CITY OF FLINT, MICHIGAN
DEPARTMENT OF PURCHASES & SUPPLIES

PROJECT MANUAL FOR

2018 PHASE V SERVICE LINE REPLACEMENT (SLR)
City of Flint Proposal No. 18-574

April 9, 2018

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CITY OF FLINT

Department of Purchases & Supplies

Dr. Karen Weaver
Mayor

Bryan D. Bond
Purchasing Manager

INVITATION TO BID

OWNER:

THE CITY OF FLINT
DEPARTMENT OF PURCHASES AND SUPPLIES
1101 S. SAGINAW STREET, ROOM 203
FLINT, MI, 48502

Project Name: Phase V Service Line Replacement (SLR)
Proposal No.: 18-574

SCOPE OF WORK:

The City of Flint, Department of Purchases & Supplies, is soliciting sealed bids for providing:

2018 PHASE V SERVICE LINE REPLACEMENT (SLR)

per the attached requirements.

If your firm is interested in providing the requested services, please submit 1 original, 1 copy, and 1 unbound copy of your bid in a sealed envelope to the City of Flint, Department of Purchases and Supplies, 1101 S. Saginaw St., Room 203, Flint, Ml, 48502, by **Monday, April 23, 2018 @ 12:00 PM EST**. The outside of the envelope should clearly identify the project name and number, and the name and address of the Bidder. Please note: all bids received after 12:00 PM (EST) will not be considered. Faxed bids to the Purchasing Department will not be accepted. Bidding Documents shall meet requirements set forth in Specification Section 00 21 13 Instructions to Bidders.

A mandatory pre-bid meeting will be held on **Monday, April 16, 2018 @ 10:00 AM EST** at City Hall, 1101 S. Saginaw St., Flint, Ml 48502 in City Council Chambers. This will be the only venue that potential contractors will be able to have a face-to-face conversation with both the Purchasing Department and the Service Line Replacement (SLR) Program Management Team. This venue will also allow contractors to ask any questions concerning this project.

A bid guaranty or a cashier's check in the amount of $100,000 must be submitted with the bid. Please note: cashier' check must be payable to Treasurer, City of Flint.

All additional bid documents, requirements, addendums, specifications and plans/drawings (if utilized) are available on the Purchasing page of the City of Flint's web site at www.cityofflint.com/purchasing under "open bids" and the specific bid or proposal number assigned to this notice.

Bid Submission

- Date Released and Bid Posted to City's Website: Tuesday, April 10, 2018
- Bid Advertisement: Thursday, April 12, 2018 and Sunday, April 15, 2018
- Pre-bid Meeting: Monday, April 16, 2018
- Final Date for Questions: Wednesday, April 18, 2018
- Final Addendum: Thursday, April 19, 2018
- Bid Due Date: Monday, April 23, 2018
- Bid Review: Friday, April 27, 2018
- Introduce to Finance Committee: Wednesday, May 2, 2018
- Anticipated City Council Approval: Monday, May 7, 2018
- Contract Preparation: Friday, May 11, 2018
- Anticipated Contract Execution: Monday, May 14, 2018

The dates provided above are estimated dates only and may be subject to change.

Submit to City: 1 printed, signed, original proposal and addenda
1 printed, signed, copy of the proposal and addenda
1 printed, signed, copy of the proposal and addenda (unbound)

Send to: The City of Flint
Department of Purchases and Supplies
1101 S. Saginaw Street, Room 203
Flint, MI 48502

Effective immediately upon release of this request for proposal (RFP), and until notice of contract award, all official communications from proposers regarding the requirements of this RFP shall be directed to:

Bryan Bond
810 766-7340
bdbond@cityofflint.com

The City, or designee, shall distribute all official changes, modifications, responses to questions or notices relating to the requirements of this RFP. Addenda to this RFP may be developed and shared with all Vendors. Any other information of any kind from any other source shall not be considered official, and proposers relying on other information do so at their own risk.

Sincerely



Bryan D. Bond, Purchasing Manager

PHASE V SERVICE LINE REPLACEMENT (SLR)

TABLE OF CONTENTS

DIVISION 00 – FRONT END DOCUMENTS

Invitation to Bid
Table of Contents
Section 00 21 13 Instructions to Bidders
Section 00 41 13 Bid Form
Section 00 43 13 Bid Bond
Section 00 52 13 Agreement
Section 00 61 13 Performance Bond
Section 00 61 16 Payment Bond
Section 00 72 00 General Conditions
Section 00 73 02 Supplementary Conditions

DIVISION 01 – GENERAL REQUIREMENTS

Section 01 11 00 Summary of Work
Section 01 14 14 Control of Work
Section 01 29 01 Measurement and Payment
Section 01 31 19 Project Meetings
Section 01 32 17 Construction Progress Schedules
Section 01 32 33 Construction Photographs
Section 01 33 00 Submittals
Section 01 35 43 Protection of Environment
Section 01 42 13 Definitions
Section 01 43 00 Quality Requirements
Section 01 50 00 Temporary Facilities
Section 01 57 13 Erosion Control, Sedimentation and Containment of Construction Materials
Section 01 61 00 Control of Materials
Section 01 66 10 Delivery, Storage and Handling
Section 01 74 23 Cleaning Up
Section 01 77 00 Contract Closeout

DIVISION 31 – EARTHWORK

Section 31 10 00 Site Clearing
Section 31 23 19 Dewatering
Section 31 23 33 Trenching and Backfill
Section 31 50 00 Excavation Support Systems

DIVISION 33 – UTILITIES

Section 33 05 12 Horizontal Directional Drilling
Section 33 10 00 Water Utilities and Service Connections
Section 33 13 00 Disinfecting of Water Utility Distribution

APPENDICES

Appendix A Fast Start Exploration by Phase
Appendix B Standard Details

- Service Line Replacement Detail
- Water Meter Connection Detail
- Trench Detail, Landscape Areas
- Trench Detail, Sidewalk and Driveway Areas
- Trench Detail, Street Areas
- Abandoned House Service, Cut and Cap Detail

Appendix C Material Disposal Plan (MDP)
Appendix D AWWA C810-17 Replacement and Flushing of Lead Service Lines
Appendix E Davis-Bacon Prevailing Wage Rates – Heavy Construction

END OF SECTION

SECTION 00 21 13

INSTRUCTION TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

B. *Bidder* - The individual or entity who submits a Bid directly to Owner.

C. *Successful Bidder* - A responsible Bidder submitting a responsive Bid to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

D. *Owner* – City of Flint, MI

E. *Engineer* - AECOM

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Invitation to Bid may be obtained through the Owner's website *www.cityofflint.com/purchasing* under "open bids".

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

2.04 Deposit on Drawings and Documents: No deposit is required.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

A. The address and description of the Bidder's place of business.

B. The number of years engaged in the contracting business under the present firm name, and the name of the state where incorporated.

C. A list of the property and equipment available to the Bidder to evaluate if the Bidder can complete the Work in accordance with the Bidding Documents.

D. A financial statement of the Bidder showing that the Bidder has the financial resources to meet all obligations incidental to the Work.

E. The Bidder's performance record giving the description, location, and telephone numbers of similar projects constructed in a satisfactory manner by the Bidder. The City is seeking a Contractor that has at least five (5) years' worth of experience in replacing service lines using both traditional excavation and horizontal directional drilling (HDD) methods in order to perform the replacement of service lines to various residential homes / buildings located within the City of Flint. Experience shall include the installation of at least 1,000 residential service lines using traditional excavation methods and 500 installations using HDD methods. Bidder shall provide at least five reference projects demonstrating the level of experience required to be awarded this Contract. Refer to Bid Form, Exhibit F.

F. A list of projects presently under contract, the approximate contract amount, and percent of completion of each.

G. A list of contracts which resulted in law suits.

H. A list of contracts defaulted.

I. A statement of the Bidder indicating whether or not the Bidder has ever filed bankruptcy while performing Work of like nature or magnitude.

J. A list of officers of the firm who, while in the employ of the firm or the employ of previous firms, were associated with contracts which resulted in lawsuits, contracts defaulted or filed for bankruptcy.

K. The technical experience of personnel guaranteed to be employed in the responsible charge of the Work stating whether the personnel have or have not performed satisfactorily on other contracts of like nature and magnitude or comparable difficulty at similar rate of progress.

L. Such additional information as will assist Owner in determining whether the Bidder is adequately prepared to fulfill the contract.

3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

3.03 Ability and Experience of Bidder:

A. No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant (equipment and labor) to enable him to prosecute and complete the Work successfully

within the time named. The Owner's decision or judgment on these matters shall be final, conclusive, and binding.

B. The Owner may make such investigations as it deems necessary, and the Bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions:*

A. No geotechnical or subsurface investigation reports are available.

4.02 *Underground Facilities*

A. No information regarding existing underground facilities is available.

4.03 *Hazardous Environmental Condition*

A. No information regarding hazardous environmental conditions is available.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06

A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

B. Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;

E. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and

procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 Bidders are required to attend and participate in a pre-Bid conference as scheduled in the Invitation to Bid. Representatives of Owner and Engineer will be present to discuss the Project. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents.

6.02 All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

6.03 The Contractor shall not work on property requiring obtaining of an easement until the Owner has obtained the necessary easement.

6.04 The Contractor shall have no claim for additional compensation or damage on account of any delay in obtaining the necessary easements.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Bryan Bond, City of Flint Department of Purchases and Supplies in writing. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda posted to the Owner's website *www.cityofflint.com/purchasing* under this proposal number. Questions received after 5:00 PM EST on Tuesday, April 17, 2018 will not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 The Owner will set forth as Addenda, which shall become a part of the Contract Documents, such questions received as above provided as in his sole judgment are appropriate or necessary and his decision regarding each. Owner shall post addenda to the Owner's website *www.cityofflint.com/purchasing* under this proposal number.

7.03 The Contractor agrees to use the products and methods designated or described in the Specifications as amended by the Addenda.

7.04 *Items and Indeterminate Items:*

A. The work to be done under this contract has been divided into parts or items to enable each bidder to bid on different portions of the work in accordance with his estimate of their cost and so that the actual quantity of work executed under each item may be paid for at the price bid for that particular item, even though such quantity is greater or less than the estimated quantity stated in the Bid Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in amount of not less than $100,000 and in the form of a certified cashier's check or a Bid Bond issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder(s) will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider the Bidder to be in default and annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving an award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or 60 days after the Bid opening, where upon the Bid security furnished by such Bidders will be returned.

8.03 Bid security of the other Bidders whom Owner believes do not have a reasonable chance of receiving the award and who furnished certified checks will have checks returned within 60 days after the Bid opening. Bond forms will be returned upon request.

8.04 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.05 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

ARTICLE 12 – BASIS OF DESIGN

12.01 *Basis of Design*

A. Unless otherwise indicated, design of this Project is based upon the material or Supplier's equipment named first in the list of manufacturers in the Specifications. Engineer has performed an evaluation of other listed manufacturers for compliance with the requirements of the Contract Documents. When other manufacturers are listed, Contractor may be required to make modifications or adjustments, at Contractor's expense, to coordinate the installation of the furnished equipment with associated elements of Work, such as piping and electrical connections, or support and mounting provisions.

