lengths by visual inspections. In addition, unless otherwise indicated, non-destructive testing shall be performed using magnetic particle, liquid penetrant, ultrasonic, or radiographic, as selected by the CONTRACTOR with the approval of the ENGINEER and shall be indicated on the shop drawings submitted for approval.

   b. The CONTRACTOR shall test 100 percent of the weld lengths on the following assemblies by magnetic particle testing or liquid penetrant methods:

      i. Horizontal girders and vertical ribs connections with skinplate
      ii. Gate arms connections with skinplate/horizontal girders
      iii. Lifting lugs connections
      iv. Trunnion hubs

   c. All other welds shall be tested using Liquid Penetrant (PT) or Magnetic Particle (MT) testing methods for at least 10 percent of their length. The selected locations of this testing shall include areas representative of all

weld positions.

d. All complete joint penetration (CJP) welds shall be tested by ultrasonic method, except that, where defects are discovered, repairs and retests shall be performed in accordance with ASME Code Section VIII, Division I, UW-53.

6. Weld testing shall be performed after removal of slag and necessary cleaning, but before application of coatings.

7. Magnetic Particle and Liquid Penetrant Inspection: When magnetic particle or dye penetrant is used, it shall be in accordance with Section V, Article 7 of the ASME Code the acceptance standard shall be as per ASME BPVC Section VIII, Div. 1, Appendix 8. Where it is found necessary or deemed appropriate by the ENGINEER, such magnetic particle examination shall be supplemented by liquid penetrant examination in accordance with Section V, Article 6, of the ASME Code.

8. Ultrasonic Inspection: Ultrasonic method shall conform to Section V, Article 5, of the ASME BPVC Section VIII, Div. 1.

9. Repair and Re-examination of Unacceptable Welds: Sections of welds that have been inspected as specified and are found to be unacceptable shall be removed by mechanical means, oxygen-flame gouging, or other approved method and shall be rewelded and re-inspected using the same procedure as originally used, or other procedure as approved by ENGINEER.

D. Concrete Inspection

1. The CONTRACTOR, at his own expense, shall hire an independent inspector to provide testing and verification for all concrete placed as detailed in Specification Section 03300, Cast-in-Place Concrete. Every load of concrete shall be tested for: slump, % of entrained air, temperature, and strength (five cylinders per load).

2. The independent inspector shall provide inspection reports to the CONTRACTOR and ENGINEER.

E. Bolt Torque Verification

1. The CONTRACTOR, at his own expense, shall hire an independent inspector to provide verification of bolt torques.

2. The independent inspector shall provide inspection reports to the CONTRACTOR and ENGINEER.

END OF SECTION

SECTION 02220

DEMOLITION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Demolition and removal of metals, concrete and other materials, equipment, or work necessary to complete the Work as shown and specified.

B. Demolitions and removals, which may be specified under other Sections, shall conform to requirements of this Section.

1.2 RELATED SECTIONS

A. Section 01000, Project Requirements

1.3 REFERENCES

A. Comply with all applicable requirements of the following reference standards:

1. OSHA Standard, Title 29, Code of Federal Regulations, Part 1926, Section .850 through .860.

2. OSHA Standard, Title 29, Code of Federal Regulations, Part 1926, Section .650.

3. OSHA Standard, Title 29, Code of Federal Regulations, Part 1926, Section .62 – Lead Standard.

4. MDOT, 2012 Standard Specifications for Construction.

5. United States Environmental Protection Agency (USEPA) Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, henceforth SW-846.

1.4 SUBMITTALS

A. Submit a Demolition Plan in accordance with Section 01330, Submittal Procedures. Demolition plan shall describe the proposed sequence, methods and equipment for demolition, removal and disposal of metals, concrete and related items. Plan shall include lead abatement procedures.

B. Demolition plan shall include a schedule.

C. Do not proceed with demolition until the OWNER has approved the demolition plan.

1.5 DELIVERY, STORAGE, AND HANDLING

A. CONTRACTOR is responsible for determining the applicability of disposal locations for debris generated throughout the course of work.

B. CONTRACTOR is responsible for all analytical testing required by the disposal facilities that CONTRACTOR receives approval from for debris disposal.

1.6 PROJECT CONDITIONS

A. The existing tainter gate is assumed to contain lead-based paint based on previous tests taken at the site. Results are included in the Appendix.

B. Unknown Conditions: Should unforeseen facilities be encountered during demolition, notify the ENGINEER immediately. Cooperate with utility OWNER in keeping adjacent services and facilities in operations. Repair damaged utilities immediately.

C. Perform demolition and removal Work to prevent damage or injury to structures, occupants thereof, and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.

1. Closing or obstructing of roadways, parking areas, sidewalks, and park pathways adjacent to the Work by the placement or storage of materials will not be permitted, and all operations shall be conducted with a minimum interference to traffic on these ways.

2. Erect and maintain barriers, lights, sidewalk sheds, and other necessary protective devices.

3. Repair damage to facilities to remain, or to property belonging to the OWNER or occupants of the facilities.

4. CONTRACTOR shall stop demolition work if demolition debris falls outside of the work limits and shall clear away the debris immediately. Demolition work may resume once debris outside of the work limits is removed. CONTRACTOR shall notify the ENGINEER of debris outside of the work limits. The CONTRACTOR shall prevent debris of any kind from entering the river.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.1 GENERAL

A. All materials and equipment removed from existing work shall become the property of CONTRACTOR, except for those which OWNER has identified and marked for their use. All materials and equipment marked by the OWNER to remain the property of the OWNER shall be carefully removed by CONTRACTOR so as not to be damaged and shall be cleaned and stored on or adjacent to the Site in a protected location specified by the ENGINEER or loaded onto trucks provided by the OWNER.

B. Metal and concrete removals shall be separated from what is to remain by saw cuts. Damage from over-cutting shall be repaired at the CONTRACTOR’s expense.

C. CONTRACTOR shall dispose all demolition materials, equipment, debris, and all other items not marked by the OWNER to remain, off the Site and in conformance with all existing applicable laws and regulations.

D. CONTRACTOR shall remove demolition materials from the site daily. CONTRACTOR shall not stockpile materials or equipment on-site.

E. Concrete or other areas which are exposed by any of the removals specified herein, and which will remain as architecturally finished surfaces shall be repaired and re-finished by CONTRACTOR with the same or matching materials as the existing adjacent surface or as may be otherwise approved by the ENGINEER.

F. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

2. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Concrete work shall include the furnishing of all labor, materials, formwork, reinforcing, tools, and equipment required to manufacture, transport, place, protect, repair, cure, and finish all concrete work for a complete and functioning installation in accordance with the Contract Documents.

B. The CONTRACTOR shall be responsible for all items (openings, rebar, sleeves, inserts, anchorages, etc.) shown on the Plans and those which may not be shown on the Plans but are required to be placed in the concrete work.

C. Progress of Work

1. If unacceptable concrete strength or air content occurs and additional testing or remedial actions or modifications are required, further concrete work will not be permitted until such testing has revealed the probable cause of the low strength or low air levels and a program of remedial actions or modifications has been implemented.

1.2 DEFINITIONS

A. The following supplemental definitions cover the meanings of certain words and terms as used in this Section.

1. Reviewed or Permitted: Reviewed by the OWNER and/or OWNER's REPRESENTATIVE.

2. Exposed Construction: Exposed to view. Situated so that it can be seen from eye level from any location after completion of the structure.

3. Normal Weight Concrete: Concrete for which density is not a controlling attribute, made with aggregates of the types covered by "Specification for Concrete Aggregates" (ASTM C-33), and having unit weights in the range of 135 to 160 lb/cu ft.

B. Other words and terms used in these specifications are defined in Cement and Concrete Terminology (ACI-SP-19).

1.3 STANDARDS

A. The latest edition of the standards from the American Society for Testing and Materials, American Concrete Institute, American Welding Society, and Concrete Reinforcing Steel Institute, referred to in these Specifications, are listed below with their serial designation and are declared to be a part of these Specifications, the same as if fully set forth herein, except as modified in this Specification.

1. American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103:

A 185-85 Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement

A 497-86 Standard Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement

A 615-87 Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

C 31-87a (1980) Standard Method of Making and Curing Concrete Test Specimens in the Field

C 33-86 Standard Specification for Concrete Aggregates

C 39-86 Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens

C 94-86b Standard Specification for Ready-Mixed Concrete

C 109-86 Standard Method of Test for Compressive Strength of Hydraulic Cement Mortars (using 2-inch (50-mm) cube specimens)

C 138-81 Standard Method of Test for Unit Weight Yield, and Air Content (Gravimetric) of Concrete

C 143-78 Standard Method of Test for Slump of Portland Cement Concrete

C 144-87 Standard Specification for Aggregate for Masonry Mortar

C 150-86 Standard Specification for Portland Cement

C 172-82 Standard Method of Sampling Fresh Concrete

C 173-78 Standard Method of Test for Air Content of Freshly Mixed Concrete by the Volumetric Method

C 192-81 Standard Method of Making and Curing Concrete Test Specimens in the Laboratory

C 231-82 Standard Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method

C 260-86 Standard Specification for Air-Entraining Admixtures for Concrete

C 309-81 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

C 494-86 Standard Specification for Chemical Admixtures for Concrete

D 994-71 Standard Specification for Preformed expansion Joint Filler for Concrete (Bituminous Type)

E 329-77 Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction

2. American Concrete Institute, Box 19150, Redford Station, Detroit, Michigan 48219

SP-1 5 Field Reference Manual: Specifications for Structural Concrete for Buildings ACI 301-89 with Selected ACI and ASTM References, 1989.

ACI 116 Cement and Concrete Terminology.

ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete

ACI 212.3 Chemical Admixtures in Concrete

ACI 214 Recommended Practice for Evaluation of Strength Test Results of Concrete (Reapproved for 1989)

ACI 301 Specifications for Structural Concrete

ACI 302 Placing Concrete by Pumping Methods

ACI 304 Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete (Revised 1982)

ACI 305 Hot Weather Concreting

ACI 306 Cold Weather Concreting

ACI 308 Standard Practice for Curing Concrete

ACI 309 Recommended Practice for Consolidation of Concrete

ACI 315 Details and Detailing of Concrete Reinforcement (Revised 1986)

ACI 318 Building Code Requirements for Reinforced Concrete (Revised 1987)

ACI 318.1 Building Code Requirements for Structural Plain Concrete

ACI 347 Recommended Practice for Concrete Formwork

ACI 503 Use of Epoxy Compounds with Concrete

3. American Welding Society, 550 N.W. LeJenne Road, P.O. Box 351040, Miami, FL 33135; “Structural Welding Code - Reinforcing Steel” (AWS D1.4-79).

4. Concrete Plant Manufacturers Bureau, 900 Spring Street, Silver Spring, MD 20910: “Concrete Plant Mixer Standards of the Plant Mixer Manufacturer’s Division”.

5. National Ready Mix Concrete Association, 900 Spring Street, Silver Spring, MD 20910: “Check List for Certification of Ready Mixed Concrete Production Facilities”.

6. Concrete Reinforcing Steel Institute, 228 North LaSalle Street, Chicago, Illinois 60601: “Placing Reinforcing Bars,” and “Reinforcement Anchorages and Splices,” latest editions.

B. Field Reference Manual

1. The CONTRACTOR shall keep at least one copy of “Specifications for Structural Concrete for Buildings (ACI 301) with Selected ACI and ASTM References “ACI Field Reference Manual SP-15, in the field office at all times.

1.4 SUBMITTAL REQUIREMENTS

A. Shop Drawings: Submit in accordance with the General Conditions, covering the items included under this Section.

1. Shop Drawings of Reinforcement: Submit original Shop Drawings for fabrication, bending, and placement of concrete reinforcement. Comply with Reinforcement Shop Drawing Checklist below as applicable:

a. Reinforcement Shop Drawing Checklist:

1) Specify ASTM number and grade of reinforcing on submitted Shop Drawings (e.g., ASTM A 615, Grade 60).

2) Specify clear coverages and bar support spacing per Placing Reinforcement Specification in Article 2.09.

3) Specify lap lengths as shown on the Structural Drawings.

4) Submit Bar Bending Schedule.

5) Use closed stirrups and ties with 135-degree hooks, unless noted otherwise in Drawings.

6) Specify major Contract reference Drawings on submitted detail sheets. Use same section cut numbers and letters when practical.

7) Show stirrup spacing.

8) Show details for additional reinforcing items. Examples are reinforcing around openings, control joints, equipment pads, masonry reinforcement.

9) Show numeric elevation references on sections shown on submitted Shop Drawings.

10) Locate expansion and control joints.

11) Organize and present sheets in logical sequence.

12) Submit "small" submittal packages when practical.

13) Show inside and outside or near face and far face on walls.

14) Show bar spacings and quantities on Shop Drawing submittals.

15) Immediately contact OWNER and/or OWNER’s REPRESENTATIVE if Contract Documents are unclear.

16) For epoxy coated reinforcement, coating applicator must furnish written certification that the coated reinforcing bars were cleaned, coated, and tested according to ASTM D3963.99.

b. Mix Designs: Submit the following for all concrete classes:

1) Water/cement ratio (total gallons of water per cubic yard)

2) Brand, type, and quantity of cement

3) Type and quantity of aggregates

4) Type and quantity of admixtures

5) Unit weight (wet density)

6) History of composition strength based on 28-day compression test. Test reports shall be current and within 90 days of submittal. Concrete supplier must demonstrate a familiarity with his supplied mix.

7) Submit laboratory test reports and certification letters for concrete mix design, cement, aggregates (particularly deleterious materials in coarse aggregate), four weeks before scheduled pouring.

B. Product Data: Submit data for proprietary materials and items, including admixtures, patching compounds, waterstops, joint systems, curing compounds, and other materials installed under this Section.

C. Submit samples of materials as requested by OWNER and/or OWNER's REPRESENTATIVE, including names, sources, and descriptions.

D. Quality Assurance Submittals:

1. Submit written reports to ENGINEER documenting testing and inspection results.

2. CONTRACTOR shall be experienced with the placement, finishing, and curing of the specified concrete mixes and admixtures, and provide a minimum of five (5) reference projects.

1.5 GENERAL PROJECT CONDITIONS

A. Protect against freezing: Cover completed Work with sufficient temporary cover to protect against possibility of freezing. Provide supplemental heat and maintain cover for curing period or until temperatures cannot affect concrete.

B. Protect concrete from heat, rain, etc., or other inclement weather.

C. Protect adjacent finish materials against spatter during concrete placement.

PART 2 - PRODUCTS

2.1 CEMENT

A. Cement shall be Portland cement Types I or III and shall conform to ASTM C150 and contain less than 0.60 percent alkalies. Different cements shall not be used interchangeably in the same element or portion of the work.

2.2 ADMIXTURES

A. The following admixtures will be permitted or required in the concrete as stated.

1. Air-entraining admixture conforming to ASTM C260.

2. Water reducing, retarding, and accelerating admixtures conforming to ASTM C494 will be permitted in concrete made with Type I Cement. Water reducing admixture conforming to ASTM C494 will be permitted in concrete made with Type III Cement.

3. Fly Ash

a. Fly ash shall be Type Class C or F, meeting the requirements of ASTM C618 and the carbon content shall be less than one percent.

B. Admixtures used in the concrete shall be of the same composition as used in establishing the required concrete proportions (See paragraph 2.7 of this Section of the Specifications).

C. Calcium chloride or admixtures containing calcium chloride will not be permitted in the concrete work.

D. The name, manufacturer, and technical information for all admixtures shall be submitted for approval.

E. All admixtures shall be used in accordance with the manufacturer's instructions.

F. Admixtures shall be supplied by a single manufacturer to ensure compatibility.

2.3 WATER

A. Mixing water for concrete shall be fresh, clean, and free from injurious amounts of oil, acid, alkalies, salts, sewage, organic matter, or other deleterious substances and meet the requirements of ASTM C94.

B. Since the project is expected to have short loads, the CONTRACTOR and supplier shall take extra caution to ensure that the drum is completely free of wash water before starting to mix the batch.

2.4 AGGREGATES

A. Aggregates shall conform to ASTM C33. Coarse aggregates shall be limestone and shall meet the grading requirements for size 67 for all concrete work unless noted otherwise.

B. Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications.

C. To minimize alkali-silica reactions, high alkali content shall not be permitted. A sample of coarse and fine aggregates shall be tested for reactivity as per ASTM C 1260 or C 1293. Maximum allowable expansion shall be 0.10% at 14 days per ASTM C 1260, and 0.04% at 2 years per ASTM C 1293.

2.5 MANUFACTURERS

A. Subject to compliance with the specified requirements, manufacturers which may be incorporated in Work include:

1. Air-Entraining Admixture:

a. AEA 15, Sika Corp.

2. Corrosion Inhibitor and Bonding Agent:

a. Armatech 110-EpoCem, Sika Corporation

3. Mid-Range Water-Reducing Admixture:

a. "Plastocrete 161", Sika Chemical Corporation

4. Moisture-Retaining Cover:

a. “BurLene” Polyethylene-coated burlap.

5. Adhexive Anchors:

a. “HIT ICE”, Hilti Systems

2.6 STORAGE OF MATERIALS

A. Cement shall be stored in weather-tight buildings, bins, or silos which will exclude moisture and contaminants.

B. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of like aggregates. To insure that this condition is met, any test for determining conformance to requirements for cleanness and grading shall be performed on samples secured from the aggregates at the point of batching. Frozen or partially frozen aggregates shall not be used.

C. Natural or manufactured sand shall be allowed to drain until it has reached relatively uniform moisture content before it is used.

D. To prevent excessive variations in moisture content, predampened aggregates must remain in the stockpiles for a minimum of 12-hours before use.

E. Admixtures shall be stored in such a manner as to avoid contamination, evaporation, or damage. For those used in the form of suspensions or non-stable solutions, agitating equipment shall be provided to assure thorough distribution of the ingredients. Liquid admixtures shall be protected from freezing and from temperature changes which would adversely affect their characteristics.

2.7 PROPORTIONING

A. General

1. Concrete for all parts of the work shall be of the specified quality capable of being placed without excessive segregation. When hardened, concrete shall develop all characteristics required by these Specifications.

2. Use Portland Cement Type I or III.

3. Fly ash shall be used to partially supplant cement content in concrete. Replacement quantity shall be not less than 15%, nor more than 20% of cement content by weight.

4. Concrete shall not have less than four-inch slump as determined by ASTM C143.

5. The nominal maximum size of the aggregate shall not be more than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs, nor three-fourths of the minimum clear spacing between reinforcing bars.

B. Design Mixes

1. Locations for concrete classes are attached at the end of this section.

2. Properties for concrete classes are attached at end of this section.

3. Adjustment of Concrete Mixes: Mix designs may be adjusted when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, when approved by ENGINEER, at no additional cost to OWNER. Submit laboratory test data for revised mix design and strength results to ENGINEER before using in work.

4. Admixtures:

a. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete for placement and workability.

b. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F (10 degrees C).

c. Add air-entraining admixture at manufacturer's prescribed rate to result in placed concrete having total air content specified.

d. Refer to the mix designs attached at the end of this section for other specific admixture usage.

2.8 FORMWORK

A. General

1. Forms shall be used to confine the concrete and shape it to the required dimensions. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall have sufficient rigidity to maintain specified tolerances.

2. Formwork shall conform to ACI 347.

B. Design and Installation of Formwork

1. The design and engineering of the formwork, as well as its construction, shall be the responsibility of the CONTRACTOR.

2. The formwork shall be designed for the loads, lateral pressure, and allowable stresses outlined in ACI 347, Design of "Recommended Practice for Concrete Formwork" as well as for the design considerations, wind loads, allowable stresses, and other applicable requirements of the controlling local building code.

3. Requirements for facing materials are given in following items of this Section of the Specifications. The maximum deflection of facing materials reflected in concrete surfaces exposed to view shall be 1/240 of the span between structural members.

4. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Chamfer strips (1" x 1" x 1-1/2") shall be placed in the corners of forms to produce beveled edges on permanently exposed surfaces unless detailed otherwise. Interior corners on such surfaces and the edges of formed joints will not require beveling. Exposed surfaces include surfaces exposed to view or water in the finished construction.

5. Temporary openings shall be provided at the base of column forms and wall forms and at other points where necessary to facilitate cleaning and observation immediately before concrete is placed.

6. Form accessories to be partially or wholly embedded in the concrete, such as ties and hangers, shall be of a commercially manufactured type. Non-fabricated wire shall not be used.

7. Form ties shall be constructed so that the end or end fasteners can be removed without causing appreciable spalling at the faces of the concrete. Form ties shall have cones on each end.

    a. Non-Exposed Concrete Work: After the ends or end fasteners of form ties have been removed, the embedded portion of the ties shall terminate not less than two diameters or twice the minimum dimension of the tie from the formed faces of concrete and in no case shall this distance be less than ¾-inch.

    b. Exposed Concrete Work (this shall apply to areas where one or both faces of the work is exposed to view, i.e., retaining wall): Form, ties, assemblies for concrete exposed to water, influent, effluent, weather, freeze/thaw, and similar exposures shall permit tightening of the forms and shall leave no metal or other material within 1½-inch of the surface. The assembly should provide cone-shaped depressions at the form/concrete surface interface of at least 1-inch diameter and 1½-inch deep to permit filling and patching. Tie shall be tight fitting or tie holes shall be sealed to prevent leakage. Single rod ties shall be equipped with a tightly fitted washer at midpoint when part of the tie is to remain in concrete exposed to liquids.

    c. Tie systems shall provide positive pressure at all joints to preclude mortar/grout leakage.

8. At construction joints, contact surface of the form sheathing for flush surfaces shall overlap the hardened concrete in the previous placement by not more than 1 inch. The forms shall be held against the hardened concrete to prevent offsets or loss of mortar at the construction joint and to maintain a true surface.

9. Wood forms for wall openings shall be constructed to facilitate loosening, if necessary, to counteract swelling of the forms.

10. Wedges used for final adjustment of the forms prior to concrete placement shall be fastened in position after the final check.

11. Formwork shall be so anchored to shores or other supporting surfaces or members that upward or lateral movement of any part of the formwork system during concrete placement will be prevented.

12. Runways for moving equipment shall be provided with struts or legs and shall be supported directly on the formwork or structural member without resting on the reinforcing steel.

13. Provide temporary openings at base of wall and column forms and other interior areas of formwork where it is inaccessible for cleanout, for observation before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

14. Provisions for other trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing these items. Accurately place and securely support items built into forms.

C. Tolerances

1. The formwork shall be constructed so that the concrete surfaces will conform to the tolerance limits listed in Table 2.08.C.1.

Table 2.08.C.1
Tolerances for Formed Surfaces

(1) Variation from plumb:

a. In the lines and surfaces of columns, piers, walls, and in arises:

in any l0 ft of length	¼ - inch
maximum for entire length	1 inch

b. For exposed corner columns, control joint grooves and other conspicuous lines:

in any 20'- 0" length	¼ - inch
maximum for the entire length	½ - inch

2. The CONTRACTOR shall establish and maintain in an undisturbed condition and until final completion and acceptance of the project sufficient control points and benchmarks to be used for reference purposes to check tolerances.

3. Regardless of the tolerances listed in Table 208.C.1, no portion of the building shall extend beyond the legal boundary of the project.

D. Preparation of Form Surfaces

1. All surfaces of forms and embedded materials shall be cleaned of any accumulated mortar or grout from previous concreting and of all other foreign material before concrete is placed in them. Local defects such as chipped plywood or kinks in steel forms will not be permitted.

2. Unless otherwise specified or approved, surfaces of forms shall be treated as follows:

a. Before placing of either the reinforcing steel or the concrete, the surfaces of the forms shall be covered with an approved coating material that will effectively prevent absorption of moisture and prevent bond with the concrete and will not stain the concrete surfaces. A field applied form release agent or sealer of approved type or a factory applied non-absorptive liner may be used.

b. Excess form coating material shall not be allowed to stand in puddles in the forms nor shall such coating be allowed to come in contact with reinforcing steel or with hardened concrete against which fresh concrete is to be placed.

3. The CONTRACTOR shall submit the name of the form coating agent material proposed to be used with sufficient supportive documentation to the ENGINEER for review.

E. Removal of Forms

1. Forms shall be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations after review by the ENGINEER.

2.9 REINFORCEMENT

A. General

1. Shop Drawings, showing all fabrication dimensions and locations for placing of the reinforcing steel and accessories shall be submitted for review in accordance with these Specifications. Review shall be obtained before fabrication.

2. Details of concrete reinforcement and accessories not covered herein shall be in accordance with ACI 315.

B. Reinforcing Steel

1. All reinforcement shall be Grade 60 (fy = 60,000 psi) and shall conform to the appropriate Specification listed below, except as follows:

a. Yield strength shall be determined by testing of full-size bars.

b. For bars, wire, or wire fabric with a specified yield strength fy exceeding 60,000 psi, fy shall be the stress corresponding to a strain of 0.35 percent.

2. Reinforcing bars shall conform to ASTM A615 Grade 60 and the supplementary requirement S1 shall apply.

3. All cutting, bending, fabrication, and erection of reinforcing steel shall conform to the "Manual for Concrete Structures". (ACI 315 latest edition).

4. All splicing of reinforcing steel shall conform to "Reinforcing Bar Splices" latest edition by the Concrete Reinforcing Steel Institute and the "Building Code Requirements for Reinforced Concrete" (ACI 318-99).

5. The use of plain bars is not permitted.

6. Supports for reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar supports complying with CRSI specifications.

C. Welding

1. When required or permitted, all welding of reinforcing bars shall conform to AWS D14. Unless otherwise accepted, welding of cross bars (tack welding) for assembly of reinforcement is prohibited. Reinforcing to be welded must be certified as weldable.

D. Fabricating and Placing Tolerances

1. Bars shall be fabricated in accordance with the tolerances given in ACI 315.

2. Bars may be moved as necessary to avoid interference with other reinforcing steel, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, additional reinforcing as directed by the ENGINEER may be required.

E. Placing

1. Minimum concrete cover for reinforcement shall be 3-inch.

2. All reinforcement, at the time concrete is placed, shall be free of mud, oil or other materials that may adversely affect or reduce the bond. Reinforcement with rust, mill scale or a combination of both will be accepted as being satisfactory without cleaning or brushing provided the dimensions and weights, including heights of deformations, of a cleaned sample are not less than required by the applicable ASTM specification.

3. All reinforcement shall be supported and fastened together to prevent displacement by construction loads or the placing of concrete beyond the specified tolerances. On ground, where necessary, supporting concrete blocks may be used. Over formwork, metal, plastic or other approved bar chairs and spacers shall be used. All accessories within ½-inch of the formed concrete surface shall be plastic coated.

4. Vertical bars in columns shall be offset at least one bar diameter at lapped splices. To insure proper placement, templates shall be furnished for all column dowels.

5. All splices not shown in the Contract Documents shall be subject to review by the ENGINEER.

   Splicing shall be a minimum of 48 bar diameters (typical, unless noted otherwise).

6. Reinforcement shall not be bent after being embedded in hardened concrete.

2.10 JOINTS AND EMBEDDED ITEMS

A. Construction Joints

1. Joints not shown in the Contract Documents shall receive prior review by the ENGINEER and shall be so made and located at least to impair the strength of the structure. In general, they shall be located near the middle of the spans of slabs, beams, and girders unless a beam intersects a girder at this point, in which case the joint in the girder shall be offset a distance equal to twice the width of the beam. Joints in walls and columns shall be at the underside of floors, slabs, beams, or girders and at the tops of footings or floor slabs. Beams, girders, brackets, column capitals, haunches, and drop panels shall be placed at the same time as slabs. Joints shall be perpendicular to the main reinforcement.

2. All reinforcement shall be continued across joints.

3. The surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed prior to placing adjoining concrete.

4. Bond shall be obtained by roughening the surface of concrete in an approved manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface.

B. Waterstops

1. Use Greenstreak Hydrotite CJ where required on the Drawings.

C. Other Embedded Items

1. All sleeves, inserts, anchors, and embedded items required for adjoining work or for its support shall be placed prior to concreting.

D. Placing Embedded Items

1. Expanding Bentonite Waterstops:

a. Fastening Waterstop. Before installing waterstop, apply minimum 15-mil-thick coating of Waterstop-WB adhesive, for width and length of applied expanding bentonite waterstop material.

b. Verify that 3-inch minimum coverage of concrete placement will occur along waterstop's entire length. Do not install waterstop in keyways.

c. Follow Manufacturer's recommended installation procedures.

PART 3 - EXECUTION

3.1 PRODUCTION OF CONCRETE

A. Ready-Mixed Concrete

1. Except as otherwise provided in this Section, ready-mixed concrete shall be batched, mixed, and transported in accordance with "Specification for Ready-Mixed Concrete" (ASTM C 94) and ACI 304. Plant equipment and facilities shall conform to the "Check List for Certification of Ready Mixed Concrete Production Facilities" of the National Ready Mixed Concrete Association.

2. Concrete produced by on-site volumetric batching and continuous mixing shall be batched and mixed in accordance with and shall conform to all requirements of ASTM C685.

B. Control of Admixtures

1. Air-entraining admixtures, and other chemical admixtures shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so, recommended by the manufacturer.

2. If two or more admixtures are used in the concrete, they shall be added separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete.

3. Addition of retarding admixtures shall be completed within 1 minute after addition of water to the cement has been completed, or prior to the beginning of the last three-quarters of the required mixing, whichever occurs first.

C. Tempering and Control of Mixing Water

1. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall not be retempered but shall be discarded.

2. The addition of water at the construction site will not be permitted.

D. Weather Conditions

1. Cold Weather - Ambient Temperature 45°F or below

a. In cold weather, the temperature of the concrete when delivered at the site of the work shall conform to the following temperature limitations:

Minimum Temperature °F	Minimum Concrete Temperature °F
30 to 45	60
15 to 30	65
below 15	no concreting permitted

b. If water or aggregate is heated above 100°F, the water shall be combined with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water and aggregate having a temperature greater than 100°F.

c. When the temperature of the surrounding air is expected to be below 40°F during placing or within 24-hours thereafter, special precautions for concrete, placing, and protection shall be followed as required by "Recommended Practice for Cold Weather Concreting" ACI 306 and modifications herein.

d. The CONTRACTOR shall provide all labor, equipment, and materials to meet the above cold weather requirements.

2. Hot Weather Ambient Temperature 90°F or Above

a. The ingredients shall be cooled before mixing, or flake ice or well-crushed ice of a size that will melt completely during mixing may be substituted for all or part of the mixing water if, due to high temperature, low slump, flash set, or cold joints are encountered.

b. Concreting under hot weather conditions shall conform to "Recommended Practice for Hot Weather Concreting" ACI 305 and modifications herein. See Article 3.06. The use of an approved set retarder will be permitted under hot weather conditions.

3.2 PLACING

A. Preparation Before Placing

1. Hardened concrete and foreign materials shall be removed from the inner surfaces of the conveying equipment.

2. Formwork shall have been completed; snow, ice and water shall have been removed; reinforcement shall have been secured in place; expansion joint material, anchors, and other embedded items shall have been positioned.