ARTICLE 13 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

13.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute without any increase in the Bid.

13.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.

13.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 14 – PREPARATION OF BID

14.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from the Engineer.

A. All blanks on the Bid Form shall be completed in ink and Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form.

B. A Bid price shall be indicated for each bid item listed therein. In the case of optional alternatives, the words "No Bid," "No Change," or "Not Applicable" may be entered.

C. The Bid shall contain an acknowledgement of the receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

D. Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

E. All names shall be printed in ink below the signatures.

F. It is the responsibility of the Bidder to submit a neat, accurate, and complete Bid using the forms provided in Bid documents.

14.02 The Bidder, when signing the Bid(s) shall meet the following requirements:

A. A Bid by an individual shall show Bidder's name and Bidder's official address.

B. A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature) accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

C. A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

D. A Bid by a joint venture shall be executed by each joint venture in the manner indicated on the Bid form. The official address of joint venture shall be shown.

E. A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

14.03 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state Contractor license number, if any, shall also be shown on the Bid form.

ARTICLE 15 – BASIS OF BID; COMPARISON OF BIDS

15.01 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

15.02 *Supplementary Unit Prices*

A. Bidder shall submit a unit price for each item of Work listed in the Schedule of Supplementary Prices included in the Bid.

B. Owner shall have the right to reject any supplemental unit prices for additions to or deductions from the Work if the prices are considered excessive or unreasonable, or to accept any supplementary unit prices which may be considered fair and reasonable.

15.03 *Completion Time Comparisons*

A. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9 above.

ARTICLE 16 – SUBMITTAL OF BID

16.01 The Bid Form is to be completed and submitted with the Bid security and the following documents:

A. See Article 7 of Section 00 41 13 entitled "Bid Form" for a list of documents required to be submitted with the Bid.

1. A Bid shall be submitted no later than the date and the time prescribed and at the place indicated in the Invitation to Bid and shall be enclosed in a plainly marked package with the Project title and number, the name and address of the Bidder, and

shall be accompanied by the Bid security and other required documents. If the Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." No oral, facsimile, or telephonic bids will be accepted. A mailed Bid shall be addressed to the address indicated on the Bid Form. All Bids received will be time stamped by the Department of Purchases and Supplies.

B. OWNER may consider informal any Bid not prepared and submitted in accordance with the provisions hereof.

C. Bidders are cautioned that it is the responsibility of each individual bidder to assure that his bid is in the possession of the responsible official or his designated alternate prior to the stated time and at the place of the Bid Opening. Owner is not responsible for bids delayed by mail and/or delivery services, of any nature.

ARTICLE 17 – MODIFICATION AND WITHDRAWAL OF BID

17.01 Bids may be withdrawn prior to opening of the Bids upon written request of the Bidder, or the personal appearance of the Bidder or Bidder's designated representative. Bids may not be modified and resubmitted prior to the Bid opening time if a Bidder claims a mistake, omission, or error in the preparation of the Bid. Withdrawn Bids may not be resubmitted unless the Work is re-advertised and rebid upon such advertisement.

ARTICLE 18 – OPENING OF BIDS

18.01 Bids will be opened at the time and place designated by the Owner and, unless obviously non-responsive, read aloud publicly.

ARTICLE 19 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

19.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 20 – EVALUATION OF BIDS AND AWARD OF CONTRACT

20.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

20.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

20.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

20.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

20.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.

20.06 In the event that there is a discrepancy in the Bid between the lump sum or unit prices written in words and figures, the prices written in words shall govern.

20.07 The Owner reserves the right to decrease the scope of the work to be done under this contract and to omit any work in order to bring the cost within available funds. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any items as set forth in the Bid, either prior to executing the contract or at any time during the progress of the work. The Owner further reserves the right, at any time during the progress of the work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

20.08 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project. Contracts shall be awarded to the responsible firm whose Bid is most advantageous to the program, with price and other factors considered. Through formal Bid evaluations, the Owner will evaluate the bidders complete Bid, including additional factors and considerations but not limited to approach and methodology, performance history and references, financial ability, and adherence to regulatory compliance requirements.

20.09 Responsive and Responsible Bid: Responsiveness is determined by the examination of the Bid to ensure that it conforms to the stated requirements of the Bidding Documents (i.e., the Bidder provided a Bid Bond in the proper amount; the Bidder included required documentation in its Bid; etc.). Responsibility is evaluated by measuring the apparent ability of the contractor to successfully meet the requirements of the Contract Documents considering, but not limited to:

A. Adequate financial resources to perform the Contract in entirety

B. Ability to meet the requirements of the Contract Documents

C. Satisfactory record of performance on other contracts of similar size and scope

D. Necessary staffing, organization, experience, operational controls, and technical skills

E. Necessary production, construction, and technical equipment facilities

20.10 The Owner reserves the right to omit certain items in their entirety and other items in part as set forth in the Bid.

ARTICLE 21 – CONTRACT SECURITY AND INSURANCE

21.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 22 – SIGNING OF AGREEMENT

22.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of signed counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner.

22.02 The Notice of Award will be issued within 60 days after the Bids are received.

ARTICLE 23 – WAGE RATES

23.01 Each Contractor or Subcontractor performing Work on this Project shall comply in all respects with all laws governing the employment of labor, Social Security, and Unemployment Insurance of both the state and federal government. There shall be paid each employee engaged in Work under this Contract at the Site of the Project, the minimum wage for the classifications of labor employed. Bidders shall make their own investigation locally and satisfy themselves as to availability of labor.

23.02 Not less than the prevailing wage rates on public Work as established by the U.S. Department of Labor and the State in which Work is to be done shall be paid. Wages and rates are subject to the provisions of the Davis-Bacon Act.

ARTICLE 24 – SALES AND USE TAXES

24.01 Provisions for the Bidder's responsibilities for sales and other taxes appear in Paragraph 6.10 of the General Conditions and as supplemented in the Supplementary Conditions. Bidder shall investigate the statutory requirements for payment of sales taxes and if required shall include the tax in the Bid.

24.02 If investigation indicates tax exempt status, Contractor(s) shall forward this information to its Suppliers in order that the sale of such materials and equipment be properly recorded as a tax-exempt sale.

24.03 Contractor and any subcontractor engaged in this contract shall withhold from each payment to his employees the City income tax on all of their compensation subject to tax, after giving effect to exemptions, as follows:

A. Residents of the City: At a rate equal to 1 % of all compensation paid to the employee who is a resident of the City of Flint.

B. Non-residents: At a rate equal to 1/2% of the compensation paid to the employee for work done or services performed in the City of Flint.

These taxes shall be held in trust and paid over to the City of Flint in accordance with City ordinances and State law. Any failure to do so shall constitute a substantial and material breach of this contract.

ARTICLE 25 – POST-BID SUBMITTALS

25.01 *Disadvantaged Business Enterprises Participation*

A. Non-Applicable.

ARTICLE 26 – RETAINAGE

26.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 27 – CONTRACTS TO BE ASSIGNED

27.01 Non-Applicable

ARTICLE 28 – PARTNERING

28.01 Non-Applicable.

ARTICLE 29 – OTHER CONTRACTS

29.01 The attention of bidders is directed to the fact that the work to be done under this contract is only part of a program of improvements, that contracts have been let for additional facilities, and that the successful operation of the improvements is dependent upon the completion of the work under this contract and of the work to be done by others.

29.02 It is essential that all parties interested in the project cooperate to the end that the entire project will be brought to a successful conclusion as rapidly as possible, but the Owner cannot guarantee that no interference or delay will be caused thereby. Interference and delay resulting from such cooperation shall not be the basis of claims against the Owner.

ARTICLE 30 – FEDERALLY ASSISTED CONTRACT

30.01 This Contract is Federally assisted. The Contractor must comply with the Davis-Bacon Act, the Anti-Kickback Act, the Contract Work Hours Standards Act, Title VI of the Civil Rights Act of 1964, and Executive Orders 11246 and 11375.

ARTICLE 31 – FEDERAL WAGE RATES

31.01 *Davis – Bacon Act*

A. For all prime construction contracts in excess of $2,000, the contractor must comply with all state and federal requirements as governed by the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146--3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week.

ARTICLE 32 – OTHER PROVISIONS

32.01 *Copeland Anti-Kickback Clause*

A. For all prime construction contracts in excess of $2,000, the contractor must comply with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Sub-contractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or sub-recipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensa-tion to which he or she is otherwise entitled. The non-Federal entity must report all sus-pected or reported violations to the Federal awarding agency.

32.02 *Suspension and Debarment*

A. This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such the contractor is required to verify that none of the contractor, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935). The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into. This certification is a material representation of fact relied upon by (insert name of subgrantee). If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to (name of state agency serving as grantee and name of subgrantee), the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of

any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

B. A prospective contractor that is listed on the government-wide Excluded Parties List System in the System for Award Management (www.SAM.gov) as suspended or debarred, **CANNOT** be awarded a contract funded with Federal assistance.

32.03 *Anti-Lobbying*

A. Contractors who apply or bid for an award of $100,000 or more shall file the required certification must comply with the Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 as amended . Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

32.04 *Clean Air Act and Federal Water Pollution Control Act*

A. For all contracts exceeding $150,000, the contractor must comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387), and will report violations to the Regional Office of the Environmental Protection Agency (EPA).

32.05 *Non-Discrimination*

A. The contractor shall comply with the Elliott Larsen Civil Rights Act, 1976 PA 453, as amended, MCL 37.2101 et seq., the Persons with Disabilities Civil Rights Act, 1976 PA 220, as amended, MCL 37.1101 et seq., and all other federal, state, and local fair employment practices and equal opportunity laws and covenants that it shall not discriminate against any employee or applicant for employment, to be employed in the performance of this Agreement, with respect to his or her hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment, because of his or her race, religion, color, national origin, age, sex, height, weight, marital status, or physical or mental disability that is unrelated to the individual's ability to perform the duties of a particular job or position. The contractor agrees to include in every subcontract entered into for the performance of this Agreement this covenant not to discriminate in employment. A breach of this covenant is a material breach of this Agreement.

32.06 *American Iron and Steel (AIS) Requirements*

A. The Contractor acknowledges to and for the benefit of the City of Flint ("Purchaser") and the Michigan Department of Environmental Quality (the "State") that it understands

the goods and services under this Agreement are being funded with monies made available by the State Revolving Fund and/or the Drinking Water Revolving Fund and such law contains provisions commonly known as "American Iron and Steel (AIS);" that requires all iron and steel products used in the project be produced in the United States ("AIS Requirements") including iron and steel provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the AIS Requirements, (b) all iron and steel used in the project will be and/or have been produced in the United States in a manner that complies with the AIS Requirements, unless a waiver of the requirements is approved or the State made the determination in writing that the AIS Requirements do not apply to the project, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the AIS requirements, as may be requested by the Purchaser. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privily with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

END OF SECTION

SECTION 00 41 13

BID FORM

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

The City of Flint
Department of Purchases and Supplies
1101 S. Saginaw Street, Room 203
Flint, MI 48502

Attn: Bryan D. Bond
Purchasing Manager

(Hereinafter called Owner)

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 120 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner. Bidder shall sign and deliver the required number of counterparts of the Agreement with the bonds and other documents required by the Bidding Documents within twenty (20) days after the issuance date of the Notice of Award.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

J. Bidder agrees to comply with the Disadvantaged Business Enterprise participation as specified in the Bidding Documents.