3. Semi-porous subgrades shall be sprinkled sufficiently to eliminate suction and porous subgrades shall be sealed in an approved manner.

4. Concrete shall not be placed on frozen ground.

B. Conveying

1. Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients and in a manner, which will assure that the required quality of the concrete is maintained.

2. Conveying equipment shall be approved and shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed. Conveying equipment shall be cleaned at the end of each operation or workday. Conveying equipment and operations shall conform to the following additional requirements:

a. Truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of "Specification for Ready-Mixed Concrete" (ASTM C 94).

b. Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. An approved arrangement shall be used at the discharge end to prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.

c. Chutes shall be metal or metal-lined and shall have a slope not exceeding one vertical to two horizontal and not less than one vertical to three horizontal. Chutes more than 20-feet long and chutes not meeting the slope requirements may not be used.

d. Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity and shall conform to ACI committee report 304. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed 1½-inches. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy.

C. Depositing

1. General: Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, construction joints shall be located as shown in the Contract Documents or as approved. Placing shall be carried on at such a rate that the concrete which is being integrated with fresh concrete is still plastic. Concrete which has partially hardened or has been contaminated by foreign materials shall not be deposited. Temporary spreaders in forms shall be removed when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained. Communication between the batching plant and the point of delivery shall be such that concrete placement can proceed without interruption and without trucks waiting more than 15 minutes to make delivery.

2. Placing: Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic and has been in place at least two hours. Wall and column placement and consolidation shall be in approximately horizontal layers not exceeding 2-feet in height. Concrete shall not be allowed to drop freely more than 4-feet or through a reinforcing steel cage. Sections of walls between joints shall be placed continuously to produce a monolithic unit. At least 48- hrs. shall elapse between casting of adjoining wall units.

3. Segregation: Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Concrete shall not be subjected to any procedure which will cause segregation. Horizontal flow shall not exceed 5-feet. Where concrete placing operations involve dropping concrete freely more than 4-feet vertically, spouts or pipes shall be used. Such pipes or spouts shall be of suitable diameter for the large aggregate being used, shall be kept within 3-feet of the concrete, and shall have suitable hoppers on their upper ends. Temporary openings or portholes in wall or column forms may be used to limit concrete free-fall to less than 4-feet. The ports should be spaced no more than 6-feet to 8-feet apart to limit horizontal concrete flow.

4. Placement Time: Concrete shall be placed no more than 90 minutes after the cement is first introduced into the drum. The batch will be rejected and removed from the site if this limit is exceeded.

5. Consolidation: All concrete shall be consolidated by vibration, spading, rodding, or forking so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. Internal vibrators shall have a minimum frequency of 8000 vibrations per min., and sufficient amplitude to consolidate the concrete effectively. They shall be operated by competent workmen. Use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at points approximately 18 inches apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation. A spare vibrator shall be kept on the job site during all concrete placing operations. Where the concrete is to have an as-cast finish, a full surface of mortar shall be brought against the form by the vibration process, supplemented if necessary, by spading to work the coarse aggregate back from the formed surface. Consolidation shall conform to "Recommended Practice for Consolidation of Concrete" (ACI 309).

D. Protection

1. Adhere to the requirements of:

   a. ACI 305 Hot Weather Concreting

   b. ACI 306 Cold Weather Concreting

2. Unless adequate protection is provided concrete shall not be placed during rain, sleet, or snow.

3. Rainwater shall not be allowed to increase the mixing water nor to damage the surface finish.

4. Placing Temperature: When the temperature of the surrounding air is expected to be below 40°F during placing or within 24-hours thereafter, the temperature of the plastic concrete, as placed, shall be no lower than 55°F. The temperature of the

concrete as placed shall not be so high as to cause difficulty from loss of slump, flash set, or cold joints and shall not exceed 90°F.

E. Bonding

1. When specified, the surface of joints shall be prepared in accordance with one of the methods specified.

2. The hardened concrete of wall construction joints and of construction joints between floor slabs shall be dampened (but not saturated) immediately prior to placing of fresh concrete.

3. The hardened concrete of joints in exposed work; joints in the middle of beams, girders, and joists; and horizontal joints in work designed to contain liquids shall be dampened (but not saturated) and then thoroughly covered with a coat of cement grout of similar proportions to the mortar in the concrete. The grout shall be as thick as possible on vertical surfaces and at least one inch thick on horizontal surfaces. The fresh concrete shall be placed before the grout has attained its initial set.

3.3 REPAIR OF SURFACE DEFECTS

A. General

1. Surface defects, including tie holes, shall be repaired immediately after form removal.

B. Repair of Defective Areas

1. All honeycombed and other defective concrete shall be chipped down to sound concrete. The edges shall be perpendicular to the surface or slightly undercut. No feather edges will be permitted. The area to be patched and an area at least 6-inches wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately one part cement to one-part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.

2. The patching mixture shall be made of the same materials and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted, and the mortar shall consist of not more than one part cement to 2-1/2 parts sand by damp loose volume. The quantity of mixing water shall be no more than necessary for handling and placing. The patching mortar shall be mixed in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing. Use of latex bonding agent is required.

3. After surface water has evaporated from the area to be patched, the bond coat shall be well brushed into the surface. When the bond coat begins to lose the water sheen, the premixed patching mortar shall be applied. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, it shall be left undisturbed for at least 1-hour before being finally finished. The patched area shall be kept damp for seven days. Metal tools shall not be used in finishing a patch in a formed wall which will be exposed.

C. Tie Holes

1. After being cleaned and thoroughly dampened, the tie holes shall be filled solid with a non-metallic non-shrink patching mortar. The layout of tie holes and exterior finish of the tie holes on surfaces permanently exposed to view on the outside shall be submitted to the ENGINEER for review.

D. Proprietary compounds for adhesion or as patching ingredients may be used in lieu of or in addition to the foregoing patching procedures providing that prior review is done by the ENGINEER. The ENGINEER may require such compounds in certain patching locations.

3.4 FINISHING OF FORMED SURFACES

A. Finish on all surfaces shall be as cast finish as follows:

1. Smooth Form Finish: The form facing material shall produce a smooth, hard, uniform texture on the concrete. It may be plywood, tempered concrete-form-grade hardboard, metal, plastic, paper, or other approved material capable of producing the desired finish. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to the practical minimum. It shall be supported by studs or other backing capable of preventing excessive deflection. Material with raised grain, torn surfaces, worn edges, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used. Tie holes and defects shall be patched. All fins, projections, and seams shall be completely removed.

B. Related Unformed Surfaces

1. Tops of walls or buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed and shall be floated to a texture reasonably consistent with that of the formed surfaces. Final treatment on formed surfaces shall continue uniformly across the unformed surfaces.

3.5 CURING AND PROTECTION

A. General

1. Beginning immediately after placement, concrete shall be protected from premature drying, excessively hot, or cold temperatures, and mechanical injury, and shall be maintained with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be in accordance with ACI 308 and subject to review by the ENGINEER.

B. Preservation of Moisture

1. For concrete surfaces not in contact with forms, ponding or continuous sprinkling shall be applied immediately after completion of placement and finishing and be continued for a minimum of three days. After the initial 3-day period, one of the following procedures shall be applied:

a. Ponding or continuous sprinkling;

b. Application of absorptive mats or fabric kept continuously wet;

c. Continuous application of mist spray;

d. Application of other moisture-retaining covering as approved.

e. The use of curing compounds shall not be permitted.

2. Moisture loss from surfaces placed against wooden forms or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed. After form removal, the concrete shall be cured until the end of the time prescribed in 3.5.B.3 below by one of the methods of 3.5.B.1 above.

3. Curing in accordance with 3.5.B.1 and 2 above shall be continued for at least 14-days in the case of all concrete.

C. Temperature, Wind, and Humidity

1. Adhere to the requirements of:

a. ACI 305 Hot Weather Concreting

b. ACI 306 Cold Weather Concreting

2. Cold Weather: When the mean daily outdoor temperature is less than 40˚F, the temperature of the concrete shall be maintained between 50˚F and 70˚F for 14-days. Arrangements for heating, covering, insulating, and housing the concrete work shall be made in advance of placement and shall be adequate to maintain the required temperature without injury due to concentration of heat. Combustion heaters shall not be used during the first 24-hours unless precautions are taken to prevent exposure of the concrete to exhaust gases.

3. Hot Weather: When necessary, provision for windbreaks, shading, fog spraying, sprinkling, ponding, or wet covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as concrete hardening and finishing operations will allow.

4. Rate of Temperature Change: Changes in temperature of the air immediately adjacent to the concrete during and immediately following the curing period shall be kept as uniform as possible and shall not exceed 5°F in any one hour or 50°F in any 24-hour period.

D. Protection from Mechanical Injury

1. During the curing period, the concrete shall be protected from damaging mechanical disturbances, such as load stresses, heavy shock, and excessive vibration. All finished concrete surfaces shall be protected from damage by construction equipment, materials, or methods, by application of curing procedures, and by rain or running water. Structures shall not be loaded in such a way as to overstress the concrete.

3.6 TESTING

A. General

1. Concrete materials and operations will be tested and inspected as the work progresses. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered, nor shall it obligate the ENGINEER for final review.

B. Testing Agencies

1. All testing agencies shall meet the requirements of "Inspection and Testing Agencies for Concrete and Steel as Used in Construction," (ASTM E329).

C. Testing Services

The following testing services shall be performed by the designated agency:

1. Review and test the CONTRACTOR's proposed materials for compliance with the Specifications.

2. Review and test the CONTRACTOR's proposed mix design as required by the ENGINEER.

3. Secure production samples of materials at plants or stockpiles during the course of the work and test for compliance with the Specifications.

4. Conduct strength tests of the concrete during construction in accordance with the following procedures:

   a. Secure composite samples in accordance with "Method of Sampling Fresh Concrete" (ASTM C 172). Each sample shall be obtained from a different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placement.

   b. Mold and cure four specimens from each sample in accordance with "Method of Making and Curing Concrete Test Specimens in the Field" (ASTM C 31). Any deviations from the requirements of this standard shall be recorded in the test report.

   c. Test specimens in accordance with "Method of Test for Compressive Strength of Cylindrical Concrete Specimens" (ASTM C 39). Two specimens shall be tested at 28-days for acceptance and one shall be tested at seven days for information. The fourth cylinder shall be held as a spare specimen to be tested as directed by the ENGINEER. The acceptance "strength test" result shall be the average of the strengths of the two specimens tested at 28-days. If one specimen in a test manifests evidence of improper sampling, molding, or testing, it shall be discarded, and the strength of the remaining cylinder shall be considered the "strength test" result. Should both specimens in a test show any of the above defects, the entire test shall be discarded. When high early strength concrete is used, the specimens shall be tested with two specimens at 14-days and one specimen at three days. The acceptance will be based on the 14-day test.

   d. Make at least one "strength test" (mold four cylinders) for each 50 cubic yards, or fraction thereof, of each mix design of concrete placed in any one day.

5. Determine slump of the concrete sample for each strength test and whenever consistency of concrete appears to vary, using "Method of Test for Slump of Portland Cement Concrete: (ASTM C 143).

6. Determine air content of normal weight concrete sample for each strength test in accordance with the "Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method" (ASTM C 231), "Method of Test for Air Content of Freshly Mixed Concrete by the Volumetric Method" (ASTM C 173) or "Method of Test for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete" (ASTM C 138).

7. Determine temperature of concrete sample for each strength test.

D. Additional Services When Required

The following services shall be performed by the designated agency when required by the ENGINEER:

1. Inspect concrete batching, mixing and delivery operations to the extent deemed necessary by the ENGINEER.

2. Sample concrete at point of placement and perform required tests.

3. Other testing or inspection services as required by the ENGINEER.

E. Other Services as Needed

The following services shall be performed by the designated agency when necessary and costs of said services shall be borne by the CONTRACTOR:

1. Additional testing and inspection required because of changes in materials or proportions requested by the CONTRACTOR.

2. Additional testing of materials or concrete occasioned by their failure by test or inspection to meet specification requirements.

3. Testing to determine strength for early form removal.

F. Duties and Authorities of Designated Testing Agency

1. Representatives of the agency shall inspect, sample, and test the materials and the production of concrete as specified herein. When it appears that any material furnished or work performed by the CONTRACTOR fails to fulfill specification requirements, the testing agency shall report such deficiency to the ENGINEER and the CONTRACTOR promptly.

2. The agency shall report all test and inspection results to the ENGINEER and CONTRACTOR immediately after they are performed. All test reports shall include the exact location in the work at which the batch represented by a test was deposited. Reports of strength tests shall include detailed information on storage and curing of specimens prior to testing.

3. The testing agency or its representatives are not authorized to modify any requirement of the Contract Documents, nor to approve, accept, disapprove, or reject any portion of the work.

G. Responsibilities and Duties of CONTRACTOR

1. The use of testing services shall in no way relieve the CONTRACTOR of the responsibility to furnish materials and construction in full compliance with the Contract Documents.

2. The CONTRACTOR shall submit to the ENGINEER the concrete materials and the concrete mix designs proposed for use with a written request for review. This submittal shall include the results of all testing performed to qualify the materials and to establish the mix designs. No concrete shall be placed in the work until the CONTRACTOR has received such approval in writing.

3. To facilitate testing and inspection, the CONTRACTOR shall provide and maintain for the use of the testing agency and ENGINEER adequate facilities for safe storage and proper curing of concrete test specimens on the project site for the first 24 hours as required by "Method of Making and Curing Concrete Test Specimens in the Field" (ASTM C 31). The CONTRACTOR shall provide labor, tools, and equipment to assist in the sampling and testing of concrete on the job. The CONTRACTOR shall advise the designated testing agency sufficiently in advance of operations to allow for completion of quality tests and assignment of personnel.

3.7 EVALUATION AND ACCEPTANCE OF CONCRETE

A. Evaluation of Test Results

1. Test results for standard molded and standard cured test cylinders shall be evaluated separately for each specified concrete mix design. Such evaluation shall be valid only if tests have been conducted in accordance with procedures specified.

B. Acceptance of Concrete

1. The following conditions must be met:

a. The strength level of the concrete will be considered satisfactory and acceptable so long as the average of all sets of three consecutive "strength test" results equals or exceeds the specified 28-day strength f'c and no individual "strength test" result falls below the specified 28-day strength f'c by more than 500 psi. The strength level of the concrete shall be measured at 14-days for high-early strength concrete. High-early strength concrete shall achieve the specified 28-day f'c at the age of 14-days.

b. The requirements described by paragraphs 3.8 Acceptance of Structure, A, B, C and D.

C. Testing of Concrete in Place

1. This Work shall be at the CONTRACTOR’s expense.

2. Testing by impact hammer, sonoscope, or other non-destructive device may be permitted or required by the ENGINEER to determine relative strengths at various locations in the structure as an aid in evaluating concrete strength in place and for selecting areas to be cored, if the strength level of the concrete is not satisfactory. Such tests shall not be used as a basis for acceptance or rejection.

3. Core Tests: Required when specifications are not met.

a. Cores at least 2-inches in diameter shall be obtained and tested in accordance with "Methods of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete" (ASTM C 42). Cores shall be taken as soon as practicable after determining that the concrete strength level is unsatisfactory. If the concrete in the structure will be dry under service conditions, other cores shall be air dried (temperature 60° to 80°F, relative humidity less than 60 percent) for seven days before test and shall be tested dry. If the concrete in the structure will be more than superficially wet under service conditions, the cores shall be tested after moisture conditioning in accordance with ASTM C 42.

b. At least three representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location and number of cores shall be determined by the ENGINEER so as least to impair the strength of the structure and best represent the condition of the potentially deficient concrete. If, before testing, one or more of the cores shows evidence of having been damaged subsequent to or during removal from the structure, they shall be replaced.

c. Concrete in the area represented by the core test will be considered adequate and acceptable if the average strength of the cores is equal to at least 85 percent of, and if no single core is less than 75 percent of, the specified 28-day strength f'c. If the above strengths are not met, the CONTRACTOR shall remove the deficient concrete.

d. Core holes shall be filled by the CONTRACTOR with low slump concrete or mortar.

3.8 ACCEPTANCE OF STRUCTURE

A. General

1. Completed concrete work which meets all applicable specification requirements will be accepted without qualification.

2. Completed concrete work which fails to meet one or more of the specified requirements, but which has been repaired to bring it into compliance will be accepted without qualifications.

3. If any concrete does not meet the specified strength levels in paragraph 03.08.B, Acceptance of Concrete, the ENGINEER will require additional material and other tests to determine the probable cause of the low strength levels. This may result in remedial actions or modifications being required in the methods or materials being employed. Such actions or modifications shall be at the CONTRACTOR's expense.

4. Completed concrete work which fails to meet the requirements these specifications will be rejected, and the CONTRACTOR will be required to remove and replace the defective concrete. In this event, modifications will be required to assure that remaining work complies with the requirements.

B. Dimensional Tolerances

1. Formed surfaces resulting in concrete outlines smaller than permitted by the tolerances shall be considered potentially deficient in strength and subject to the provisions of these Specifications.

2. Formed surfaces resulting in concrete outlines larger than permitted by the required tolerances may be rejected and the excess material shall be subject to removal. If removal of the excess material is required, it shall be accomplished in such a manner as to maintain the strength of the section and to meet all other applicable requirements of function and appearance.

3. Concrete members cast in the wrong location will be rejected.

4. Inaccurately formed concrete surfaces exceeding the required limits may be rejected and shall be repaired or removed and replaced as required by the ENGINEER.

5. Finished slabs exceeding the required tolerances o may be required to be repaired provided that strength or appearance is not adversely affected. High spots may be removed with a terrazzo grinder, low spots filled with a patching compound, or other remedial measures performed as reviewed by the ENGINEER.

C. Appearance

1. All concrete with defects which adversely affect the appearance or function of the specified finish may be repaired only by approved methods.

D. Strength of Structure

1. The strength of the structure in place will be considered deficient if it fails to comply with any requirements, which control the strength of the structure, including but not necessarily limited to the following conditions:

a. Low concrete strength as designated.

b. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the requirements of the the Contract Documents.

c. Concrete which differs from the required dimensions or location in such a manner as to reduce the strength.

d. Curing less than that specified.

e. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.

f. Mechanical injury as defined in paragraph 03.06.D, construction fires, accidents, or premature removal of formwork likely to result in deficient strength.

2. Additional testing will be required when the strength of the structure is considered potentially deficient. Cost of this testing will be borne by the CONTRACTOR.

3. Core tests in accordance will be required when ENGINEER determines that the strength of the concrete in place is considered potentially deficient. Cost of coring and testing will be borne by the CONTRACTOR.

4. Concrete work judged inadequate by failure to meet the requirements of these Specifications shall be removed and replaced at the CONTRACTOR's expense.

5. The CONTRACTOR shall pay all costs incurred in providing the additional testing and/or analysis required by these Specifications, or the Contract Documents.

6. The OWNER will pay all costs of additional testing and/or analyses which are made at its request and which are not required by these Specifications, or the Contract Documents.

3.09 CLEANING UP

A. At the completion of the concrete work to the satisfaction of and review by the ENGINEER, all extraneous concrete debris, materials, and equipment shall be removed from the job site and the concrete shall be left clean and in first class condition.

Concrete Class	A
Locations	Steel embedments
28-day Compressive Strength (psi)	4,000
Cement Content (per CYD of concrete)	594 (6 sack equivalent)
Coarse Aggregate	6AA
Water/Cement Ratio by Weight (maximum)	0.42
Air Content (% by volume)	6% ± 1%
Mid-Range Water Reducer	Yes
Slump at point of placement (inches) *	5” – 7” (will vary based on location)
Fiber Reinforcement	No
Fly Ash (% of cement content; maximum)	15 – 20%
Silica Fume	No

END OF SECTION

SECTION 05010

METAL MATERIALS

PART 1 – GENERAL

1.1 REQUIREMENT

A. Metal materials not otherwise specified shall conform to the requirements of this Section.

B. Surfaces of dissimilar metals in contact subject to immersion shall be isolated with an insulating material to prevent anodic corrosion.

C. All materials substitutions shall be subject to approval by the OWNER and ENGINEER.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Materials for fasteners are included in Section 05050, Metal Fastening.

B. Requirements for specific products made from the materials specified herein are included in other sections of the Specifications. See the section for the specific item in question.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. ASTM A36 Standard Specification for Structural Steel

B. ASTM A47 Standard Specification for Malleable Iron Castings

C. ASTM A48 Standard Specification for Gray Iron Castings

D. ASTM A53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

E. ASTM A167 Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

F. ASTM A193 Standard Specification for Alloy-Steel and Stainless-Steel Bolting for High Temperature or High-Pressure Service and Other Special Purpose Applications

G. ASTM A240 Standard Specification for Chromium and Chromium-Nickel Stainless-Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

H. ASTM A276 Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes

I. ASTM A446 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality

J. ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

K. ASTM A501 Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

L.	ASTM A529	Standard Specification for Structural Steel with 42,000 psi (290 Mpa) Minimum Yield Point (1/2-in. (12.7 mm) Maximum Thickness)
M.	ASTM A536	Standard Specification for Ductile Iron Castings
N.	ASTM A564	Standard Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless-Steel Bars and Shapes
O.	ASTM A570	Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality
P.	ASTM A705	Standard Specification for Age-Hardening Stainless-Steel Forgings
Q.	ASTM A992	Standard Specification for Structural Steel Shapes
R.	ASTM A666	Standard Specification for Austenitic Stainless-Steel, Sheet, Strip, Plate, and Flat Bar for Structural Applications
	ASTM B21	Standard Specification for Naval Brass Rod, Bar, and Shapes
S.	ASTM B26	Standard Specification for Aluminum-Alloy Sand Castings
T.	ASTM B85	Standard Specification for Aluminum-Alloy Die Castings
U.	ASTM B108	Standard Specification for Aluminum-Alloy Permanent Mold Castings
V.	ASTM B138	Standard Specification for Manganese Bronze Rod, Bar, and Shapes
W.	ASTM B209	Standard Specification for Aluminum-Alloy Sheet and Plate
X.	ASTM B221	Standard Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
Y.	ASTM B308	Standard Specification for Aluminum-Alloy Standard Structural Shapes, Rolled or Extruded
Z.	ASTM B574	Standard Specification for Nickel-Molybdenum-Chromium Alloy Rod
AA.	ASTM F468	Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs for General Use

1.4 SUBMITTALS

A. Material certifications shall be submitted along with any Shop Drawings for metal products and fabrications required by other sections of the Specifications.

1.5 QUALITY ASSURANCE

A. OWNER may engage the services of a testing agency to test any metal materials for conformance with the material requirements herein. If the material is found to be in conformance with the Specifications, the cost of testing will be borne by the OWNER. If the material does not conform to the Specifications, the cost of testing shall be paid by the CONTRACTOR and all materials not in conformance as determined by the ENGINEER shall be replaced by the CONTRACTOR at no additional cost to the OWNER. In lieu of replacing materials, the CONTRACTOR may request further testing

to determine conformance, but any such testing shall be paid for by the CONTRACTOR regardless of outcome of such testing.

PART 2 – PRODUCTS

2.1 CARBON AND LOW ALLOY STEEL

A. Unless noted otherwise on the Drawings, material types and ASTM designations shall be as listed below:

1.	Structural Beams (W Shapes)	A992
2.	Other Structural Steel (Including Plates, Angles, and Bars)	A572 Grade 50
3.	Pipe - Structural Use	A106 Grade C
4.	Round Structural Tubes	A500 Grade C
5.	Structural Steel Bolts	F3125 Grade A325

2.2 STAINLESS-STEEL

A. All stainless-steel fabrications exposed to underwater service shall be Type 316/316L, unless noted otherwise.

B. Material types and ASTM designations are listed below:

1.	Plates and Sheets	ASTM A240
2.	Structural Shapes	ASTM A276
3.	Trunnion Pin	ASTM A564 or A705, Type 630
4.	Fasteners (Bolts, Screws)	ASTM A193 or F593

2.3 CASTINGS

A. Material types and ASTM designations are listed below:

1.	Cast Steel	ASTM A27

2.4 BRONZE

A. Material types and ASTM designations are listed below:

1.	Seal Nuts and General Purpose	ASTM B21, Alloy 464, Half Hard, Naval Brass

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 05050

METAL FASTENING

PART 1 – GENERAL

1.1 REQUIREMENT

A. Furnish all materials, labor, and equipment required to provide all metal welds and fasteners not otherwise specified, in accordance with the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 05010, Metal Materials

B. Section 05120, Structural Steel

C. Section 05500, Metal Fabrications

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced Specifications, codes, and standards refer to the most current issue available at the time of Bid.

1.	Michigan Building Code	
2.	AISC	Specification for Structural Joints Using ASTM F3125 Grade A325 or A490 Bolts.
3.	AISC	Code of Standard Practice
4.	AWS D1.1	Structural Welding Code - Steel
5.	AWS D1.6	Structural Welding Code – Stainless-Steel
6.	ASTM A572/A572M	Standard Specification for High Strength Low-Alloy Columbium-Vanadium Structural Steel Grade 50
7.	ASTM A307	Standard Specification for Carbon Steel Externally Threaded Standard Fasteners
8.	ASTM F3125	Standard Specification for High-Strength Structural Bolts and Accessories, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength
9.	ASTM A489	Standard Specification for Eyebolts
10.	ASTM A563	Standard Specifications for Carbon and Alloy Steel Nuts

11.	ASTM F593	Standard Specification for Stainless-Steel Bolts; Hex Cap Screws, and Studs
12.	ASTM F594	Standard Specification for Stainless-Steel Nuts
13.	ASTM D1785	Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe
14.	ASTM F467	Standard Specification for Nonferrous Nuts for General Use
15.	ASTM A193	Standard Specification for Alloy-Steel and Stainless-Steel Bolting for High Temperature or High-Pressure Service and Other Special Purpose Applications
16.	ASTM A194	Standard Specification for Carbon Steel, Alloy Steel, and Stainless-Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01300, Submittals.

1. Shop Drawings providing the fastener's manufacturer and type and certification of the fastener's material and grade/capacity.

2. Weld Procedure Specifications (WPS), Procedure Qualification Records (PQR), and Welders' Qualifications, per AWS D1.1 and D1.6, as applicable.

3. Certified weld inspection reports.

1.5 QUALITY ASSURANCE

A. Fasteners not manufactured in the United States shall be tested and certification provided with respect to specified quality and strength standards. Certifications of origin shall be submitted for all U.S. fasteners supplied on the project.

B. All welding shall be performed by welders certified in accordance with AWS D1.1 and D1.6, as applicable. All stainless-steel welding shall be performed by welders certified in accordance with AWS D1.6. Certifications of field welders shall be submitted prior to performing any field welds. Any item not covered by AWS shall be welded in accordance with procedure prepared by the CONTRACTOR, as approved by the ENGINEER. All non-prequalified welds shall be qualified by the CONTRACTOR.

C. Welds and high strength bolts used in connections of structural steel will be visually inspected in accordance with Article 3.04.

D. The CONTRACTOR shall engage an independent testing agency to perform testing of welded connections and to prepare test reports in accordance with AWS. Inadequate welds shall be corrected or redone and retested to the satisfaction of the ENGINEER, OWNER, and/or an acceptable independent testing laboratory, at no additional cost to the OWNER. Weld examination requirements shall be per Section 01810.

E. Provide a welding procedure for each type and thickness of weld. For welds that are not prequalified, include a Performance Qualification Report. The welding procedure shall be given to each welder performing the weld. The welding procedure shall follow the format in Annex E of AWS D1.1 with relevant information presented.

PART 2 – PRODUCTS

2.1 ANCHOR BOLTS

A. Anchor bolts shall conform to ASTM A36 or ASTM A307 Grade A except where stainless-steel or other approved anchor bolts are shown on the Drawings. Anchor bolts shall have hexagonal heads and shall be supplied with hexagonal nuts meeting the requirements of ASTM A563 Grade A.

B. Where pipe sleeves around anchor bolts are shown on the Drawings, pipe sleeves shall be cut from Schedule 40 PVC plastic piping meeting the requirements of ASTM D1785.

2.2 HIGH STRENGTH BOLTS

A. High strength bolts and associated nuts and washers shall be in accordance with ASTM F3125 Grade A325 or A490. Bolts, nuts, and washers shall meet the requirements of AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".

2.3 STAINLESS-STEEL BOLTS

A. Stainless-steel bolts and screws, including for gate seal mounting, shall conform to ASTM A193 or F593, Type 316.

B. Stainless-steel bolts shall have hexagonal heads with a raised letter or symbol on the bolts indicating the manufacturer and shall be supplied with hexagonal nuts meeting the requirements of ASTM F594. Nuts shall be of the same alloy as the bolts.

C. For each seal mounting stainless-steel bolt or screw, bronze (ASTM B21, C46400, half hard, naval brass) main and lock nuts shall be provided to avoid galling. Stainless-steel plain washers and neoprene washers shall also be provided.

D. Stainless-steel bolts shall be used as shown on the Drawings.

2.4 CONCRETE ANCHORS

A. All concrete anchors shall be adhesive anchors. Adhesive anchors shall be two-part injection type.

B. Adhesive anchors shall consist of stainless-steel threaded rods or bolts anchored with an adhesive system into hardened concrete or grout-filled masonry. The adhesive system shall use a two-component adhesive mix and shall be injected with a static mixing nozzle following manufacturer's instructions. Thoroughly clean drill holes of all debris and drill dust with wire brush prior to installation of adhesive and threaded rod/bolt. Wipe rod free from oil that may be present from shipping or handling. The embedment depth of the rod/bolt shall provide a minimum allowable bond strength that is equal to the allowable tensile capacity of the rod/bolt (see Table 1) unless noted otherwise on the Drawings. The adhesive system shall be “HIT ICE” as manufactured by Hilti, Inc, or approved equal.

2.5 WELDS

A. Electrodes for welding structural steel and all ferrous steel shall comply with AWS Code, using E70 series electrodes for shielded metal arc welding (SMAW), or F7 series electrodes for submerged arc welding (SAW).

B. Electrodes for welding stainless-steel and other metals shall comply with AWS D1.6.

2.6 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and perimeter concrete and masonry walls.

1. Provide stainless-steel fasteners for fastening galvanized metals.

B. Cast-in-Place Anchors in Concrete: Threaded type unless otherwise indicated; stainless-steel castings. Provide bolts, washers, and shims as needed, all stainless-steel.

C. Post-Installed Anchors: Chemical adhesive set anchors.

1. Material for all Locations: Type 304 stainless-steel, unless otherwise indicated.

2.7 WELDED STUD CONNECTORS

A. Welded stud connectors shall conform to the requirements of AWS D1.1 Type C.

2.8 EYEBOLTS

A. Eyebolts shall conform to ASTM A489 unless noted otherwise.

2.9 ANTI-SEIZE LUBRICANT

A. Anti-seize lubricant shall be Graphite 50 Anti-Seize by Loctite Corporation, 1000 Anti-Seize Paste by Dow Corning, 3M Lube and Anti-Seize by 3M, or equal as approved by ENGINEER and OWNER.