K. In connection with the performance of Work under this Contract, Bidder agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition or developmental disability, or national origin.

L. The submission of this Bid constitutes and incontrovertible representation by the Bidder that the Bidder has complied with every requirement of the Bidding Documents, and that without exception, the Bid prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the unit prices identified in the table below.

A. Unit Prices shall be computed in accordance with Paragraph 11.03.B of the General Conditions.

B. The intent of this Bid is to establish unit prices to complete service line replacements (SLR) and associated work. The complete scope of SLR work is dependent on the results of the hydrovac exploration contracts. The hydrovac explorations will occur at a

minimum of 6,000 houses. SLR and related work will be conducted at properties where hydrovac explorations locate non-copper water service connections or where hydrovac explorations cannot be conducted.

C. SLR quantities may be increased or decreased as schedule and available funding dictate.

D. The Owner reserves the right to negotiate and award contracts to multiple Bidders. Each selected Contractor will receive an equal number of houses for which to complete SLR and / or associated work. The final scope of assigned houses per Contract will be equal to 6,000 houses divided by number of SLR Contracts awarded and executed.

E. The Owner reserves the right to award additional assignments once a Contract's original scope of work is completed and accepted by the Owner.

F. The Contractor shall not be entitled to renegotiate any unit pricing based upon the quantity of any work, whether assigned or not assigned.

G. Bidder acknowledges that quantities of work are not guaranteed. Final payment for all unit price Bid items will be based on actual quantities of work completed as described in the Contract Documents.

H. The maximum cost for any service line replacement is capped at $5,000 each per the Concerned Pastor's Settlement Agreement. Bids with unit prices for Bid Items SLR.1 through SLR.12 in excess of this value will be rejected.

Note that Bid Item SLR.13 will contribute to the overall cost of the service line replacement. Work at homes with service lines in excess of 60' may not be completed if the overall cost for the service line replacement will exceed $5,000.

ITEM	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE
Mobilization				
MOB.1	Mobilization / Demobilization	1 LS	$	$
Service Line Replacement (SLR)				
SLR.1	¾" Partial Replacement, Public Side	1,995 EA	$	$
SLR.2	¾" Partial Replacement, Private Side	855 EA	$	$
SLR.3	¾" Full Replacement	2,850 EA	$	$
SLR.4	1" Partial Replacement, Public Side	89 EA	$	$
SLR.5	1" Partial Replacement, Private Side	38 EA	$	$
SLR.6	1" Full Replacement	128 EA	$	$
SLR.7	1-½ " Partial Replacement, Public Side	11 EA	$	$
SLR.8	1-½ " Partial Replacement, Private Side	5 EA	$	$
SLR.9	1-½ " Full Replacement	15 EA	$	$
SLR.10	2" Partial Replacement, Public Side	5 EA	$	$

ITEM	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE
SLR.11	2" Partial Replacement, Private Side	2 EA	$	$
SLR.12	2" Full Replacement	8 EA	$	$
SLR.13	Additional Copper Service Line, >60 LF	1,800 LF	$	$
SLR.14	SLR, SHPO Zone w/ Archeologist	300 EA		
Miscellaneous Work				
M.1	Cut & Cap, Abandoned House Service	150 EA	$	$
M.2	Sanitary Lateral Inspection	6,000 EA	$	$
M.3	Sanitary Lateral Repair	180 EA	$	$
M.4	LSM, Unstable Trench Bottom	370 CY	$	$
M.5	Traffic Control, Flagmen/Police Assisted	300 HR	$	$
M.6	Tree Removal, ≤24" Diameter	30 EA	$	$
M.7	Tree Removal, >24" Diameter	50 EA	$	$
M.8	Exploratory Excavation	300 EA	$	$
TOTAL PRICE (IN FIGURES)			**$**	

_____

Dollars and _____ Cents (TOTAL PRICE IN WORDS)

5.02 SCHEDULE OF SUPPLEMENTAL UNIT PRICES

A. A corresponding credit shall be applied to the Contractor's payment application when the materials shown in the Unit Price Schedule listed below are provided by the Owner.

ITEM	DESCRIPTION	UNIT PRICE
Credit for Owner-Provided Materials		
OPM.1	¾" Copper Service Line (60' Coil)	$ $230 / EA

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete on or before November 30, 2018, and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before December 31, 2018.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security in the form of a Bid Bond. Refer to Section 00 43 13;

B. Non-collusion Affidavit of Prime Bidder included as Exhibit B.

C. Bid Certification Form included as Exhibit C.

D. List of Proposed Subcontractors. Use the form included as Exhibit D.

E. List of Proposed Suppliers. Use the form included as Exhibit E.

F. List of Project References. Use the form included as Exhibit F.

G. Evidence of authority to do business in the state of Michigan; or a written covenant to obtain such license within the time for acceptance of Bids;

H. Contractor's License No.: [_____] Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

I. Required Bidder Qualification Statement with Supporting Data; and

J. Ownership statement. Use the form included as Exhibit G.

K. Certification of Disadvantaged Business Participation Requirements.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability):_____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in Michigan is ____/____/____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____(SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

_____

Phone No. _____ Fax No. _____

E-mail _____ _____

SUBMITTED on _____, 20____.

State Contractor License No. _____.

Sworn and subscribed to before me this

_____ day of _____ , 20___ .

_____

Notary or other officer authorized to administer oaths

My commission expires: _____ , 20___ .

(Bidders shall not add any conditions or qualifying statements to this Bid as otherwise the Bid may be declared irregular as being not responsive to the advertisement. BIDDERS SHALL USE THIS BID FORM IN SUBMITTING THEIR BIDS.)

Bidder acknowledges that the above representations are material and important, and will be relied on by the Owner in awarding the Contract(s) for which this Bid is submitted. The Bidder understands that misstatement in this Bid is and shall be treated as fraudulent concealment from the Owner of the true facts relating to the submission of the Bid for this Contract.

Bidder, being duly sworn, deposes and states that he is the person making the above Bid or is authorized to make this Bid on behalf of said partnership, joint venture or corporation; and that said Bid is genuine and not sham or collusive, and is not made in the interest of or on behalf of any person, partnership, joint venture, or corporation not therein named, and that he has not directly or indirectly induced or solicited any bidder to put in a sham bid; that he has not directly or indirectly induced or solicited any other person, partnership, joint venture, or corporation to refrain from bidding, and that he has not in any manner sought by collusion to secure himself or to said partnership, joint venture, or corporation an advantage over other bidders.

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EXHIBIT A

CHECKLIST OF ITEMS REQUIRED FOR SUBMISSION OF BID

BIDDERS MUST COMPLETE THIS SHEET AND SUBMIT WITH THEIR BID, ALONG WITH THE FOLLOWING ITEMS

____ Checklist form – Exhibit A
____ Non-Collusion Affidavit – Exhibit B
____ Bid Certification - Exhibit C
____ Capacity information
- Bidder has to provide information on their capacity, including horizontal directional drilling, to perform the work outlined in the bid documents.
- Provide a historical summary of work that demonstrates the required experience, both in time an quantity of work completed.

____ Experience and qualifications
- Identify all subcontractors (if applicable) and provide same information as proposed bidder. – Exhibit D
- Identify all equipment and suppliers (if applicable) intended to be utilized for this contract. – Exhibit E

____ References
- Supply at least five (5) references from municipalities (city, county, township, etc.) or communities (or developments) demonstrating experience working on water distribution projects that are similar in size and scope to this project. Please include customer's name, dates of contracts, summary of services provided, reference contact name, phone number, and address. – Exhibit F

____ Other
- Ownership Statement – Exhibit G
- Identify the name of the landfill or approved disposal site in which excavation spoils, waste, including lead or other contaminated material, and compost material will be disposed for the period of this contract. The City may request financial information of said landfill or disposal site at a later date.
- Describe how your company meets or exceeds the minimum experience qualification of the services requested.
- Any information that the vendor would like to submit with their proposal.

____ Bid Bond – Section 00 43 13

PLEASE NOTE: FAILURE TO SUBMIT THE ABOVE ITEMS WILL RESULT IN A REJECTION OF YOUR BID.

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EXHIBIT B

NON-COLLUSION AFFIDAVIT

State of _____:

s.s.

County of _____:

I state that I am _____ of _____
(Title) (Name of Firm)

and that I am authorized to make this affidavit on behalf of my Firm, its Owner, Directors and Officers. I am the person responsible in my firm for the price(s) and the amount of the bid.

I state that:

1. The price(s) and the amounts of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.
2. Neither the price(s) nor the amount of the bid, and neither the approximate price(s) nor the approximate amount of the bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before the bid opening.
3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive or other form of complementary bid.
4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a discussion with, or inducement from, any firm or person to submit a complementary or noncompetitive bid.
5. _____, its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

_____

_____

_____

_____

_____

I state that _____ understands and
(Name of Firm)

Acknowledges that the above representations are material and important, and will be relied on by the City of Flint, Department of Purchase and Supplies in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that misstatement in this affidavit is and shall be treated as fraudulent concealment from the City of Flint, Department of Purchase and Supplies of the true facts relating to the submission of bids for this contract.

_____
(Signature)

_____
(Printed Name)

_____
(Position / Job Title)

EXHIBIT C

BID CERTIFICATION FORM

THIS PAGE MUST BE COMPLETED AND INCLUDED WITH THE BID

The undersigned hereby certifies, on behalf of the respondent named in this Certification (the "Respondent"), that the information provided in this offer submitted to the City of Flint, Department of Purchase and Supplies is accurate and complete, and that I am duly authorized to submit same. I hereby certify that the Respondent has reviewed all documents and requirements included in this offer and accept its terms and conditions.

Company (Respondent): _____

Address: _____

_____

City, State & Zip Code: _____

Phone / Fax Number: _____

Email: _____

Authorized Representative: _____
(Printed)

_____
(Signature)

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EXHIBIT D

LIST OF SUBCONTRACTORS

Herewith is the list of Subcontractors referenced in the Bid submitted by:

_____

(Bidder)

City of Flint, Department of Purchase and Supplies
(Owner)

dated _____

The following work will be performed (or provided) by the following Subcontractors, and coordinated by us:

SECTION OF WORK	SUBCONTRACTOR'S NAME

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EXHIBIT E

LIST OF SUPPLIERS

Herewith is the list of Suppliers referenced in the Bid submitted by:

_____

(Bidder)

City of Flint, Department of Purchase and Supplies
(Owner)

dated _____

The following work will be performed (or provided) by the following Suppliers, and coordinated by us:

SECTION OF WORK	EQUIPMENT NAME	SUPPLIER'S NAME

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EXHIBIT F

PROJECT REFERENCES

Herewith is the list of Project References referenced in the Bid submitted by:

_____

(Bidder)

City of Flint, Department of Purchase and Supplies
(Owner)

dated _____

The following work will be performed (or provided) by the following Project References, and coordinated by us:

PROJECT	
Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	
Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	

Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	

Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	

Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	

EXHIBIT G

OWNERSHIP STATEMENT

OWNER	-	City of Flint, Department of Purchase and Supplies
ENGINEER	-	AECOM
PROJECT	-	Phase V Service Line Replacement (SLR)

ARTICLE 1

1.1 If the Bidder is a corporation, partnership, limited partnership, limited liability corporation, limited liability partnership or a subchapter S corporation, the Bidder, in compliance with P.L. 1977, Chapter 33, shall submit, with the Bid, the following statement setting forth the names and addresses of all stockholders or individual partners who own ten percent (10%) or more of its stock or interest. If one or more such stockholder or partner is itself a corporation, partnership, limited partnership, limited liability corporation, limited liability partnership or a subchapter S corporation, the stockholders holding ten percent (10%) or more of that corporation's stock, or the individual partners owning ten percent (10%) or greater interest in that partnership, as the case may be, shall also be listed.