B. Anti-seize lubricant shall be applied to threads of all SS bolts or threaded rods where SS nuts are used prior to assembly.

PART 3 – EXECUTION

3.1 MEASUREMENTS

A. The CONTRACTOR shall verify all dimensions and review the Drawings and shall report any discrepancies to the ENGINEER for clarification prior to starting fabrication.

3.2 BOLT INSTALLATION

A. Anchor Bolts and Concrete Anchors

1. Anchor bolts shall be installed in accordance with AISC "Code of Standard Practice" by setting in concrete while it is being placed and positioned by means of a rigidly held template.

2. The CONTRACTOR shall verify that all concrete anchors have been installed in accordance with the manufacturer's recommendations and that the capacity of the installed anchor meets or exceeds the specified safe holding capacity.

3. Concrete anchors shall not be used in place of anchor bolts without ENGINEER's approval.

4. All stainless-steel threads shall be coated with anti-seize lubricant.

B. High Strength Bolts

1. All bolted connections for structural steel shall use high strength bolts. High strength bolts shall be installed in accordance with AISC "Specification for Structural Joints, using A325 or A490 Bolts". All bolted joints shall be Type N, snug-tight, bearing connections in accordance with AISC Specifications unless noted otherwise on the Drawings.

C. Other Bolts

1. All dissimilar metals shall be connected with appropriate fasteners and shall be insulated with a dielectric or approved equal.

3.3 WELDING

A. All welding shall comply with AWS Code for procedures, appearance, quality of welds, qualifications of welders and methods used in correcting welded work.

B. Welded stud connectors shall be installed in accordance with AWS D1.1.

3.4 INSPECTION

A. High strength bolting will be visually inspected in accordance with AISC "Specification for Structural Joints Using A325 or A490 Bolts". Rejected bolts shall be either replaced or retightened as required.

B. Field welds will be visually inspected in accordance with AWS Codes. Inadequate welds shall be corrected or redone as required in accordance with AWS Codes. Refer to Section 01810 for weld examination requirements.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 REFERENCES

A. AISC - Specification for Structural Steel Buildings

B. AISI - Specifications for the Design of Cold Formed Steel Structural Members

C. AWS – American Welding Society

D. USACE – US Army Corps of ENGINEERS

E. Section 01810, Testing and Materials Inspection

F. Section 05010, Metal Materials

G. Section 05050, Metal Fastening

1.2 PERFORMANCE REQUIREMENTS

A. The gates as repaired with replacement fabricated parts by the CONTRACTOR shall be suitable for performing its intended functions shown on the Drawings, including suitability for site assembly, installation, and testing.

B. All work shall be performed and completed in a thorough workmanlike manner and shall follow the best modern practices in the fabrication of all equipment parts and accessories. All work shall be done by personnel skilled in the related professions and trades. All parts shall be made accurately to standard gages so as to facilitate replacement.

C. After award of contract and before commencing fabrication, the CONTRACTOR shall visit the project sites to verify accuracy of the dimensions and elevations of the existing gate slot areas shown on the Drawings.

D. The correct fit and functioning of all repaired equipment and fabrications shall be the CONTRACTOR's responsibility.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Paint products.

2. Grout.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include detailed plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

C. Certified Mill Test Reports

D. Affidavit of Compliance with grade specified

E. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 QUALITY ASSURANCE

A. CONTRACTOR shall establish and maintain quality control records for all fabricated parts. The quality control shall include maintenance of proper dimensions, tolerances, and finishes; non-destructive testing of welds; proper painting procedures, including surface preparations, correct dry film thickness, and testing for pin holes. All records shall be subject to review by the ENGINEER. The OWNER or ENGINEER shall also have the right to witness fabrication or testing of metal fabrications at any time.

1.5 TOLERANCES

A. Fabrication tolerances shall be as noted on the Contract Drawings or in these Specifications.

1. Tolerances not shown on the Contract Drawings shall be established by the CONTRACTOR, subject to the ENGINEER's review. All fabrication tolerances shall be indicated on the Shop Drawings.

2. Plate thickness shall be governed by ASTM A 6/A 6M.

3. All un-toleranced centerline hole dimensions (between centerline to centerline of bolt holes groups), wherever shown on detail Drawings, shall have an implied tolerance of ± 1/32-in.

B. The CONTRACTOR shall provide finer tolerances, as needed, for proper operation of the equipment, taking into consideration also the installation tolerances. Where tolerances are not specified, an allowable variation of 1/32-in. is permissible in the overall length of component members with both ends milled. Component members without milled ends shall not deviate from the dimensions shown by not more than 0.1-in. for members 30-ft. or less in length and by more than 0.2-in. for members over 30-ft. in length.

C. Erection tolerances not specified shall be as noted in AISC S303, Code of Standard Practices for Steel Buildings and bridges, Section 7. Any deviations shall be subject to the approval of ENGINEER.

D. The tolerances specified in these Specifications and on the Drawings are maximum tolerances applicable to the equipment when it is installed. Finer shop tolerances shall be established, if necessary, to meet the specified design or operational requirements or for interchangeability of spare parts. All tolerances shall be selected with due consideration to the nature and function of the parts, to the effects of cumulative tolerances, and to the corresponding accuracy required to secure proper operation, but they shall not exceed the tolerances specified below.

1. Plumbness. The assembled repaired gate when hung from its lifting lugs shall be within ±1/4-in. in the width direction.

2. Seal Mounting Angles and Seat Bars. Replaced seal seat bars for side seals shall be within 1/16-in. of a plane parallel to the respective embedded seal plates. Seal mounting angle and seat bars shall not have more than 0.050 in. of camber over any 10-ft. of length, or 0.010-in. of camber over any 5-ft. of length. The maximum total camber over the entire length shall not exceed 0.060 in.

3. Replaced sill beams shall be within ±0.050 in. of its design plane. They shall be level within ±0.050-in. and shall have a maximum camber of 0.050-in. for the entire length.

4. Repaired bottom of each skinplate shall be straight within ± 0.050-in. over the entire length. Repaired bottom edge shall be parallel with the top edge of skinplate within ±0.010-in. per 5-ft. of height. Length of diagonals connecting skinplate corners shall be within ± 0.005-in. for any 5-ft. of skinplate perimeter or within ± 0.050-in. for full length.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes.

B. When galvanizing is called for, provide hot galvanized coatings that conform to the requirements of ASTM A123 or ASTM A446.

2.2 MISCELLANEOUS MATERIALS

A. Low-Emitting Materials: Paints and coatings shall comply with Section 09900, Painting.

B. Nonshrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

C. Concrete: Comply with requirements in Section 03300, Cast-in-Place Concrete for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 4,000 psi.

2.3 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.

C. Dimensions shall be measured by an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled fabrication unit shall be within the maximum tolerances as appropriate or as specified.

D. All bolts shall be equipped with a positive locking device which may be lock nut, lock washer, or another device, as applicable.

E. Like parts shall be interchangeable. Machining of fits shall be accurate and to specified dimensions.

F. Rounding of edges where shown shall be full radius.

G. Seals and seal seat bar welds shall be continuous and watertight.

H. All corners and edges in contact with seals shall be rounded and smooth, with minimum radius of ¼-inch, unless otherwise noted on Drawings.

I. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended.

J. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.

K. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

L. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than 24-inches o.c.

2.4 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

2.5 STEEL AND IRON FINISHES

A. Shop prime iron and steel items in accordance with Section 09900, Painting.

B. Preparation for Shop Priming: Prepare surfaces to comply with Section 09900, Painting

C. Machined interfacing surfaces of metal fabrications and all bolt holes shall be applied with a coat of anti-corrosion compound, subject to the OWNER's approval, prior to assembly.

D. The qualities of all surface finishes not indicated on the Drawings shall be selected with due regard for the nature and function of the surface and in accordance with ANSI B46.1 except as otherwise specified or approved. Surface roughness shall not exceed 32 microinches for all surfaces in sliding contact, 125 microinches for surfaces in permanent contact where a tight joint is required, and 250 microinches for surfaces in contact where tight joint is not required. Contact surfaces of shafts/pins which interface with bearings shall be finished to a surface roughness not exceeding 32 microinches.

PART 3 - EXECUTION

3.1 MEASUREMENT

A. The CONTRACTOR shall verify all dimensions and shall make any field measurements necessary and shall be fully responsible for accuracy and layout of work. The CONTRACTOR shall review the Drawings and any discrepancies shall be reported to the ENGINEER for clarification prior to starting fabrication.

3.2 FABRICATION

A. All measurements and dimensions shall be based on field conditions and shall be verified by the CONTRACTOR prior to fabrication. Such verification shall include coordination with adjoining work.

B. Metalwork fabrication shall be in accordance with the applicable provisions of AISC- 01 and AISC-02.

C. Manufacturing Processes. The CONTRACTOR shall be responsible for the proper selection of manufacturing methods for fabrication and assembly. The CONTRACTOR shall also be responsible for correct fit of parts. Any errors, omissions, or conflicts on the Contract Drawings and Specifications shall be brought to the immediate attention of the ENGINEER for resolution. The CONTRACTOR must receive written resolution before proceeding with the work. Different requirements stated on the Contract Drawings or in the Contract Specifications, if left unresolved with the ENGINEER, shall not be the reason for the CONTRACTOR to select less stringent requirement.

D. All fabricated work shall be shop fitted together as much as practicable, and delivered to the field, complete and ready for erection. All miscellaneous items such as stiffeners, fillets, connections, brackets, and other details necessary for a complete installation shall be provided.

E. All work shall be fabricated and installed in a manner that will accommodate expansion and contraction, prevent shearing of bolts, screws, and other fastenings, ensure rigidity, and provide a close fit of parts.

F. Finished members shall conform to the lines, angles, and curves shown on the Drawings and shall be free from distortions of any kind.

G. All shearings shall be neat and accurate, with parts exposed to view neatly finished. Flame cutting is allowed only when performed utilizing a machine.

H. Sheared edges of plate more than 5/8-in. in thickness shall have a minimum allowance of 1/8-in. to be planed, milled, ground, or thermal cut to size. Visual inspection and proper repair of plate cut edges shall be performed prior to welding. Re-entrant corners shall be filleted to a minimum radius of ¾-in., before cutting.

I. Finished members shall be free of twists, bends and open joints.

J. Steel may be cut by mechanically guided or hand guided torches provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained.

K. Surfaces and edges to be welded shall be prepared in accordance with AWS D1.1/D1.6. Where structural steel is not to be welded, chipping or grinding shall not be required except as necessary to remove slag and sharp edges. Hand guided cuts, which are to be exposed or visible, shall be chipped, ground, or machined to sound metal.

L. Steel plates for beam members shall be cut and fabricated so primary direction of rolling is parallel to the length of the members. Any primary plate members to be curved or bent shall have the bend line at right angles to the direction of mill rolling of the plate.

M. Stainless-steel plates may be flame cut provided a procedure is used which shall not destroy the corrosion resisting properties of material. The procedure to be used shall be submitted to ENGINEER. No cutting shall proceed without approval of ENGINEER.

N. Holes for bolted connections in material greater than ¾-in. in thickness shall not have punched holes. Undersized holes shall be reamed or drilled full-size to 1/8-in. larger than the nominal size of the bolts. Connection parts shall be securely held while being reamed or drilled and shall be match-marked before disassembly in the shop (if applicable). Reaming and drilling shall be done with twist drills. The fit between bolted connections shall be sufficiently tight to exclude water when painted.

O. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not impair the original properties of the metal. Proposed flame cutting of material other than structural steel shall be subject to approval and shall be indicated on Shop Drawings.

P. All shop connections shall be welded unless otherwise indicated on the Drawings or specified herein. Bolts and welds shall conform to Section 05050, Metal Fastening. All fastenings shall be concealed where practicable.

Q. Except where otherwise noted on the Drawings or in this Specification, all shop connections shall be welded.

R. All holes in structural steel members required for anchors, anchor bolts, bolt holes, sag rods or other members or for attachment of other work shall be provided by the fabricator and detailed on the Shop Drawings.

S. All materials shall be properly worked and match-marked for field assembly.

T. Fabricated items shall be shop painted when specified in Section 09900, Painting.

U. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended.

3.3 MACHINE WORK

A. Unless otherwise shown on the Contract drawings, all tolerances, allowances, and gages for metal fits between plain (non-threaded) cylindrical parts shall conform to ANSI B4.1, “Preferred Limits and Fits for Cylindrical Parts”, for the class of fit as shown or required. In general, tolerances for machine-finished surfaces shall be within 0.015-in.

B. Sufficient machining stock shall be allowed on parts to be machined to ensure true surfaces of solid material.

C. Journal and sliding surfaces shall be polished, and all surfaces shall be finished with sufficient smoothness and accuracy to ensure proper operations when assembled.

D. No machining shall be done on working surfaces of self-lubricating bronze bushings or washers, except by the original manufacturer.

E. Finish Surfaces

1. Surface finish where not indicated on the Contract Drawings or in these Specifications, shall be adequate for the intended use, shall be indicated on the Contractor's Drawings, and shall be in accordance with ANSI B46.1.

2. Values of required roughness heights indicated on the Contract Drawings or in these Specifications are arithmetical average deviations expressed in microinches. The values indicated are maximum values.

F. Compliance with specified surface shall be determined by visual inspection of the Work compared to standard roughness specimens, in accordance with the provisions of ANSI B46.1, Surface Texture.

G. Unfinished Surfaces

1. All Work shall be laid out to secure proper matching of adjoining unfinished surfaces. Where there is a large discrepancy between adjoining unfinished surfaces, they shall be chipped and ground smooth, or machined, to secure proper alignment.

2. Unfinished surfaces shall be true to the lines and dimensions shown on the Contract Drawings and shall be chipped or ground free of all projections and rough spots. Depressions or holes not affecting the strength or usefulness of the parts may be filled in a manner reviewed by the ENGINEER.

H. Protection of Machined Surfaces

1. Machine-finished surfaces shall be thoroughly cleaned of foreign matter.

2. Finished surfaces of large parts and other delicate surfaces shall be protected with wooden pads or other suitable means, until they are ready for assembly/installation.

3. Unassembled pins and bolts shall be oiled and wrapped with moisture resistant paper or protected by other approved means.

4. Finished surfaces of ferrous metals to be in bolted contact shall be washed with a rust inhibitor and given one thin coat of lubricant.

5. Self-lubricating bronze bearings shall not be greased and shall be assembled dry according to the manufacturer's instructions.

3.3 DELIVERY, STORAGE AND HANDLING

A. Fabricated parts shall be loaded in such a manner that they may be transported and unloaded without being over-stressed, deformed or otherwise damaged.

B. Fabricated parts and packaged materials shall be protected from corrosion and deterioration. Material shall be stored in a dry area and shall not be placed in direct contact with the ground. Materials shall not be placed on the structure in a manner that might cause distortion or damage to the members or the supporting structures. The CONTRACTOR shall repair or replace damaged materials or structures as directed.

3.4 ERECTION

A. The erection of all structural steel shall conform to the applicable requirements of the AISC "Specification for Structural Steel Buildings" and AISC "Code of Standard Practice". All temporary bracing, guys and bolts as may be necessary to ensure the safety of the structure until the permanent connections have been made shall be provided by the CONTRACTOR.

B. Structural members shall be set accurately to the lines and elevations indicated. The various members shall be aligned and adjusted to form a part of a complete frame or structure before permanently fastened.