IF NONE, SO STATE

INDIVIDUAL	ADDRESS

NOTE: ADDITIONAL SHEETS CONSISTING OF __ PAGES ARE ATTACHED.

END OF SECTION

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SECTION 00 43 13

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
City of Flint, Department of Purchases and Supplies
1101 S. Saginaw St., Room 203
Flint, MI 48502

BID
Bid Due Date: April 23, 2018
Description *(Project Name and Include Location)*:
City of Flint, Phase V Service Line Replacements (SLR)

BOND
Bond Number:
Date *(Not earlier than Bid due date)*:
Penal sum One Hundred Thousand Dollars and No Cents (Words) $100,000 (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00 52 13

AGREEMENT

THIS AGREEMENT is by and between _____ ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described in Section 01 11 00 – Summary of Work.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Removal and replacement of lead, galvanized steel, or other non-copper water service lines as well as various miscellaneous work.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by AECOM (Engineer), which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Dates for Substantial Completion and Final Payment*

A. The Work will be substantially completed on or before November 30, 2018, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before December 31, 2018.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the

times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner $1,000 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is considered by the Engineer to be substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner $500 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

B. Owner reserves the right to withhold liquidated damages from Contractor's final payment, including retainage, in the event the Contractor refuses to pay said liquidated damages. Contractor is responsible for the payment of all liquidated damages in the event the amount of liquidated damages exceeds the value of the work to be paid, including retainage.

4.04 Permitting Contractor or Surety to continue and finish the Work or any part of the Work after the times specified for completion, or after the date to which the times for completion may have been extended, shall in no way operate as a waiver on the part of Owner of its rights under the Contract.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A below:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

B. Contractor will be required to submit certified payroll reports with each payment application so that the Owner can confirm compliance with mandated wage rates.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during

performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.

    a. 10 percent of Work completed, with the balance being retainage.

    b. Upon written approval of the Engineer and Owner, retainage will be reduced to 5 percent of the work completed, if the Work has been 50 percent completed and if the character and progress of the Work have been satisfactory to Owner and Engineer. The Owner reserves the right to maintain retainage at 10% of work completed over the entire duration of the contract.

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

7.01 Non applicable.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."

E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, if any, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. In connection with the performance of Work under this Contract, Contractor agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition or developmental disability, or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. Contractor further agrees to take affirmative action to ensure equal employment opportunities for persons with disabilities. Contractor agrees to post in conspicuous places, available for employees and applicants for employment, notices

setting forth the provisions of the nondiscrimination clause. Form of notice is included in the Project Forms.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 00 52 13-1 to 00 52 13-8, inclusive).
2. Performance bond (pages 00 61 13-1 to 00 61 13-4, inclusive).
3. Payment bond (pages 00 61 16-1 to 00 61 16-4, inclusive).
4. General Conditions (pages 00 72 00-1 to 00 72 00-68, inclusive).
5. Supplementary Conditions (pages 00 73 02-1 to 00 73 02-24, inclusive).
6. Specifications as listed in the Table of Contents of the Project Manual.
7. Addenda.
8. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid (pages 1 to 24, inclusive).
9. Davis – Bacon Prevailing Wage Rates, as provided by Owner.
10. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

OWNER:

_____

By: _____

Title: _____

[**CORPORATE SEAL**]

Attest
. _____

Title: _____

Address for giving notices:

_____

_____

_____

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Countersigned By:

_____

Comptroller
(Or other designated official)

CONTRACTOR

_____

By: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

License No.: _____

(Where applicable)

Agent for service of process:

_____

END OF SECTION

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

SECTION 00 61 13

PERFORMANCE BOND (EJCDC C-610)

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*: City of Flint, Department of Purchases and Supplies
1101 S. Saginaw Street, Room 203
Flint, MI 48502

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within

two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

SECTION 00 61 16

PAYMENT BOND (EJCDC C-615)

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*: City of Flint, Department of Purchases and Supplies
1101 S. Saginaw Street, Room 203
Flint, MI 48502

CONSTRUCTION CONTRACT

Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND

Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

   5.1 Claimants who do not have a direct contract with the Contractor,

      5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

      5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

   5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

   7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

   7.2 Pay or arrange for payment of any undisputed amounts.

   7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by

anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default**: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

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and

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1 – Definitions and Terminology 1
1.01 Defined Terms 1
1.02 Terminology 5

Article 2 – Preliminary Matters 6
2.01 Delivery of Bonds and Evidence of Insurance 6
2.02 Copies of Documents 6
2.03 Commencement of Contract Times; Notice to Proceed 6
2.04 Starting the Work 7
2.05 Before Starting Construction 7
2.06 Preconstruction Conference; Designation of Authorized Representatives 7
2.07 Initial Acceptance of Schedules 7

Article 3 – Contract Documents: Intent, Amending, Reuse 8
3.01 Intent 8
3.02 Reference Standards 8
3.03 Reporting and Resolving Discrepancies 9
3.04 Amending and Supplementing Contract Documents 9
3.05 Reuse of Documents 10
3.06 Electronic Data 10

Article 4 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions; Reference Points 11
4.01 Availability of Lands 11
4.02 Subsurface and Physical Conditions 11
4.03 Differing Subsurface or Physical Conditions 12
4.04 Underground Facilities 13
4.05 Reference Points 14
4.06 Hazardous Environmental Condition at Site 14

Article 5 – Bonds and Insurance 16
5.01 Performance, Payment, and Other Bonds 16
5.02 Licensed Sureties and Insurers 16
5.03 Certificates of Insurance 17
5.04 Contractor's Insurance 17
5.05 Owner's Liability Insurance 19
5.06 Property Insurance 19
5.07 Waiver of Rights 20
5.08 Receipt and Application of Insurance Proceeds 21

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5.09 Acceptance of Bonds and Insurance; Option to Replace 21
5.10 Partial Utilization, Acknowledgment of Property Insurer 22

Article 6 – Contractor's Responsibilities 22
6.01 Supervision and Superintendence 22
6.02 Labor; Working Hours 22
6.03 Services, Materials, and Equipment 22
6.04 Progress Schedule 23
6.05 Substitutes and "Or-Equals" 23
6.06 Concerning Subcontractors, Suppliers, and Others 25
6.07 Patent Fees and Royalties 27
6.08 Permits 27
6.09 Laws and Regulations 28
6.10 Taxes 28
6.11 Use of Site and Other Areas 28
6.12 Record Documents 29
6.13 Safety and Protection 29
6.14 Safety Representative 30
6.15 Hazard Communication Programs 30
6.16 Emergencies 30
6.17 Shop Drawings and Samples 31
6.18 Continuing the Work 32
6.19 Contractor's General Warranty and Guarantee 33
6.20 Indemnification 33
6.21 Delegation of Professional Design Services 34

Article 7 – Other Work at the Site 35
7.01 Related Work at Site 35
7.02 Coordination 35
7.03 Legal Relationships 36

Article 8 – Owner's Responsibilities 36
8.01 Communications to Contractor 36
8.02 Replacement of Engineer 36
8.03 Furnish Data 36
8.04 Pay When Due 36
8.05 Lands and Easements; Reports and Tests 36
8.06 Insurance 36
8.07 Change Orders 37
8.08 Inspections, Tests, and Approvals 37
8.09 Limitations on Owner's Responsibilities 37
8.10 Undisclosed Hazardous Environmental Condition 37
8.11 Evidence of Financial Arrangements 37
8.12 Compliance with Safety Program 37

Article 9 – Engineer's Status During Construction 37
9.01 Owner's Representative 37

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9.02 Visits to Site 37
9.03 Project Representative 38
9.04 Authorized Variations in Work 38
9.05 Rejecting Defective Work 38
9.06 Shop Drawings, Change Orders and Payments 39
9.07 Determinations for Unit Price Work 39
9.08 Decisions on Requirements of Contract Documents and Acceptability of Work 39
9.09 Limitations on Engineer's Authority and Responsibilities 39
9.10 Compliance with Safety Program 40

Article 10 – Changes in the Work; Claims 40
10.01 Authorized Changes in the Work 40
10.02 Unauthorized Changes in the Work 41
10.03 Execution of Change Orders 41
10.04 Notification to Surety 41
10.05 Claims 41

Article 11 – Cost of the Work; Allowances; Unit Price Work 42
11.01 Cost of the Work 42
11.02 Allowances 45
11.03 Unit Price Work 45

Article 12 – Change of Contract Price; Change of Contract Times 46
12.01 Change of Contract Price 46
12.02 Change of Contract Times 47
12.03 Delays 47

Article 13 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work 48
13.01 Notice of Defects 48
13.02 Access to Work 48
13.03 Tests and Inspections 49
13.04 Uncovering Work 49
13.05 Owner May Stop the Work 50
13.06 Correction or Removal of Defective Work 50
13.07 Correction Period 50
13.08 Acceptance of Defective Work 51
13.09 Owner May Correct Defective Work 52

Article 14 – Payments to Contractor and Completion 52
14.01 Schedule of Values 52
14.02 Progress Payments 52
14.03 Contractor's Warranty of Title 55
14.04 Substantial Completion 55
14.05 Partial Utilization 56
14.06 Final Inspection 57
14.07 Final Payment 57
14.08 Final Completion Delayed 58

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14.09 Waiver of Claims 58

Article 15 – Suspension of Work and Termination 59
15.01 Owner May Suspend Work 59
15.02 Owner May Terminate for Cause 59
15.03 Owner May Terminate For Convenience 60
15.04 Contractor May Stop Work or Terminate 60

Article 16 – Dispute Resolution 61
16.01 Methods and Procedures 61

Article 17 – Miscellaneous 61
17.01 Giving Notice 61
17.02 Computation of Times 62
17.03 Cumulative Remedies 62
17.04 Survival of Obligations 62
17.05 Controlling Law 62
17.06 Headings 62

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

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12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

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27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

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40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

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addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

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E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

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2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on

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Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

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3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

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1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or

2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

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4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

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contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data;

b. locating all Underground Facilities shown or indicated in the Contract Documents;

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

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consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

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C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

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meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

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a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

a. Such insurance shall remain in effect for two years after final payment.

b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

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5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

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members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

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1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

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interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

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B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

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2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

3) it has a proven record of performance and availability of responsive service.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

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c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

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required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

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Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

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6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought

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by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and

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shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is

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required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

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2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

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6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

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B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

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E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

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B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

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8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

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continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

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9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not

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exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

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10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

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shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

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1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of

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said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

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limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to

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the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

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C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

   a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

   b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

   c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

   d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

   e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

   f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

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neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

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13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

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C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

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1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

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13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

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Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or

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involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

   c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

   d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

   e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

   d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

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D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

   a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

   b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

   c. there are other items entitling Owner to a set-off against the amount recommended; or

   d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

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final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

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4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying

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documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

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ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

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so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days

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to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

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1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00 73 02

SUPPLEMENTARY CONDITIONS

ARTICLE 1. DEFINITIONS

SC-1.01

Defined Terms:

Delete Subparagraph 1.01.A.8 in its entirety and insert the following in its place:

8. *Bidding Requirements* - The Official Notice, Notice of Public Hearing, Advertisement or Invitation to Bid; Instructions to Bidders; Bid security of acceptable form, if any; and the Bid Form with any supplements.