C. No cutting of structural steel members in the field will be allowed except by the written approval of the ENGINEER.

D. Bearing surfaces and other surfaces which will be in permanent contact shall be cleaned before assembly.

E. Field welding shall not be permitted unless specifically indicated in the Drawings or approved in writing by the ENGINEER. All field welding shall comply with Section 05050, Metal Fastening.

F. All bolted connections shall use high strength bolts in accordance with Section 05050, Metal Fastening. Bolts shall be fully pretensioned according to the AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".

G. All field connections shall be accurately fitted up before being bolted. Drifting shall be only such as will bring the parts into position and shall not be sufficient to enlarge the holes or to distort the metal. All unfair holes shall be drilled or reamed.

H. Misfits at Bolted Connections

1. Where misfits in erection bolting are encountered, the ENGINEER shall be immediately notified. The CONTRACTOR shall submit a method to remedy the misfit for review by the ENGINEER. The ENGINEER will determine whether the remedy is acceptable or if the member must be refabricated.

2. Incorrectly sized or misaligned holes in members shall not be enlarged by burning or by the use of drift pins. The CONTRACTOR shall notify the ENGINEER immediately and shall submit a proposed method of remedy for review by the ENGINEER.

3. Where misalignment between anchor bolts and bolt holes in steel members are encountered, the ENGINEER shall be immediately notified. The CONTRACTOR shall submit a method to remedy the misalignment for review by the ENGINEER.

I. Grouting of Base Plates and Bearing Plates

1. The bottom surface of the plates shall be cleaned of all foreign materials, and concrete or masonry bearing surface shall be cleaned of all foreign materials and roughened to improve bonding.

2. Accurately set all base and bearing plates to designated levels with steel wedges or leveling plates.

3. Baseplates shall be grouted with non-shrink grout to assure full uniform bearing. Grouting shall be done prior to placing loads on the structure.

4. Anchor bolts shall be tightened after the supported members have been positioned and plumbed and the non-shrink grout has attained its specified strength.

J. Where finishing is required, assembly shall be completed including bolting and welding of units before start of finishing operations.

3.5 PAINTING

A. Painting shall be performed according to Section 09900, Painting and the following additional requirements.

1. Contact Surfaces: Contact surfaces such as at field connections, shall be cleaned and primed but not painted.

2. Finished Surfaces: Machine finished surfaces shall be protected against corrosion by a rust-inhibiting coating which is easily removed prior to erection or which has characteristics that make removal unnecessary prior to erection.

3. Surfaces Adjacent to Field Welds: Surfaces within 2-inches of any field weld location shall be free of materials that would prevent proper welding or produce objectionable fumes while welding is being done.

3.6 ADJUSTING AND CLEANING

A. Touch-up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

END OF SECTION

SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. It is the intent of this Section that all painting necessary to result in a complete, finished appearing facility be accomplished. As the work of this Section, prepare surfaces that are to be painted and furnish and apply paint materials. Paint schedules follow the text of this Section and define the surface preparation and coating systems required to paint the various types of surfaces that are to be painted. The Paint Application Table below identifies the areas to receive the paint systems specified in the paint schedules. For items or areas not listed in the Paint Application Table, consult the ENGINEER for the proper system to be used. Exclusion from the Paint Application table does not necessarily mean that an item or area does not require painting.

B. Acceptable manufacturers: Carboline or Tnemec. No substitutions.

C. Paint Applications

Schedule M1: Submerged Metal

Paint all submerged metal provided or refurbished for the project including, but not limited to upstream face of tainter gate.

There will be a maximum of one finish color for each of the three dams.

Schedule M2: Exterior Metal

Paint all non-submerged metal provided or refurbished for the project including, but not limited to downstream face, strut arms, girders and other steel of gates, all replacement metal on gates, hoist torque tube, gate stops.

There will be a maximum of one finish color for each of the three dams.

D. Prime and finish painting, regardless of the location in which the work is performed, shall conform to all requirements of this Section. Coordinate painting with the fabrication of components and with the work of other trades so as to ensure the full and correct application of paint materials.

E. Stainless steel and brass shall not be painted.

1.2 DEFINITIONS

A. For the purposes of this Section, the following definitions apply: "Exposed to View" means all surfaces in the final work that could be seen from any vantage point from any height with the gate dewatered.

B. "Paint" means all pretreatment, prime, intermediate, and final coatings specified herein including clear, translucent, and opaque materials.

1.3 QUALITY ASSURANCE

A. Use only qualified journeyman painters for the mixing and application of paint on exposed surfaces. In the acceptance or rejection of installed painting, no allowance will be made for lack of skill on the part of painters.

B. Apply paints following the recommendations in the "Applications Manual for Paint and Protective Coatings" published by McGraw-Hill.

1.4 INDEPENDENT INSPECTION

A. The CONTRACTOR shall hire an independent, National Association of Corrosion Engineers (NACE) certified, CIP Level 2 paint inspector for the project. Nelson Tank Engineering and Consulting and Dixon Engineering are pre-approved. In-house paint inspector, even if certified, will not be acceptable for this role. Inspector's scope shall include checking the following:

1. Before placing coatings, check: surface preparation for conformance with the Specification; conditions including ambient and surface temperatures, humidity, dew point and other factors that might affect coatings; coating products; blast material and equipment; containment strategy; etc.

2. After coating placement, check dry film thickness (DFT) of all coatings and total DFT, as per SSPC-PA2

3. Upon full cure of final coat for submerged surfaces, perform holiday inspection by voltage spark detection in accordance with NACE SP0188. Areas not passing the spark detection shall be properly repaired then re-tested until passing.

4. Coating surface. Flaws such as holidays, runs, etc., shall be flagged for correction and re-inspected after correction.

5. Findings shall be indicated immediately to the CONTRACTOR by verbal or other communication.

B. Inspector shall produce a report for each field visit, indicating findings as noted above and including a list of correction items and status of each item. Reports shall include photographs and other attachments as required. A separate report shall be produced for each day of inspection. A copy of all reports shall be submitted regularly to CONTRACTOR and ENGINEER, at least on a weekly basis.

1.5 SUBMITTALS

A. Prior to ordering and delivering paint materials to the project site, submit the following:

1. Manufacturer literature demonstrating compliance with these Specifications and indicating paint formulation, rate of coverage, recommended uses and recommended application method.

2. Physical color chips or cards for the full range of colors available in each product.

1.6 PRODUCT HANDLING

A. Deliver all paint materials to the job site in their original unopened containers with all labels intact and legible at time of use. Store only the approved materials at the job site.

Store them in a suitable and designated area restricted to the storage of paint materials and related equipment. Use all means necessary to ensure the safe storage and use of paint materials and the prompt and safe disposal of waste. Store volatile solvents, rags, and cleaning materials in a well-ventilated area.

B. Use all means necessary to protect paint materials before, during, and after application and to protect the installed work and materials of all other trades. In the event of damage, immediately make all repairs and replacements necessary at no additional cost to the OWNER.

PART 2 – PRODUCTS

2.1 PAINT MATERIALS

A. Provide paint materials in accordance with the paint schedules that follow the text of this Section.

B. All paint materials for each paint system shall be the products of a single manufacturer. All paint materials and equipment shall be compatible in use: finish coats shall be compatible with prime coats; prime coats shall be compatible with the surface to be coated; and all tools and equipment shall be compatible with the coating to be applied. Thinners, when used, shall be only those thinners specifically recommended for that purpose by the manufacturer of the material to be thinned.

C. Furnish finish paint in the colors selected by the OWNER from the manufacturer's standard available colors (a minimum of 12 colors must be available for each finish paint requiring color choice).

PART 3 – EXECUTION

3.1 GENERAL

A. At no time during the work shall open containers of paint, thinners, solvent or cleaners be placed directly over the waterway. Any paint, thinner, solvents or cleaner spilled within the dewatered work area shall be cleaned up immediately. In the event of any discharge of any fuel, chemical, lubricant, paint thinner, solvent, or cleaner into the Huron River, the OWNER shall be notified immediately.

B. Prior to beginning the work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this application may properly commence. Verify that paint finishes may be applied in strict accordance with all pertinent codes and regulations and the requirements of these Specifications. In the event of discrepancy, immediately notify the ENGINEER. Do not proceed with application in areas of discrepancy until all such discrepancies have been fully resolved. Application of paint materials shall be deemed to indicate acceptability of the existing surface conditions.

C. Paint inspection shall be in accordance with Section 01810, Testing and Materials Inspection.

D. The CONTRACTOR shall seek technical assistance and guidance for surface preparation and application of coating systems from the manufacturer’s technical

representative as needed. The manufacturer shall have qualified personnel available to consult and make field visits as appropriate.

3.2 REMEDIATION AND CONTAINMENT

A. It is anticipated that the existing gates and related equipment to be painted have lead-based paint on them. The CONTRACTOR shall follow the requirements of Section 01370, Lead-Based Paint Remediation.

B. Results of existing lead testing are included in the Appendix of this Specification.

C. As needed during construction, the City will collect additional paint samples and have them tested for lead. Either the City or the CONTRACTOR may call for additional testing. The CONTRACTOR shall provide at least one week notice in advance of needing additional lead testing.

D. The City's responsibility will be limited to pulling and testing samples from *existing coatings before removal*. The City will not be responsible for environmental/industrial hygiene testing or other health and safety requirements as per Section 01370 of these Specifications.

E. Containment shall include negative ventilation with air filtering/treatment to remediate blast media, dust, and coatings inside the enclosure and prevent them from exiting the enclosure.

F. All abrasive blasting and spray application of coatings require full containment of work areas.

G. Surface preparation and painting done in the field shall be fully contained. Only minor touchups that may be identified after containment is removed may be done without containment, provided that steps are taken to prevent fallout from exiting the work area or entering the water.

H. For all operations, the CONTRACTOR shall be required to prevent fallout from coatings or blast media from being dispersed beyond the immediate work area or damaging public or private property.

3.3 SURFACE PREPARATION

A. Prior to beginning surface preparation and painting operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and all work of other trades that are not to receive the paint coating. Before applying paint, thoroughly clean and prepare all surfaces according to the specified surface preparation method. Schedule all cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

B. Prepare metal surfaces for painting by following the method indicated on the appropriate paint schedule. Preparation methods are referenced to the Steel Structures Painting Council (SSPC) Specifications. Do not prepare metal for painting when the relative humidity is higher than 85% or the metal is less than 5°F above the dew point. After surface preparation, thoroughly clean all surfaces of any remaining dirt, oil and grease and leave it ready to receive prime paint.

C. Except for field touch-ups that may be identified after containment is removed, surface preparation shall be by abrasive blasting, using an appropriate medium per industry standards and environmental requirements. Field touch-ups may be accomplished by mechanical means (e.g., using Bristle-Blaster) that meets the same profile and cleanness standard.

3.4 PAINT APPLICATION

A. Apply paint in accordance with paint schedule requirements, the cited reference, all codes and regulations, and the recommendations of the paint manufacturer. Apply prime paint to metal surfaces within 24-hrs. after surface preparation. Do not apply paint in areas where dust is being generated.

B. Do not apply paint when the surrounding air temperature as measured in the shade is below 40°F or when the temperature of the surface to be painted is below 35°F. Do not apply paint when it is expected that the relative humidity will exceed 85% or that the air temperature will drop below 40°F within 18-hrs. after the application of paint. Dew or moisture condensation should be anticipated and if such conditions are prevalent, delay painting until certain that the surfaces can be kept above the dew point. Follow all additional environmental limitation requirements of the paint manufacturer.

C. Paint material mil thickness and numbers of coats that are indicated in the paint schedules are based on brush or roller application. Spray application of paint materials will be allowed in the field only for areas or surfaces that are very difficult to paint with brush or roller. Field spray application must be approved by the ENGINEER before its initiation. For areas that are spray painted, apply as many coats as necessary to achieve specified mil thickness.

D. Allow sufficient drying time between coats of paint. During adverse weather, extend length of drying time as recommended by the paint manufacturer.

E. Prior to applying each paint coating after the first, check mil thickness of previously applied coating(s). Correct for insufficient paint thickness by increasing the mil thickness of subsequent applications, if allowed by the paint manufacturer or by applying additional coatings to provide the specified paint thickness.

F. Spot sand between coatings to remove paint defects visible to the unaided eye from a distance of 5-feet.

3.5 CLEAN UP

A. During the progress of the work, do not allow the accumulation of empty containers or other excess items except in areas specifically set aside for that purpose.

B. Following completion of painting in each area, promptly remove all masking and temporary protection. After paint has dried, reinstall all items removed for painting. Upon completion of this portion of the work, visually inspect all surfaces and remove paint and traces of paint from surfaces not scheduled to be painted.

SCHEDULES FOLLOW

PAINT SCHEDULE M1

SERVICE: **SUBMERGED METAL**

Surface Preparation: **SSPC-SP10 Near White Metal – Abrasive blasting**

Paint Manufacturer	Application	Product Name	Product Type	No. Of Coats	Dry Mils/ Coat	Comments
Carboline	Primer	Carbozinc 621	Immersible Zinc	One	3 – 5	
Carboline	Stripe*	Carbogard 60	Polyamide Epoxy	One		
Carboline	Finish	Carbogard 60	Polyamide Epoxy	Two	4 – 6	
		TOTAL SYSTEM THICKNESS			**11 – 17***	
Tnemec	Primer	Series 90-97	Immersible Zinc	One	2.5-3.5	
Tnemec	Stripe*	Series 66HS	Polyamide Epoxy	One		
Tnemec	Finish	Series 66HS	Polyamide Epoxy	Two	4 – 6	
		TOTAL SYSTEM THICKNESS			**10.5 – 15.5***	

*Note: All edges and corners shall be stripe coated. Specified millage does not include stripe coating.

PAINT SCHEDULE M2

SERVICE: EXTERIOR METAL

Surface Preparation: SSPC-SP10 Near White Metal – Abrasive Blast

Paint Manufacturer	Application	Product Name	Product Type	No. Of Coats	Dry Mils/ Coat	Comments
Carboline	Primer	Carbozinc 621	Immersible Zinc	One	3 – 5	
Carboline	Intermediate	Carbogard 60	Polymamide Epoxy	One	4 - 6	Color shall contrast with Finish Coat color
Carboline	Stripe*	Carbothane 134	Polyurethane	One		
Carboline	Finish	Carbothane 134	Polyurethane	Two	2 – 3	
		TOTAL SYSTEM THICKNESS			**11 – 17***	
Tnemec	Primer	Series 90-97	Immersible Zinc	One	2.5-3.5	
Tnemec	Intermediate	Series 66HS	Polymamide Epoxy	One	4 - 6	Color shall contrast with Finish Coat color
Tnemec	Stripe*	Series 1074	Polyurethane	One		
Tnemec	Finish	Series 1074	Polyurethane	Two	2 – 3	
		TOTAL SYSTEM THICKNESS			**10.5-15.5***	

*Note: All edges and corners shall be stripe coated. Specified millage does not include stripe coating.

END OF SECTION

SECTION 15601

TAINTER GATE ACCESSORIES

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. Section 05010, Metal Materials

B. Section 05050, Metal Fastening

C. Section 05120, Structural Steel

D. Section 05500, Metal Fabrications

E. Section 09900, Painting

1.2 SUBMITTALS

A. Submit Shop Drawings for all custom work specified in this Section as per the requirements of Section 01330, Submittal Procedures. Where standard products are specified, and no modification will be required, submit manufacturer's literature.

1.3 PRODUCT HANDLING AND STORAGE

A. Ship all prefabricated miscellaneous metal items in a protected manner to prevent damage prior to installation. Store materials awaiting installation so that they will not be adversely affected by weathering.

PART 2 – PRODUCTS

2.1 GENERAL PROVISIONS

A. Unless otherwise noted on the Drawings or in these Specifications, use steel for miscellaneous metal items.

B. For structural steel shapes, plates, and bars, conform to the requirements of ASTM A36 "Specification for Structural Steel".

C. Bolt or weld all shop-fabricated structural metal assemblies. For framing bolts, use bolts that conform to ASTM A307 (where normal strength bolts can be used), or ASTM A325N (where high-strength bolts are required). For welds, use AWS A5.1, E70XX welding electrodes.

2.2 SELF-LUBRICATED PIN BEARINGS

A. Provide pre-lubricated, maintenance free bearings of size shown on the Drawings.

B. Bearings shall be Lubrite Self-lubricating Bearings designed and manufactured by Lubrite Technologies, 18649 Brake Shoe Road, Meadville, PA 16335. They shall be suitable for exposure to outdoor conditions at an operational dam, including rain, icing, mist, UV and extreme hot and cold temperatures. The bearings shall be a standard product of an established bearing manufacturer with a successful performance record of ten (10) years in similar applications.

C. The bronze alloy employed in the manufacture of the bushings shall be High Strength Manganese Bronze centrifugally cast to the requirements of ASTM B22 C86300 and ASTM B271-C86300.

D. The lubricant shall consist of a combination of solids having non-deteriorating characteristics as well as inherent lubricating qualities. The lubricant shall be capable of withstanding the efforts of long-term atmospheric exposure and submersion in seawater, fresh water, and most solvents. Graphite, molybdenum disulfide or other ingredients that tend to promote electrolytic or chemical action are prohibited. The use shellac, tars, solvents, or other non-lubricating binder materials will not be acceptable. The type G10 lubricant shall have a Durometer hardness of 90 on the shore "A" Scale when tested in accordance with ASTM D2240.

E. The lubricant shall cover 100 percent of the bearing area and be dense and lubricative. The lubricant shall not be scraped or machined in any way after manufacture. The surface roughness of the base metal under the lubricant layer shall not exceed 63 micro-inches.

F. The bushings shall have a general design capacity of not less than 8,000 psi at 10 surface feet per minute. The static coefficient of friction between the bushing and the journal shall not exceed 0.07 when subjected to a design unit loading of 2.0 KSI or greater.

G. The bushing wall thickness, running fit, and tolerances shall be as recommended by the manufacturer. The manufacturer shall review the specified interference fit for the bushing into the collar and verify its acceptability for the furnished bearing.

H. The CONTRACTOR shall install the bearing into the trunnion collar with interference fit as specified.

I. Certificate of Compliance and Certified Mill Test Reports shall be furnished.

J. Press fits into collars shall be verified by the bearing manufacturer based on actual bearing material and dimensions. The manufacturer shall provide to the ENGINEER for review calculations showing computed stress in the collars as indicated on the drawings. Stress calculations shall include allowances for thermal expansion and contraction.

K. The bearing manufacturer shall provide recommendations for pin finish and tolerances.

2.3 SEALS

A. Seals

1. New resilient seals shall be placed along both sides and the bottom of the gate to prevent leakage. The seal attaching hardware shall be stainless and attached in a manner to permit replacement of the seals.

2. Seals shall be of the size and shape as shown on the Drawings, custom manufactured to fit correctly in locations as identified.

3. Seals shall be compounded of natural rubber, synthetic polyisoprene, or a blend of both, and shall contain reinforcing carbon black, zinc oxide, accelerators, antioxidants, vulcanizing agents, and plasticizers. Seals shall meet the following physical characteristics:

PROPERTY	TEST VALUE	TEST METHOD
Tensile strength	3000 psi (min)	ASTM D412
Elongation at Break	450% (min)	ASTM D412
300% Modulus	900 psi (min)	ASTM D412
Durometer Hardness (shore type A)	65 +/- 3	ASTM D2240
Water Absorption	5% by weight (max)	ASTM D471
Compression Set	30% (max)	ASTM D395
Tensile strength (after aging 48 hrs)	80% tensile strength (min)	ASTM D572

4. Seals shall be manufactured by Synaflex Rubber Products Company, Talladega, Alabama.

B. Seal hardware shall be 316 Stainless Steel, size, location and spacing as shown on the Drawings.

2.4 PULL CHAIN AND ACCESSORIES

A. Pull chain and coupling link shall be Grade 100 alloy, size as indicated on the Drawings.

B. Chain and coupling link shall be manufactured by Laclede Chain, or approved equal.

C. Shackle shall be bow style with safety bold. Shackle shall be sized as appropriate and shall be rated to the working load of the chain and coupling link.

D. Shackle shall be manufactured by VanBeest or Laclede Chain.

PART 3 – EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall inspect the gate accessories prior to commissioning and repair any defects prior to Gate Start-up Testing.

1. Bushings and Pins:

a. Inspect pins, and clean and remove foreign matter.

b. Verify pin alignment and surface finish

c. Minor defects in the surface may be corrected using in-situ polishing and cleaning methods as approved by the bushing manufacturer. Replace pins with serious defects.

d. Before installing bushings, verify that running surfaces were protected during transport and have remained clean. Bushings with damaged surfaces are to be returned to the manufacturer for correction or replacement.

2. Remove rust, scale, and foreign matter from equipment and renew defaced surfaces.

3.2 TRUNNION PIN BEARINGS

A. Before permanent fastening (welding or grouting), pin alignment shall be verified by the CONTRACTOR using method acceptable to the ENGINEER. The CONTRACTOR shall verify alignment of embedded pins before installation of gate arms.

B. The CONTRACTOR shall verify rotation of gate arms before making final connections to gate structure.

C. Following operation of gate under normal load for three open-close cycles minimum, the pin covers shall be removed, and the bearings inspected for alignment and gap.

3.3 SEALS

A. Before rolled seal angles are painted, they shall be checked for flatness in the plane facing the wall.

B. Seals shall be installed with preset as indicated on the Drawings.

C. Under full head, seals shall be inspected for leaks and adjusted, as necessary.

D. Following initial leak inspection, seal contact shall be checked through the full range of gate motion.

3.4 HOIST CHAIN

A. The CONTRACTOR shall adjust chains for smooth and kink-free spooling.

B. Length of chain shall be carefully measured, and bottom of chain elevations checked at various positions through the hoist travel to ensure even pull tension on both sides through the full range of motion. Adjustments to chain shall be made only by removing links, or by adding couplings or links as pre-approved by the ENGINEER. No deformation of links or couplings will be permitted.

END OF SECTION

APPENDIX 1

CITY OF ANN ARBOR
PREVAILING WAGE DECLARATION OF COMPLIANCE

The "wage and employment requirements" of Section 1:320 of Chapter 14 of Title I of the Ann Arbor City Code mandates that the city not enter any contract, understanding or other arrangement for a public improvement for or on behalf of the city unless the contract provides that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. Where the contract and the Ann Arbor City Code are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used. Further, to the extent that any employees of the contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with section 1:320 of Chapter 14 of Title I of the Code of the City of Ann Arbor, employees shall be paid a prescribed minimum level of compensation (i.e. Living Wage) for the time those employees perform work on the contract in conformance with section 1:815 of Chapter 23 of Title I of the Code of the City of Ann Arbor.

At the request of the city, any contractor or subcontractor shall provide satisfactory proof of compliance with this provision.

The Contractor agrees:

(a) To pay each of its employees whose wage level is required to comply with federal, state or local prevailing wage law, for work covered or funded by this contract with the City,

(b) To require each subcontractor performing work covered or funded by this contract with the City to pay each of its employees the applicable prescribed wage level under the conditions stated in subsection (a) or (b) above.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the wage and employment provisions of the Chapter 14 of the Ann Arbor City Code. The undersigned certifies that he/she has read and is familiar with the terms of Section 1:320 of Chapter 14 of the Ann Arbor City Code and by executing this Declaration of Compliance obligates his/her employer and any subcontractor employed by it to perform work on the contract to the wage and employment requirements stated herein. The undersigned further acknowledges and agrees that if it is found to be in violation of the wage and employment requirements of Section 1:320 of the Chapter 14 of the Ann Arbor City Code it shall has be deemed a material breach of the terms of the contract and grounds for termination of same by the City.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than $10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than $10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than $10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here [___] *No. of employees__*

The Contractor or Grantee agrees:

(a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as $13.91/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than $15.51/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

(b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

(e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

_____	_____
Company Name	Street Address
_____	_____
Signature of Authorized Representative Date	City, State, Zip
_____	_____
Print Name and Title	Phone/Email address

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2020 - ENDING APRIL 29, 2021

$13.91 per hour
If the employer provides health care benefits*

$15.51 per hour
If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than $10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org

Revised 2/10/2020

Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	( ) Relationship to employee _____ ( ) Interest in vendor's company ( ) Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	**Vendor Phone Number**	
Signature of Vendor Authorized Representative	**Date**	**Printed Name of Vendor Authorized Representative**

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

CITY OF ANN ARBOR
DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

(a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy, including but not limited to an acceptable affirmative action program if applicable.

(b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.

(c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.

(d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email Address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below. You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

Michigan Department
Of Transportation
CP-347 (04/10)

MICHIGAN DEPARTMENT OF TRANSPORTATION
CERTIFIED PAYROLL
COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE)	(2) ADDRESS		
(3) PAYROLL NO.	(4) FOR WEEK ENDING	(5) PROJECT AND LOCATION	(6) CONTRACT ID

(a) EMPLOYEE INFORMATION	(b) WORK CLASSIFICATION	(c) Hour Type	(d) DAY AND DATE HOURS WORKED ON PROJECT							(e) TOTAL HOURS ON PROJECT	(f) PROJECT RATE OF PAY	(g) PROJECT RATE OF FRINGE PAY	(h) GROSS PROJECT EARNED / GROSS WEEKLY EARNED	(i) TOTAL WEEKLY HOURS WORKED ALL JOBS	(j) DEDUCTIONS FICA	FEDERAL	STATE		OTHER	TOTAL DEDUCT	(k) TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											
NAME:										0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S								0											

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,

all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Start. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

APPENDIX 2

ANALYTICAL LABORATORY REPORT

CUSTOMER: Stantec
3754 Ranchero Drive
Ann Arbor, MI 48108

DATE RECEIVED: Wednesday, November 14, 2012
PO/PROJECT #: 2075116502
SUBMITTAL #: 2012-11-14-012

LAB NUMBER: AB39802

Sampled By: Paul J. Malocha
Job Location: Ann Arbor, MI
Sample Identification: 1 - Argo lifts

Date Sampled: Thursday, November 8, 2012
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)
Date Analyzed: Wednesday, November 21, 2012

ELEMENT	RESULT (by weight)	REPORTING LIMIT (RL)
Lead	0.0041 %	0.0025 %

LAB NUMBER: AB39803

Sampled By: Paul J. Malocha
Job Location: Ann Arbor, MI
Sample Identification: 2 - Argo valves

Date Sampled: Thursday, November 8, 2012
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)
Date Analyzed: Wednesday, November 21, 2012

ELEMENT	RESULT (by weight)	REPORTING LIMIT (RL)
Lead	0.043 %	0.0025 %

LAB NUMBER: AB39804

Sampled By: Paul J. Malocha
Job Location: Ann Arbor, MI
Sample Identification: 3 - Argo control house

Date Sampled: Thursday, November 8, 2012
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)
Date Analyzed: Wednesday, November 21, 2012

ELEMENT	RESULT (by weight)	REPORTING LIMIT (RL)
Lead	0.097 %	0.0025 %

LAB NUMBER: AB39805

Sampled By: Paul J. Malocha
Job Location: Ann Arbor, MI
Sample Identification: 4 - Argo railings

Date Sampled: Thursday, November 8, 2012
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)
Date Analyzed: Wednesday, November 21, 2012

ELEMENT	RESULT (by weight)	REPORTING LIMIT (RL)
Lead	2.4 %	0.0026 %

CCC&L has obtained accreditation under the programs detailed on the final page of the laboratory report. The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the scope of accreditation table. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table fall outside of the current scope of laboratory accreditation.

ANALYTICAL LABORATORY REPORT

CUSTOMER: Stantec
3754 Ranchero Drive
Ann Arbor, MI 48108

DATE RECEIVED: Wednesday, November 14, 2012
PO/PROJECT #: 2075116502
SUBMITTAL #: 2012-11-14-012

LAB NUMBER: AB39806

Sampled By: Paul J. Malocha
Job Location: Ann Arbor, MI
Sample Identification: 5 - Geddes door

Date Sampled: Friday, November 9, 2012
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)
Date Analyzed: Wednesday, November 21, 2012

ELEMENT	RESULT (by weight)	REPORTING LIMIT (RL)
Lead	0.033 %	0.0064 %

LAB NUMBER: AB39807

Sampled By: Paul J. Malocha
Job Location: Ann Arbor, MI
Sample Identification: 6 - Geddes lifts
Flagged Data: Substrate could not be completely removed.

Date Sampled: Friday, November 9, 2012
Sample Description: Paint Chips

Preparation Method: EPA 3050B-P-M (Acid Digestion for Paints)
Analysis Method: EPA 6010C (ICP-AES Method for Determination of Metals)
Date Analyzed: Wednesday, November 21, 2012

ELEMENT	RESULT (by weight)	REPORTING LIMIT (RL)
Lead	0.0074 %	0.0025 %

ANALYTICAL LABORATORY REPORT

CUSTOMER: Stantec
3754 Ranchero Drive
Ann Arbor, MI 48108

DATE RECEIVED: Wednesday, November 14, 2012
PO/PROJECT #: 2075116502
SUBMITTAL #: 2012-11-14-012

Unless otherwise noted, the condition of each sample was acceptable upon receipt, all laboratory quality control requirements were met, and sample results have not been adjusted based on field blank or other analytical blank results. Individual sample results relate only to the sample as received by the laboratory.

Tests Reviewed By: Michael J. Swiech, QA/QC Manager Michael J. Swiech 2012.11.26 13:23:35 -05'00'

CCC&L has obtained accreditation under the following programs:

- **National Lead Laboratory Accreditation Program (NLLAP)**
  ELLAP: AIHA Laboratory ELLAP Accreditation Program Laboratory, ID#101030 (www.aiha.org)
  OH: Ohio Department of Health Lead Poisoning Prevention Program, Approval #E10013 (www.odh.ohio.gov)
- **AIHA Laboratory IHLAP Accreditation Program** (www.aiha.org)
  IHLAP: Laboratory ID#101030
- **National Environmental Laboratory Accreditation Program (NELAP)**
  NY: State of New York Department of Health, Laboratory ID#11609 (Serial # 46417 through 46421) (518-485-5570)
  LA: State of Louisiana Department of Environmental Quality, Laboratory ID#180321 (Certificate 05036) (www.deq.louisiana.gov)
  OK: Oklahoma Department of Environmental Quality, Laboratory ID#9993 (Certificate 2012-034) (www.deq.state.ok.us)

The accreditations pertain only to the testing performed for the elements, and in accordance with the test methods, listed in the table below. Testing which is performed by CCC&L according to other test methods, or for elements which are not included in the table below fall outside of the current scope of laboratory accreditation. Customers are encouraged to verify the current accreditation status with the individual accreditation programs by calling or visiting the appropriate website for the applicable program.