SC-1.01

Defined Terms:

Insert the following language before the word “Agreement” in the first sentence of the definition 1.01A.12 entitled "Contract Documents" in the General Conditions:

Invitation to Bid, Instructions to Bidders, and

SC-1.01

Defined Terms:

Add the following to the end of Paragraph 1.01A.19:

Wherever in the Contract Documents the name Boyle, CTE, Earth Tech, Metcalf & Eddy, or TCB appears, it shall also mean to include AECOM.

SC-1.01

Defined Terms:

Add the following new paragraph immediately after paragraph 1.01.A.31:

32. *Products* - Means materials and equipment that Contractor furnishes and provides, other than labor and services.

SC-1.01

Defined Terms:

Delete Subparagraph 1.01.A.34 in its entirety and insert the following in its place:

34. *Project Manual* - The Project Manual is the volume assembled for the Work which includes the Bid Documents, Contract Documents, and Specifications.

ARTICLE 2. PRELIMINARY MATTERS

SC-2.01

Copies of Documents:

Delete paragraph 2.01B of the General Conditions in its entirety and insert the following in its place:

B. Before any work at the site is started, Contractor shall deliver to Owner, with a copy to Engineer, certificates of insurance (and other evidence of insurance requested by Owner) which Contractor is required to purchase and maintain in accordance with the requirements of Article 5.

1. Contractor shall include and identify on the certificate of insurance, indemnification as required by Article 6.20.

2. Engineer shall furnish to the Contractor, the form for Certificate of Insurance to be completed.

SC-2.02

Copies of Documents:

Add the following to the end of the first sentence in Paragraph 2.02.A.:

and one set in electronic format.

SC-2.03

Commencement of Contract Times; Notice to Proceed:

Delete the last sentence of Paragraph 2.03.A. in its entirety and insert the following in its place:

In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the 30th day after the Effective Date of the Agreement, whichever date is earlier.

SC-2.05

Before Starting Construction:

Amend the first sentence of Paragraph 2.05.A.3. by inserting the words "except for Unit Price Work" at the beginning of the sentence.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01

Intent:

Add a new paragraph immediately after paragraph 3.01A of the General Conditions which is to read as follows:

1. Each and every provision of law and clause required by law to be inserted in the Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though they were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

2. Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications.

SC-3.03

Reporting and Resolving Discrepancies

Add the following language as Paragraph 3.03.A.4.:

4. A request for written interpretation or clarification of the Contract Documents shall be submitted on the Contract Clarification/Interpretation Request form provided in the Project Forms section.

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

SC-4.02

Subsurface and Physical Conditions:

Delete paragraph 4.02A of the General Conditions in its entirety and insert the following in its place:

A. Reports and Drawings: No supplemental geotechnical or subsurface investigation reports are available.

SC-4.04

Underground Facilities:

Delete the following words from line 5 of paragraph 4.04B.2 of the General Conditions:

"or not shown or indicated with reasonable accuracy"

SC-4.05

Reference Points:

Delete paragraph 4.05A in entirety and replace with the following::

A. No engineering surveys or reference points are provided for this contract.

SC-4.06

Hazardous Environmental Conditions at Site:

Delete Paragraphs 4.06.A. and 4.06.B. in their entirety and insert the following in their place:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Not used.

ARTICLE 5. BONDS AND INSURANCE

SC-5.01

Performance, Payment and Other Bonds:

Add the following text after the phrase "Contract Price" in the second line of paragraph 5.01.A:

for the work assigned

Add the following language at the end of Paragraph 5.01.C:

In addition, no further progress payments under the Agreement will be made by Owner until Contractor complies with the provisions of this paragraph.

SC-5.02

Licensed Sureties and Insurers:

Add the following language at the end of Paragraph 5.02.A.:

Insurance companies shall have a VI or better rating by Best's Insurance Guide Rating.

SC-5.04

Contractor's Insurance:

Add the following new paragraph immediately after Paragraph 5.04.B.:

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation, and related coverage under Paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions. Statutory coverage or proof acceptable to the City of approval as a self-insurer by the State of Michigan.

a. Workers Compensation:	Statutory
b. Applicable Federal:	Statutory
c. Employer's Liability:	$100,000 (each accident) $100,000 disease (each employee)
d. Disease:	$500,000 (policy limit)

2. Contractor's General Liability under Paragraphs 5.04.A.3 through 5.04.A.6 of the General Conditions which shall include completed operations and product liability coverage's and eliminate the exclusion with respect to property under the care, custody, and control of Contractor or provide equivalent coverage under Builders Risk:

a. General Aggregate:	$1,000,000 (each occurrence) $2,000,000 (general aggregate)
b. Products-Completed Operations Aggregate:	$2,000,000
c. Personal and Advertising Injury:	$1,000,000
d. Bodily Injury and Property Damage:	$500,000 (each occurrence)

e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.

f. Excess or Umbrella Liability: $1,000,000 (general aggregate)
$1,000,000 (each occurrence)

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions. Michigan "no-fault" coverage, and residual automobile liability, comprehensive form, covering, owned, hired, and non-owned automobiles.

a. Bodily Injury: $500,000 (each person)
$1,000,000 (each accident)

b. Property Damage: $500,000 (each accident)

4. The Contractual Liability coverage required by Paragraph 5.04.B.3 of the General Conditions shall provide coverage for not less than the following amounts:

a. Bodily Injury: $1,000,000 (each accident)
$2,000,000 (annual aggregate)

b. Property Damage: $500,000 (each accident)
$1,000,000 (annual aggregate)

5. In addition to those identified and entities specified in the General Conditions include as additional insured the following:

a. City of Flint, Michigan

b. City of Flint, Department of Purchases and Supplies

c. AECOM and subcontractors

Amend the subparagraph by deleting the words "two years" and inserting the words "three years".

SC-5.05

Owner's Liability Insurance:

Delete paragraph 5.05 of the General Conditions in its entirety and insert the following in its place:

A. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:

1. Bodily Injury: $1,000,000 (each occurrence)

2. Property Damage: $500,000 (each occurrence)
$1,000,000 (annual aggregate)

SC-5.06

Property Insurance:

Delete Paragraph 5.06.A in its entirety and insert the following in its place:

A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any deductible or self-insured retention. The insurance shall:

1. Include the interests of Owner, Contractor, Subcontractors, Engineer, individual property owners, and any other individuals or entities identified herein, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup;

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued;

8. comply with the requirements of Paragraph 5.06.C. of the General Conditions.

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

SC-6.03

Services, Materials, and Equipment:

Add the following new paragraph(s) immediately after Paragraph 6.03.C.:

D. Basis of Design

1. Unless otherwise indicated, design of this Project is based upon the material or Supplier's equipment named first in the list of manufacturers in a Specification section. Engineer has performed an evaluation of other listed manufacturers for compliance with the requirements of the Contract Documents.

2. When other manufacturers are listed, Contractor may be required to make modifications or adjustments, at Contractor's expense, to coordinate the installation of the furnished equipment with associated elements of Work, such as piping and electrical connections, or support and mounting provisions.

SC-6.05

Substitutes and "Or Equals":

Add the following language at the end of Paragraph 6.05.D.:

. . . in the form of a Special Performance Guarantee and Surety Bond included in the Project Forms of the Project Manual.

SC-6.05

Substitutes and "Or Equals":

Delete Paragraph 6.05.E. in its entirety.

SC-6.05

Substitutes and "Or Equals":

Add the following new paragraphs immediately after Paragraph 6.05.F.:

1. When a substitute item of material or equipment is proposed by Contractor and accepted by Engineer, and the substitution will require a change in any of the Contract Documents to adapt the design to the proposed substitute, Contractor shall notify Engineer of the changes and be responsible for the costs involved to revise the design and to make modifications or changes to the construction, including the costs

associated with the Work of other contractors due to such changes in design or space requirements.

a. Redesign and drawing revisions will be prepared by Engineer and Contractor shall reimburse Owner for charges of Engineer for redesign and drawing preparation.

b. Reimbursement of Engineer shall be based on Engineer's direct labor costs, indirect labor costs, profit on the total labor, and any direct non-labor expenses such as travel or per diem.

SC-6.06

Concerning Subcontractor's, Suppliers, and Others:

Renumber subparagraph 6.06F to 6.06G and subparagraph 6.06G to 6.06H and add new subparagraph as follows:

F. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid to Contractor in accordance with Contractor's Applications for Payment on account of the particular Subcontractor's, Suppliers, other person's, or other organization's Work.

SC-6.10

Taxes:

Add the following new paragraphs immediately after Paragraph 6.10.A.:

1. Contractor shall investigate the statutory requirements for payment of sales taxes and if required shall include the tax in the Contract price.

2. If investigation indicates tax exempt status, Contractor(s) shall forward this information to its Suppliers in order that the sale of such materials and equipment be properly recorded as a tax-exempt sale.

SC-6.12

Record Documents:

Delete the last sentence of Paragraph 6.12.A. in its entirety and insert the following in its place:

Upon Substantial Completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

SC-6.16

Emergencies:

Add the following new paragraph immediately after Paragraph 6.16.A.:

B. In emergencies affecting the safety or protection of persons or property or maintenance of temporary construction at the Site or adjacent thereto, and Contractor cannot be reached, Owner may act to attempt to prevent threatened damage, injury, or loss. Owner will give Contractor and Engineer prompt written notice of such action and the cost of the correction or remedy shall be charged against Contractor. A Change Order will be issued to document the change in Contract Price.

SC-6.17

Shop Drawings and Samples:

Add the following new paragraphs immediately after Paragraph 6.17.E.:

F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.

G. After Engineer has reviewed and approved a Shop Drawing or Sample, Contractor shall provide the material or equipment approved. Engineer will not review subsequent submittals of a different manufacturer or Supplier unless Contractor provides sufficient information to Engineer that the approved material or equipment is unavailable, time of delivery will delay the construction progress but not as a result of Contractor's failure to timely pursue the Work or to coordinate various activities properly, or Owner requests a different manufacturer or Supplier.

ARTICLE 7. OTHER WORK

SC-7.02

Coordination:

Add the following new paragraph immediately after Paragraph 7.02.B.:

1. Engineer will be the construction coordinator to schedule and coordinate the activities of the various Contractors at the Site, maintain liaison between the Contractors, the Engineer's design staff, and Owner.