SCOPE OF ACCREDITATION

Air and Emissions

Element/Test	Method	Accreditation(s)
Particulates (PM10)	40 CFR 50 Appendix J	NY, LA
Total Suspended Particulates (TSP)	40 CFR 50 Appendix B	NY, LA
Lead in Airborne Dust	NIOSH 7300	ELLAP, OH, NY, LA
Lead in Airborne Dust	EPA600/R-93/200	ELLAP, OH
Metals in Airborne Dust	NIOSH 7300/ EPA 6010B or EPA 6010C	IHLAP
Metals in Airborne Dust	EPA600/R-93/200/ EPA 6010B or EPA 6010C	IHLAP

Solid Chemical Materials

Element/Test	Method	Accreditation(s)
TCLP	EPA 1311(Sample Preparation Method)	NY, LA, OK
Acid Digestion	EPA 3050B	NY, LA
Lead in Soil	EPA 3050B/EPA 6010C	NY, LA, OK
Lead in Soil	EPA 3050B/EPA 6010B or EPA 6010C	ELLAP, OH, NY, LA
Lead in Paint	EPA 3050B/EPA 6010B or EPA 6010C	ELLAP, OH, NY, LA
Lead in Dust Wipes	EPA 6010B or EPA 6010C	NY, LA
Lead in Dust Wipes	EPA600/R-93/200/EPA 6010B or 6010C	ELLAP, OH

Non-Potable Water / Analysis by ICP

Element/Test	Method	Accreditation(s)	Method	Accreditation(s)
Arsenic	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Barium	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Cadmium	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Chromium	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Copper	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Lead	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Mercury	EPA 245.1 Rev.3	NY, LA, OK		
Mercury	EPA 7470A	NY, LA, OK		
Nickel	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Selenium	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Silver	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Zinc	EPA 6010B	NY	EPA 6010C/ EPA 200.7 Rev 4.4	NY, LA, OK
Acid Digestion	EPA 3010A	NY, LA		

CHAIN OF CUSTODY FORM

Send To:

Corrosion Control Consultants & Labs, Inc. a GPI company

4403 Donker Ct Kentwood MI 49512-4054

ph: 616-940-3112 fx: 616-940-8139 web-sites: www.ccclabs.com www.gpinet.com

FOR LAB USE ONLY			
Properly Contained	(YES)	NO	N/A
ASTM E1792 wipes	YES	NO	(N/A)
Adequate Ph Adjust	YES	NO	(N/A)
Lab acidified: By/Date:	CLH		

Company: Stantec Consulting Michigan, Inc.	Address: 3754 Ranchero Drive Ann Arbor, MI 48108	Company Contact: Paul J. Malocha	P.O./Proj #: 2075116502
		Telephone: 734-214-2525	Job Location: Ann Arbor, MI
		E-Mail: paul.malocha@stantec.com	

MATRIX	TOTAL CONCENTRATION	MISC. TESTS	Special Instructions:
☑ PAINT CHIPS	☑ LEAD	☐ pH (Corrosivity)	
☐ SOIL	☐ LEAD, CAD, CHROME	☐ Ignitability	
☐ SPENT ABRASIVE	☐ RCRA (8) METALS	☐ VOC (Method 24)	
☐ WIPE brand _____	☐ OTHER _____	☐ Other _____	
☐ WASTEWATER	WASTE CHARACTERIZATION	TURNAROUND TIME	
☐ 37 mm CASSETTE	☐ LEAD TCLP	☐ Same Day*	
☐ TSP FILTER	☐ RCRA (8) METALS TCLP	☐ 1 Day (24 Hour)*	
☐ PM 10 FILTER	☐ OTHER _____	☑ Standard (2-4 days)	*Same Day and 1 Day turn around not available for TCLP or PM10; additional fees may apply, contact lab for pricing.
☐ OTHER _____		☐ Other _____	

CCC&L accepts Visa, MasterCard, and American Express. Please call for information.

CCC&L Lab No.	Sample Number	Date/Time Sampled	Sample Identification/Location	WIPES Area wiped (sq.ft.)	AIR SAMPLES TIME START	TIME STOP	FLOW RATE START	FLOW RATE STOP	FLOW RATE UNITS
~~AB~~ 39802	1	Nov 8, 2012	Argo lifts						
39803	2	Nov 8, 2012	Argo valves						
39804	3	Nov 8, 2012	Argo control house						
39805	4	Nov 8, 2012	Argo railings						
39806	5	Nov 9, 2012	Geddes door						
~~AB~~ 39807	6	Nov 9, 2012	Geddes lifts						

Sampled By (Please print): Paul J. Malocha Date Submitted: November 13, 2012 Signature: Paul J. Malocha

Received by: Debbie Evans Date/Time: 11/13/12 4:00 pm Relinquished Date/Time:

Received by: Date/Time: Relinquished Date/Time:

Method of Shipment: FedEx Ground

Received for Laboratory by: JMP Date/Time: 11/14/12 11:52 Submittal #: 2012-11-14-012

Form #53 12/22/11 Rev. 9

SKP 11/15

Certificate of Analysis - Metals in Paint

Method: EPA SW846-7420M

Project: Superior Dam Paint Inspection

Report to:
Mr. John Tyler
City of Ann Arbor
301 E. Huron St.
Ann Arbor, MI 48104

ARL Report #: 18-L15876
Date Sampled: 09/27/18
Date Received: 09/27/18
Date Analyzed: 09/28/18
Date Reported: 10/01/18

Laboratory ID:	Client ID:	Reporting Limit:	Lead:
L15876-01	927-01 Dark Blue	0.01%	**Pb -** < 0.01%
L15876-02	927-02 Light Blue	0.01%	**Pb -** 0.08%

Reporting Limit of 0.01% is based on minimum sample weight of 100mg per our SOP, and may vary based on smaller sample size. APEX Research is not responsible for sample collection activities, and results apply to samples as received. Methods have been slightly modified. This certificate of analysis relates only to the samples tested and to ensure the integrity of the results, may only be reproduced in full. Liability limited to cost of analysis. APEX Research, Inc. (Laboratory ID# 227441) is accredited by the AIHA Laboratory Accreditation Programs, LLC (AIHA-LAP,LLC) in the Environmental Lead Laboratory Accreditation Program for Lead in Paint as documented by the Scope of Accreditation Certificate and associated Scope.

Robert T. Letarte Jr., Laboratory Director

Apex # **L15876**

APEX Research, Inc.

11054 Hi Tech Drive, Whitmore Lake, MI 48189. Phone: (734) 449 - 9990, Fax (734) 449 - 9991 www.ApexMI.com

Customer Name: _City of Ann Arbor_____
Address:_301 E. __ City, St., Zip: _Ann Arbor MI 48110_____ Phone: _734-794-6000_____
Fax: _____ **Turn Around Time:** (*circle one*) ***Terms and conditions on the other side.

Date of Survey: _9/27/2018_____
Project: ____Superior Dam Paint Inspection___
Project # _____
Contact Person: ___John Tyler ___
Email: _jtyler@a2gov.org ___
Circle analyses required, indicate type and quantity

Lab Use Only
Log-In:____
Report: ____
Fax: _____
Verbal:_____
Email:_____

Rush | 24 hour
(48 hour) | 72 hour
Other:_____ | TTP yes / no (Test Till Positive)
Samples received after 3pm logged in next morning

Asbestos: Bulk ____ Wipe ____ Point Count _____ PCM _____
Lead / Cad / Chrome: Wipe **ASTM E1792?** circle YES or (NO) ___ Air _____ Paint X Bulk____
Mold: Bulk ____ Air/Zefon/AlergencoD _____ BioSIS _____ Tape _____
TEM: Bulk/NOB _____ NIOSH 7402____ EPA Level II _____ Other ___

Lab ID	Customer ID #	Material/Location	Volume	Area	Results
1	927-01	Dark Blue	NA	NA	by weight
2	927-02	Light Blue	NA	NA	"

Relinquished By: John Tyler
Date: 9/27/18
Revision R4 Date: May/2017

Received By: _____
Time/Date: _____

RECEIVED
SEP 27 2018
APEX RESEARCH

Relinquished By: _____
Date: _____

Received By: _____
Time/Date: _____

SanAir Technologies Laboratory

The Identification Specialists

Analysis Report prepared for PEL Labs

Report Date: 2/18/2021

Project Name: Barton Dam

Project #: 2/11/21-1

SanAir ID#: 21007114

1551 Oakbridge Dr. Suite B | Powhatan, Virginia 23139-8061
888.895.1177 | 804.897.1177 | fax: 804.897.0070 | IAQ@SanAir.com | SanAir.com

SanAir ID Number
21007114
FINAL REPORT
2/18/2021 12:43:04 PM

Name: PEL Labs
Address: 600 South Wagner Road
Ann Arbor, MI 48103
Phone: 877-220-3528

Project Number: 2/11/21-1
P.O. Number:
Project Name: Barton Dam
Collected Date: 2/14/2021
Received Date: 2/15/2021 9:30:00 AM

Dear Doug Forsyth,

We at SanAir would like to thank you for the work you recently submitted. The 3 sample(s) were received on Monday, February 15, 2021 via FedEx. The final report(s) is enclosed for the following sample(s): BD-01, BD-02, BD-03.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:
- Cover Letter
- Analysis on Test Family AA
- Disclaimers and Additional Information

Sample conditions:
- 3 samples in Good condition.

SanAir Technologies Laboratory

SanAir ID Number
21007114
FINAL REPORT
2/18/2021 12:43:04 PM

Name: PEL Labs
Address: 600 South Wagner Road
Ann Arbor, MI 48103
Phone: 877-220-3528

Project Number: 2/11/21-1
P.O. Number:
Project Name: Barton Dam
Collected Date: 2/14/2021
Received Date: 2/15/2021 9:30:00 AM

Analyst: Oliver, Hannah
Test Method: SW846/M3050B/7000B

Lead Paint Analysis

PAINT Sample	Description	µg Pb In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
21007114 - 1	BD-01 Cream Dam Canopy	< 10	0.1007	99.3	<99.3 µg/g (ppm)	<0.010 % By Weight
21007114 - 2	BD-02 Cream Dam Canopy	< 10	0.1001	99.9	<99.9 µg/g (ppm)	<0.010 % By Weight
21007114 - 3	BD-03 Orange Hand Rail	4082	0.075	133.3	54430 µg/g (ppm)	5.443 % By Weight

Method Reporting Limit <10 µg/0.1 g paint

Signature: Hannah L. Oliver
Date: 2/16/2021

Reviewed: Alissa Gabarelli
Date: 2/16/2021

Disclaimer

SanAir Technologies Laboratory, Inc. participates in the Environmental Lead Accreditation Program (ELAP) administered by AIHA-LAP, LLC (Lab ID162952). Refer to our accreditation certificate or www.aihaaccreditedlabs.org for an up to date list of the Fields of Testing for which we are accredited. SanAir also participates in the State of New York's DOH-ELAP (Lab Id 11983), and has met the EPA's NLLAP program standards. This report does not constitute endorsement by AIHA-LAP, LLC and/or any other U.S. governmental agencies; and may not be accredited by every local, state or federal regulatory agency.

This report is the sole property of the client named on the SanAir Technologies Laboratory chain-of-custody (COC). Neither results nor reports will be discussed with or released to any third party without our client's written permission. Final reports cannot be reproduced, except in full, without written authorization from SanAir Technologies Laboratory, Inc. The information provided in this report applies only to the samples submitted and is relevant only for the date, time, and location of sampling. SanAir is not responsible for sample collection or interpretation made by others. SanAir assumes no responsibility for information provided by the client on the COC such as project number, project name, collection dates, po number, special instructions, samples collected by, sample numbers, sample identifications, sample type, selected analysis type, flow rate, total volume or area, and start stop times that may affect the validity of the results in this report. SanAir Technologies Laboratory, Inc only assures the precision and accuracy of the data it generates and assumes no responsibility for errors or biasing that occur during collection prior to SanAir's receipt of the sample(s). SanAir's Method Detection Limits (MDL) and Reporting Limits (RL) have been derived using various materials meeting each accrediting agencies' standards. All quality control results are acceptable unless otherwise noted. Results are not corrected for blanks. For Lead Exposure Limits in Paint, refer to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards and State and Federal Regulations, where applicable.

Email Results to Lwaits@pellabs.com

SanAir Technologies Laboratory
1551 Oakbridge Dr STE B
Powhatan, VA 23139
804.897.1177 / 888.895.1177
Fax 804.897.0070
sanair.com

Metals & Lead Chain of Custody

Form 70, Revision 10, 05 18 18

SanAir ID Number: 21007114

Company: PEL LABS	Project #: 2/11/21-1	Phone #:
Address: 600 S. Wagner Rd.	Project Name: Barton Dam	Phone #:
City, St., Zip: Ann Arbor, Mi 48103	Date Collected:	Fax #:
Samples Collected By: Doug Forsyth	P.O. Number:	Email:
Account #:	U.S. State Collected in:	Email:

Matrix Types

- [ ] Air (ug/m³)
- [ ] Wipe (ug/ft²)
- [ ] Paint [ ] Soil [X] Bulk (ug/g or ppm)
- [ ] Other:

Metals Analysis Types

- [X] Total Concentration of Lead
- [ ] Total Concentration of RCRA 8 Metals
- [ ] TCLP for Lead
- [ ] TCLP for RCRA 8 Metals
- [ ] ICP-total concentration of metals (please list metals):

Turn Around Time

- [ ] Same Day
- [ ] 1 Day
- [ ] 2 days
- [X] 3 Days
- [ ] 4 Days
- [ ] Standard (5 day)
- [ ] Other Test:

Sample #	Collection Date & Time	Sample Identification/Location	Flow Rate	Start Time	Stop Time	Volume (L) Area (Sq ft)
BD-01	1	Cream Dam Canopy				
BD-02	2	" "				
BD-03	3	Orange Hand Rail				

Special Instructions

Relinquished by	Date	Time	Received by	Date	Time
CB	2/11/21		AM	2.15.21	9:30 AM

If no technician is provided, then the primary contact for your account will be selected. Unless scheduled, the turnaround time for all samples received after 3 pm EST will be logged in the next business day. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3hr TAT or a minimum charge of $150. A courier charge will be applied for same day and one-day turnaround times for offsite work. SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.

Page ___ of ____

LEAD CHAIN OF CUSTODY

PEL Laboratories

333 Jackson Plaza Road Ann Arbor, MI 48103

877-220-3528 |

Page 1 of 1

For Lab Use Only

Lab No. 2/11/21-1

Accept Reject

Contact Information		Project Information	Report Results (Check box)
Company: City of Ann Arbor	Phone:	Project Name: Barton Dam	
Contact: Doug Forsyth	Cell Phone: 734-678-2908	Project Location: " "	Email X
Account #:	E-mail: DForsyth@a2gov.org	Project ID:	Other
Sampled By: Name: Doug Forsyth	Date: 2/11/21	P.O. Number:	

RELINQUISHED BY	DATE &TIME	VIA	RECEIVED BY	DATE &TIME
	2/11/21 @ 10:40am		CB	2/11/21 11Am

REQUESTED SERVICES (Please Check the Appropriate Boxes)

No.	Sample ID (10 Characters Max)	Sample Description	Volume (Liters)	Volume Area (Length x Width)	Sample Matrix (see matrix code box)	Analysis: Pb	Units (Check ONE box only): PPM	Wt %	mg / l	µg /ft²	µg / m³	mg / cm²
1	BD-01	Green Dam Winch Canopy				X		X				
2	BD-02	" "										
3	BD-03	Orange Hand Rail										
4												
5												
6												
7												
8												
9												
10												
11												
12												

Sample Matrix Codes	
A	Soil
B	Paint Chips
C	Surface / Dust Wipes
D	Bulk Miscellaneous
E	Air Cassette

TURNAROUND TIME	
	Same Day
	24 - Hour
	3 - Day
X	5 - Day