SC-7.04

Claims Between Contractors:

Add the following new paragraphs immediately after Paragraph 7.03.:

A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, Engineer, or the construction coordinator, then Contractor (without involving Owner, Engineer or construction coordinator) shall either (1) remedy the damage, (2) agree to compensate the other contractor for remedy of the damage, or (3) remedy the damage and attempt to settle with such other contractor by agreement, or otherwise resolve the dispute by arbitration or at law.

B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the construction coordinator and the officers, directors, partners, employees, agents and other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, consultants, or the construction coordinator to the extent said claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the construction coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the construction coordinator on account of any such damage or Claim.

C. If Contractor is delayed at any time in performing or furnishing the Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, Engineer, or construction coordinator for activities that are their respective responsibilities.

SC-7.05

Damages to the Work or Property:

Add the following new paragraph at the end of Article 7 of the General Conditions:

A. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the Work at the site be

made by any separate contractor against Contractor, Owner, Engineer, Engineer's Consultants, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and Engineer's Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, or Engineer's Consultants, to the extent based on a claim arising out of the Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of Work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer or Engineer's Consultants, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or Engineer's Consultants, on such damage or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Engineer's Consultants, for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, or Engineer's Consultant, for activities that are their respective responsibilities.

ARTICLE 8. OWNER'S RESPONSIBILITIES

SC-8.06

Insurance:

Delete paragraph 8.06 of the General Conditions in its entirety.

ARTICLE 9. ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03

Project Representative:

Add the following new paragraphs immediately after Paragraph 9.03.A.:

B. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR'S actions. RPR'S dealings in matters pertaining to the Work in

general shall be with Engineer and Contractor. RPR'S dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:

1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

2. *Conferences and Meetings:*

    a. Conduct a preconstruction conference with Owner, Contractor(s), Utilities, and other appropriate parties affected by the Project.

    b. Attend meetings with Contractor, such as progress meetings, job conferences and other Project related meetings.

3. *Liaison:*

    a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.

    b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

    c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

    d. Direct visiting inspectors representing public or other agencies having jurisdiction over the Project to Owner or Contractor as appropriate.

4. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

5. *Shop Drawings and Samples:*

    a. Record date of receipt of Samples and approved Shop Drawings.

    b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR'S recommendations, to Engineer. Transmit to Contractor, in writing decisions as issued by Engineer.

7. *Review of Work and Rejection of Defective Work:*

    a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

    b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

8. *Inspections, Tests, and System Startups:*

    a. Verify that tests, equipment, and systems startups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

    b. Observe, record, and report to Engineer appropriate details relative to the test procedures and system startups.

9. *Records:*

    a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

    b. Maintain records for use in preparing Project documentation.

10. *Reports*:

    a. Furnish to Engineer periodic reports as required of progress of the Work and Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.

    b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

    c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

11. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. *Certificates, Operation and Maintenance Manuals*: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the times actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. *Completion:*

    a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of list of items to be completed or corrected.

    b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.

    c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.

    d. Coordinate efforts required to prepare record drawings showing those changes made during construction, based on the marked-up prints, drawings and other data furnished by Contractor to Engineer and which Engineer considers significant.

C. The RPR shall not:

1. Authorize any deviations from the Contract Documents or substitution or materials or equipment (including "or equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents.

5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawings or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or part.

SC-9.07

Determinations for Unit Price Work:

Delete the last sentence of Paragraph 9.07.A. in its entirety and insert the following in its place:

"Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor and not subject to appeal."

SC-9.10

Compliance with Safety Program:

Add the following new paragraph immediately after Paragraph 9.10.A.:

B. In the event Engineer determines that Contractor's safety plans, programs, and procedures do not provide adequate protection for Engineer, Engineer may direct its employees to leave the Project Site or implement additional safeguards for Engineer's protection. If taken, these actions will be in furtherance of Engineer's responsibility to its own employees only, and Engineer will not assume any responsibility for protection of any other persons affected by the Work. In the event Engineer observes situations which appear to have potential for immediate and serious injury to persons, Engineer may warn the persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and Engineer will not, by the issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by the Work.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

SC-10.01

Authorized Changes in the Work:

Add the following new subparagraph immediately after Paragraph10.01.B.:

1. By submission of a Claim Contractor certifies that the claim is made in good faith, that the supporting data are accurate and complete to the best of Contractor's knowledge and belief, and that the amount or time requested accurately reflects the Contract adjustment for which Contractor believes Owner is liable.

SC-10.03

Execution of Change Orders:

Add the following new paragraph immediately after Paragraph10.03.A.3.:

4. Change Orders will be prepared on the form included in the Project Forms of the Project Manual.

SC-10.05

Claims:

Amend Paragraph 10.05.B. by deleting the words "30 days" in the first sentence and inserting the words "10 days" in their place, and deleting the words "60 days" in the third sentence and inserting the words "30 days" in their place.

Amend the sixth sentence of Paragraph 10.05.B. by deleting the words "believes it."

ARTICLE 11. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

SC-11.01

Cost of the Work:

In the second sentence of paragraph 11.01A.1 delete the word "superintendents".

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01

Change in Contract Price

Delete Paragraph 12.01.B.2. in its entirety and insert the following in its place:

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which includes an allowance for overhead and profit in accordance with Paragraph 12.01.C.2); or

SC-12.01

Change of Contract Price:

Delete the semicolon at the end of Paragraph 12.01.C.2.c., and add the following language:

> ", provided, however, that on any subcontracted work the total maximum fee to be paid by Owner under this subparagraph shall be no greater than 27 percent of the cost incurred by the Subcontractor who actually performed the work";

SC-12.02

Change of Contract Times:

Add the following new paragraph immediately after Paragraph 12.02.B.:

C. Time extensions provided under Paragraph 12.03 of the General Conditions will only be allowed for controlling items of Work (critical path).

SC-12.03

Delays:

Delete Paragraph 12.03.B. in its entirety and insert the following in its place:

B. If Owner, Engineer, or other contractors or utility owners performing other work for the Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work with the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.02.B.

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02

Progress Payments:

Amend the first sentence of Paragraph 14.02.A.1. by striking out the words "20 days" and inserting the words "30 days" in their place. Also strike out the phrase "(but not more often than once a month)"

SC-14.02

Progress Payments:

Add the following language at the end of Paragraph 14.02.A.2.:

Owner may at any time require Contractor to furnish lien waivers for labor and materials covered by specified Applications for Payment.

SC-14.02

Payment Becomes Due:

Amend Paragraph 14.02.C.1. by striking out the words "Ten days" and inserting the words "Twenty days" in their place.

SC-14.04

Substantial Completion:

Add the following new paragraphs immediately after Paragraph 14.04.A.:

1. Contractor's request for issuance of a Certificate of Substantial Completion shall include schedules, guarantees, maintenance and operations instructions, Bonds, certificates or other evidence of insurance required by Paragraph 5.04.B.6, certificates of inspection, affidavit of wage rate compliance, marked-up record documents (as provided in Paragraph GC 6.12) and other documents.

SC-14.07

Final Payment:

Amend the first sentence of Paragraph 14.07.A.1. by striking out the words "and has delivered in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked up record documents (as provided in Paragraph 6.12), and other documents,"

Amend Paragraph 14.07.A.2.a. by striking out the words ", including but not limited to evidence of insurance required by Paragraph 5.04.B.6."

SC-14.07

Final Payment:

Add the following new paragraph after paragraph 14.07A.3 of the General Conditions.

4. The amount of retainage with respect to final payment will be as stipulated in the Agreement.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.04

Contractor May Stop Work or Terminate:

Amend Paragraph 15.04.A. by striking out the words "30 days" in two places and inserting the words "60 days" in their places, and by striking out the words "seven days" and inserting the words "10 days" in their place.

Amend Paragraph 15.04.B. by striking out the words "30 days" in two places and inserting the words "60 days" in their places, and by striking out the words "seven days and inserting the words "10 days" in their place.

ARTICLE 16. DISPUTE RESOLUTION

SC-16.01

Methods and Procedures:

Add a new sentence at the end of paragraph 16.01A of the General Conditions which is to read as follows:

> Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings unless otherwise agreed in writing by Owner and Contractor.

SC-16.01

Methods and Procedures:

Delete Paragraph 16.01.C in its entirety and insert the following in its place:

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C. or a denial pursuant to Paragraphs 10.05.C.3. or 10.05.D. shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. Elects in writing to demand arbitration of the Claim, pursuant to Paragraph SC-16.02.

2. Agrees with the other party to submit the Claim to another dispute resolution process.

Add the following new paragraphs immediately after Paragraph 16.01.:

SC-16.02

Arbitration:

A. All Claims or counterclaims, disputes, or other matters in question between Owner and Contractor arising out of or relating to the Contract Documents or the breach thereof (except for Claims which have been waived by the making or acceptance of final payment as provided by Paragraph 14.09) including but not limited to those not resolved under the provisions of Paragraphs SC-16.01A and 16.01.B will be decided by arbitration in accordance with the laws of the State of Michigan**,** subject to the conditions and limitations of this Paragraph SC-16.02. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the 30-day period specified in Paragraph SC-16.01.C, and in all other cases within a reasonable time after the Claim or counterclaim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim or other dispute or matter in question would be barred by the applicable statute of limitations.

C. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joiner, or in any other manner any other individual or entity including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. The inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration.

2. Such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include: (i) a concise breakdown of the award; and (ii) a written explanation of the award specifically citing the Contract Document provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Controlling Law relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

ARTICLE 17. MISCELLANEOUS

SC-17.06

Delete paragraph 17.06 in its entirety and replace with the following:

17.06 Headings:

A. The headings or titles of any article, paragraph, subparagraph, section, subsection, or part of the Contract Documents shall not be deemed to limit or restrict the article, paragraph, section, or part.

SC-17.07

Legal Address of Contractor:

Add new paragraph immediately after paragraph 17.06 of the General Conditions as follows:

A. Contractor's business address and his office at or near the site of the Work are both hereby designated as places to which communications shall be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor's business address in a post office box regularly maintained by the Post Office Department or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon Contractor, and the date of such service shall be the date of receipt. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor and delivered to Engineer. Service of any notice, letter, or other communication upon the Contractor personally shall likewise be deemed sufficient service.

SC-17.08

Engineering and Inspection Costs and Expenses:

Add a new paragraph immediately after paragraph 17.07 of the General Conditions which is to read as follows:

A. The Contractor shall be responsible and liable for all engineering and inspection costs and expenses incurred by the Owner caused by, or related in any way to, the failure of the Contractor to perform its services in the time and manner set forth in the Agreement, the General Conditions and the Supplemental Conditions. The Owner may charge to the Contractor, and may deduct from the periodical payments and the final payment for the Contractor's work, the full amount of such engineering and inspection costs and expenses including Owner's and Engineer's costs.

    1. The Engineer's charges will be based on the Engineer's actual labor and expenses at the same rate the Owner is charged.

B. For any engineering costs and expenses beyond the regular eight-hour day and for any time work on Saturday, Sunday, or holidays, the charges for such personnel will be one and one-half times the rate established above.

END OF SECTION

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SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:

1. Project information.

2. Work covered by Contract Documents.

3. Phased construction.

4. Work under separate contracts.

5. Owner-furnished products.

6. Access to site.

7. Coordination with occupants.

8. Work restrictions.

B. Related Requirements:

1. Division 01 Section "Temporary Facilities" for limitations and procedures governing temporary use of Owner’s facilities.

1.02 PROJECT INFORMATION:

A. Engineer / Construction Manager (CM): AECOM

1. Construction Manager (Engineer) has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for construction between Owner and each Contractor, according to a separate contract between Owner and Engineer.

1.03 WORK COVERED BY CONTRACT DOCUMENTS:

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Replacement of identified lead and galvanized residential water service lines with new copper piping. Work will be classified as follows:

a. Complete Replacement: Replacement of the entire water service line including, as necessary, corporation stop, curb stop and curb box from the public water main to the residential water meter.

b. Partial Replacement, Public Side: Replacement of the water service line including, as necessary, corporation stop, curb stop and curb box from the public water main to the curb box.

c. Partial Replacement, Private Side: Replacement of the water service line including, as necessary, curb stop and curb box from the curb box to the residential water meter.

2. Exploratory excavations at residential water service curb stops where hydrovac explorations could not be completed. Explorations conducted under this contract will be completed using traditional excavation methods.

3. Replacement of water mains, valves and fittings as directed.

4. Removal and disposal of excavated spoils material at an approved location. Contractor is responsible for the disposal of any lead or other contaminated material at an approved disposal facility.

5. Temporary site restoration.

6. Traffic controls and site safety.

7. Miscellaneous and ancillary work such as:

a. Sanitary lateral inspection and repair, if necessary.

b. Cut and cap of service lines for abandoned houses with active accounts.

c. Tree removal.

B. Type of Contract:

1. Project will likely be constructed under coordinated, concurrent multiple contracts.

1.04 PHASED CONSTRUCTION:

A. The Work shall be conducted in multiple phases. Contractors will be assigned a specific work area and an allotted number of houses to complete service line replacements. Additional service line replacements will be assigned to respective Contractors as the work is completed. These additional assignments will be made according the Contractor's progress, quality and acceptance of the work. Additional assignments will be made once a contractor reaches 60% acceptable completion of previously assigned work. No new work will commence until previously assigned work is completed and accepted.

B. The Owner reserves the right to not award additional assignments once a Contract's initial assignment, or previously awarded additional assignments, is completed.

C. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule showing the sequence, commencement and completion dates.

1.05 WORK UNDER SEPARATE CONTRACTS:

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

B. Preceding Work: Owner has awarded separate contract(s) for the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.

1. Hydrovac explorations to determine the material of construction for residential water service lines.

2. Temporary restoration of areas disturbed by hydrovac work.

C. Concurrent Work: Owner will award separate contract(s) for the following construction operations at or near the individual Project sites. Those operations may be conducted simultaneously with work under this Contract.

1. Hydrovac explorations to determine the material of construction for residential water service lines.

2. Replacement of lead or galvanized service lines.

3. Site restoration.

D. Subsequent Work: Owner will award separate contract(s) for the following additional work to be performed at site following Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.

1. Site restoration.

1.06 OWNER-FURNISHED PRODUCTS:

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing, testing and commissioning Owner-furnished products.

B. Owner-Furnished Products:

1. ¾" Type K copper residential water service piping.

1.07 ACCESS TO SITE:

A. General: Contractor shall have limited use of Project site for construction operations as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to public right-of-way at curb stop, within a 5-ft radius of the curb stop if conducting work on private property, as directed by the Engineer, and in street, private property at location where water service line enters the residence, inside the private residence only as necessary to reconnect the new copper service line to the existing residential water meter.

2. Driveways, Walkways and Entrances: Keep driveways, sidewalks and entrances serving premises clear and available to property owner and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.08 COORDINATION WITH OCCUPANTS:

A. Full Owner Occupancy: Resident will occupy site and existing building during entire construction period. Cooperate with resident during construction operations to minimize conflicts and facilitate usage. Perform the Work so as not to interfere with residents' day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, driveways, and other adjacent occupied or used facilities. Do not close or obstruct walkways, driveways, or other occupied or used facilities without written permission from property owner and approval of authorities having jurisdiction.

2. Engineer will notify property owner in advance of activities that will affect resident's access to the house.

3. New water service connections shall be fully operational, and required tests and inspections shall be successfully completed before the Contractor moves to a new location or completes work for the day.

1.09 WORK RESTRICTIONS:

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours of 7:00 AM to 5:00 PM., Monday through Friday, unless otherwise indicated or authorized.

1. Weekend, Holiday, and Early Morning Hours: Weekend, holiday and early morning work shall not be conducted without prior approval from the Owner and Engineer.

2. Hours for Utility Shutdowns: Coordinate and obtain approval from the owning Utility before conducting any utility shutdowns.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Engineer not less than two days in advance of proposed utility interruptions.

2. Obtain written permission from the respective utility owner before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption with Owner.

1. Notify Engineer not less than two days in advance of proposed disruptive operations.

2. Obtain Engineer's written permission before proceeding with disruptive operations.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01 14 14

CONTROL OF WORK

PART 1 - GENERAL

1.01 LABOR AND EQUIPMENT AND HOURS OF CONSTRUCTION:

A. Furnish labor and equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the Contract Time. If at any time such work appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the efficiency, change the character, or increase the labor and equipment and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

B. Normal construction activity shall take place only between the hours of 7:00 AM to 5:00 PM, excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only on an emergency basis and only with the written approval of the Owner.

1.02 OCCUPYING PRIVATE LAND:

A. The Contractor shall not (except after written consent from the proper parties) enter or occupy with personnel, tools, materials, or equipment any land outside the rights of way or property of the Owner. A copy of the written consent shall be given to the Engineer.

1.03 PIPE LOCATIONS:

A. Exterior pipelines will be located substantially as indicated on the Drawings, but the right is reserved to the Owner, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

B. Small interior piping is indicated diagrammatically on the Drawings, and the exact location is to be determined in the field. Piping shall be arranged in a neat, compact, and workmanlike manner, with a minimum of crossing and interlacing, so as not to interfere with equipment or access ways, and, in general, without diagonal runs. New service connections between the curb stop and existing water main shall be made perpendicular to the existing main and will run in a straight path, without bends, to the house.

1.04 OPEN EXCAVATIONS:

A. All open excavations shall be adequately safeguarded by providing temporary barricades, fencing, caution signs, lights, and other means to prevent accidents to persons and damage to property, and in accordance with applicable occupational health and safety regulations. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street, and requiring that the trench shall not remain open overnight.

B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

1.05 TEST PITS:

A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor at the direction of the Engineer. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

1.06 INTERFERENCE WITH AND PROTECTION OF STREETS:

A. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefor from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

B. Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefor.

C. The Contractor shall, at least 24 hours in advance, notify the Police and Fire Departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. The Contractor shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

1.07 TRAFFIC CONTROL:

A. For control of moderate traffic, the Contractor shall provide an adequate number of flagmen and other traffic controls as required by the traffic control permit.

B. Whenever and wherever, in the opinion of the Engineer or permitting agency, traffic is sufficiently congested or public safety is endangered, the Contractor, as required, shall furnish flagmen and / or uniformed police officers to direct traffic and to keep traffic off the roadway area affected by his construction operations.

C. Payment for traffic controls shall be made in accordance with Section 01 29 01.

D. The employment or presence of traffic flagmen, special officers, or police shall in no way relieve the Contractor of any responsibility or liability which is his under the terms of the contract.

1.08 CARE AND PROTECTION OF PROPERTY:

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.

1.09 INTERFERENCE WITH EXISTING WORKS:

A. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing water distribution system. The Contractor shall develop a program, in cooperation with the Engineer and interested officials, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time when the demands on the facilities best permit such interference, even though it may be necessary to work outside of normal working hours to meet these requirements. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

B. The Contractor shall make such minor modifications in the work relating to existing structures as may be necessary, without additional compensation.

C. The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting his operations to the need for continuous flow of water and sewage.

1.10 MAINTAINING FLOWS:

A. It is essential that the number and duration of interruptions to residential water service be minimized as much as possible during the execution of the work. Contractor will

coordinate with the Engineer and local residents to ensure that operations are carried out as efficiently as possible.

1.11 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES:

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric, fiberoptic and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the unit prices bid in the Bid Form.

D. If, in the opinion of the Engineer, permanent relocation of a utility is required, he may direct the Contractor, in writing, to perform the work. Work so ordered will be paid at the Contract unit prices, if applicable, or as extra work under Article 11 of the Supplementary Conditions. If relocation of a privately owned utility is required, the Engineer will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Engineer and Utility, and shall have no claim for delay due to such relocation. The Contractor shall notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays, and Legal holidays) before excavating in any public way. Contractor shall also notify Michigan 811 at least 72 working hours prior to start of work.

E. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner.

1.12 CLEANUP AND DISPOSAL OF EXCESS MATERIAL:

A. During the course of the work, the Contractor shall keep the site of his operations in as clean and as neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the day, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall

comply with all applicable Federal, State, and local laws, and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.

C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his own expense and restore the area impacted.

D. The Contractor shall provide a disposal plan that identifies the location where the Contractor intends to dispose of all spoils materials. The Contractor will be responsible for all labor, equipment, permitting and fees associated with the removal and acceptable disposal of construction debris and spoil materials.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01 29 01

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Summary:

1. Section includes administrative and procedural requirements for unit prices.

1.02 DEFINITIONS:

A. Unit price is an amount incorporated in the Agreement as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.03 MEASUREMENT AND PAYMENT – GENERAL:

A. The following paragraphs describe the measurement of and payment for the work to be done under the items listed in the Bid Form.

B. Each unit price stated in the Bid shall constitute full compensation as herein specified for each item of work completed in accordance with the specifications.

C. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price therefor, shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation.

D. Unit prices shall include:

1. Labor, equipment, materials, and other incidental work necessary to mobilize to the project site; complete the work as specified; and demobilize operations.

2. Administrative tasks and costs, including but not limited to attendance at meetings; project scheduling; project and construction management; application, approval and renewal, including associated fees, of required permits; ancillary costs such as bonding and insurances; management of subcontractors; project coordination; notification of Miss Dig; and documentation of work and site conditions.

3. General site restoration of disturbed areas including backfilling and compaction of excavations; restoration as required; and cleanup of site.

4. Traffic controls and administrative tasks, including permitting; associated fees; and maintenance and renewal of permitting. This also includes all materials such

as cones, barricades, and barrels; labor; and equipment such as arrowboards, vehicles, and truck mounted attenuators to safely conduct traffic control operations as required in the areas of the Work. Stand-alone materials and equipment such as cones, barricades, barrels, arrowboards, vehicles, and truck mounted attenuators are considered "static traffic controls".

Contractor is responsible to obtain, pay for, and maintain traffic control permits as dictated by local, state and federal agencies. All permitting efforts and fees related to traffic controls is considered incidental and are to be included in the unit price for the work.

Traffic controls and associated tasks are to be included in each Bid Item and are considered to be stand-alone, static traffic controls such as cones, barricades, barrels, arrowboards, vehicles and truck mounted attenuators only. Payment for flagmen or police required to control traffic conditions will be paid for under Bid Item M.5.

5. Project safety controls and measures.

6. Removal and disposal of excavation spoils and construction debris, including existing lead and galvanized service line material and contaminated soil, at an approved facility, including associated fees and meeting disposal requirements established by the disposal facility.

7. Provision of water including obtaining and maintaining written authorization to withdraw water and payment of all associated costs and fees; transport of water to work sites; provision or rental of hydrant meters; and all other costs and efforts to obtain water for use at work sites.

8. Coordination of work with Owner, Engineer and field representatives; other contractors; and local property owners.

9. Protection of existing site features; residential service lines; and other utilities.

10. Travel and mobilization of equipment, tools and labor between individual property work sites.

11. Recording and documentation of work and site conditions.

1.04 BID ITEM MOB.1 - MOBILIZATION/DEMOBILIZATION:

A. The quantity to be paid under this item shall be a lump sum, per the unit price listed in the Bid Form. Mobilization/Demobilization is capped at a maximum 5% of the total bid, excluding Bid Items MOB.1 Mobilization / Demobilization and OPM.1 Credit for Owner-Provided Materials. Basis for measurement shall be a percentage of mobilization completed as determined by the Engineer according to the progress of the work.

B. The lump sum price for this item shall constitute full compensation for all labor, material and equipment necessary for all preparatory work and operations, including, but not limited to, actions necessary for one mobilization and de-mobilization (this is a one-time payment and will not be paid again if the Contractor moves off site and has to return) including the movement of personnel, equipment, supplies and incidentals to and from the project site; supply and construction of temporary facilities, Contractor's field office, all items specified in Section 01 50 00 not identified in another Bid Item, other items necessary to undertake the work of the project not identified in another Bid Item; utility locations; temporary utilities and daily project clean-up and refuse disposal, and additional preconstruction costs, including permits, insurance and bonds, exclusive of bidding costs, which are necessary direct costs to the project and are of a general nature not attributable to other Bid Items.

C. The Contractor may request payment of up to 50% of this Bid Item on the first invoice; 20% over the remaining invoices, excluding the final invoice; and 30% on the final invoice. The total payment amount for this Bid Item will only be made for the lump sum price bid. No adjustment to the lump sum price of this Bid Item will be made for adjustments in the quantity of work performed and corresponding fees paid for the work.

1.05 BID ITEM SLR.1, SLR.4, SLR.7 AND SLR.10 - WATER SERVICE, VARIOUS SIZE (3/4" THROUGH 2") PARTIAL REPLACEMENT, PUBLIC SIDE:

A. The quantity to be paid under these Bid Items shall be equal to the actual number of replacements completed, tested and accepted by Engineer, according to the diameter of the service line installed. The extents of this Bid Item are from, and include the corporation stop connection at the municipal water main up to and including the curb stop.

B. The unit price for this item shall constitute providing all material, labor and equipment to complete a partial replacement of existing water service line, including but not limited to: installation, delivery, storage and handling of materials; protecting existing facilities; providing alternate or temporary service if needed; all excavation; permanent and temporary shoring; dewatering; all piping, fittings and adapters; connecting to existing facilities, piping and fittings; backfill and compaction; testing; disinfection and flushing; removal and disposal of excess material, including existing lead and galvanized steel piping and contaminated soil; restoration where not specifically included in other Bid Items; and all necessary items and work to provide a complete, working water service connection.

C. The unit price for this item shall constitute full compensation for the excavation, replacement, and associated tasks for each partial service line replacement completed as specified, regardless of depth and location. Work includes, but is not limited to locating the existing curb box; removal and disposal of existing sidewalk, driveway, curb and paving as necessary to complete the service line replacement; disconnection and abandonment of existing service line material; installation of a new corporation stop; installation of new service line piping of a diameter matching the existing piping;

installation of a new curb stop and box; reconnection of new and existing components; and documentation of work completed.

D. Payment for this Bid Item shall be for the first 60 LF of service line replaced. Payment for additional service line replacement beyond the initial 60 LF shall be made according to Bid Item SLR.13.

E. Credit for ¾" copper service line material furnished by the City shall be made according to the unit price provided under Bid Item OPM.1.

F. A new corporation stop and connection to the municipal water main will be installed for each residential water service line in those instances where multiple service lines manifold into a single service connection at the municipal water main. Each residential water service line will be provided with a dedicated corporation stop and connection to the municipal water distribution system. New corporation stops and connections to the municipal water system are considered incidental and are to be included in the unit price for the work.

G. The Contractor will be required to file and pay for an excavation permit to complete the work. All permitting efforts and fees related to excavation is considered incidental and are to be included in the unit price for the work.

H. City inspectors will provide the final approval regarding the acceptance of the service line replacement work. No backfilling of the excavation shall occur until this approval is provided. The service line will be repaired as directed if the installation is not approved by the City Inspector. This work will be completed at no additional cost to the City. Contractor time, material and labor costs associated with obtaining this approval is considered incidental to the work. The Contractor should assume that the inspection approval may take up to 30 minutes from the time the City inspector is contacted.

1.06 BID ITEMS SLR.2, SLR.5, SLR.8 AND SLR.11 - WATER SERVICE, VARIOUS SIZE (3/4" THROUGH 2") PARTIAL REPLACEMENT, PRIVATE SIDE:

A. The quantity to be paid under these Bid Items shall be equal to the actual number of replacements completed, tested and accepted by Engineer, according to the diameter of the service line installed. The extents of this Bid Item are from, and include the connection at the curb stop up to the residential water meter.

B. The unit price for this item shall constitute providing all material, labor and equipment to complete a partial replacement of existing water service line, including but not limited to: installation, delivery, storage and handling of materials; protecting existing facilities; providing alternate or temporary service if needed; all excavation; permanent and temporary shoring; dewatering; all piping, fittings and adapters; connecting to existing facilities, piping and fittings; backfill and compaction; testing; disinfection and flushing; removal and disposal of excess material, including existing lead and galvanized steel piping and contaminated soil; restoration where not specifically included in other Bid Items; and all necessary items and work to provide a complete, working water service connection.

C. The unit price for this item shall constitute full compensation for the excavation, replacement, and associated tasks for each partial service line replacement completed as specified, regardless of depth and location. Work includes, but is not limited to locating the existing curb box; removal and disposal of existing sidewalk, driveway, curb and paving as necessary to complete the service line replacement; disconnection and abandonment of existing service line material; installation of new service line piping of a diameter matching the existing piping; installation of a new curb stop and box; core drilling through and restoration of the house wall or basement floor; containment, collection and disposal of dust and debris caused by install ion of the water service line though the house wall; installation of a sampling port; relocation of the existing meter as necessary; reconnection of new and existing components; and documentation of work completed.

D. Payment for this Bid Item shall be for the first 60 LF of service line replaced. Payment for additional service line replacement beyond the initial 60 LF shall be made according to Bid Item SLR.13.

E. Credit for ¾" copper service line material furnished by the City shall be made according to the unit price provided under Bid Item OPM.1.

F. The Contractor will be required to file and pay for an excavation permit to complete the work. All permitting efforts and fees related to excavation is considered incidental and are to be included in the unit price for the work.

G. The Contractor will be required to file and pay for a plumbing permit if the residential water meter is moved more than 2' in any direction from its current location. All permitting efforts and fees related to moving the water meter are considered incidental and are to be included in the unit price for the work.

H. City inspectors will provide the final approval regarding the acceptance of the service line replacement work. No backfilling of the excavation shall occur until this approval is provided. The service line will be repaired as directed if the installation is not approved by the City Inspector. This work will be completed at no additional cost to the City. Contractor time, material and labor costs associated with obtaining this approval is considered incidental to the work. The Contractor should assume that the inspection approval may take up to 30 minutes from the time the City inspector is contacted.

I. A plumbing permit and subsequent inspection will be required in the event the existing water meter is moved more than 2' from its existing location. The Contractor is responsible for applying for and obtaining the proper permits required, including any fees, and for scheduling the final inspection. Any repairs or revisions required, as well as any permit reapplications or reinspections, as a result of a failed plumbing inspection shall be made by the Contractor at no additional cost to the Owner.

1.07 BID ITEM SLR.3, SLR.6, SLR.9, SLR.12 WATER SERVICE, VARIOUS SIZE (3/4" THROUGH 2") FULL REPLACEMENT:

A. The quantity to be paid under these Bid Items shall be equal to the actual number of replacements completed, tested and accepted by Engineer, according to the diameter of the service line installed. The extents of this Bid Item are from, and include the corporation stop connection at the municipal water main up to the residential water meter.

B. The unit price for this item shall constitute providing all material, labor and equipment to complete a partial replacement of existing water service line, including but not limited to: installation, delivery, storage and handling of materials; protecting existing facilities; providing alternate or temporary service if needed; all excavation; permanent and temporary shoring; dewatering; all piping, fittings and adapters; connecting to existing facilities, piping and fittings; backfill and compaction; testing; disinfection and flushing; removal and disposal of excess material, including existing lead and galvanized steel piping and contaminated soil; restoration where not specifically included in other Bid Items; and all necessary items and work to provide a complete, working water service connection.

C. The unit price for this item shall constitute full compensation for the excavation, replacement, and associated tasks for each complete service line replacement completed as specified, regardless of depth and location. Work includes, but is not limited to locating the existing curb box; removal and disposal of existing sidewalk, driveway, curb and paving as necessary to complete the service line replacement; disconnection and abandonment of existing service line material; installation of a new corporation stop; installation of new service line piping of a diameter matching the existing piping; installation of a new curb stop and box; core drilling through and restoration of the house wall or basement floor; containment, collection and disposal of dust and debris caused by install ion of the water service line though the house wall; installation of a sampling port; relocation of the existing meter as necessary; reconnection of new and existing components; and documentation of work completed.

D. Payment for this Bid Item shall be for the first 60 LF of service line replaced. Payment for additional service line replacement beyond the initial 60 LF shall be made according to Bid Item SLR.13.

E. Credit for ¾" copper service line material furnished by the City shall be made according to the unit price provided under Bid Item OPM.1.

F. A new corporation stop and connection to the municipal water main will be installed for each residential water service line in those instances where multiple service lines manifold into a single service connection at the municipal water main. Each residential water service line will be provided with a dedicated corporation stop and connection to the municipal water distribution system. New corporation stops and connections to the municipal water system are considered incidental and are to be included in the unit price for the work.

G. The Contractor will be required to file and pay for an excavation permit to complete the work. All permitting efforts and fees related to excavation is considered incidental and are to be included in the unit price for the work.

H. The Contractor will be required to file and pay for a plumbing permit if the residential water meter is moved more than 2' in any direction from its current location. All permitting efforts and fees related to moving the water meter are considered incidental and are to be included in the unit price for the work.

I. City inspectors will provide the final approval regarding the acceptance of the service line replacement work. No backfilling of the excavation shall occur until this approval is provided. The service line will be repaired as directed if the installation is not approved by the City Inspector. This work will be completed at no additional cost to the City. Contractor time, material and labor costs associated with obtaining this approval is considered incidental to the work. The Contractor should assume that the inspection approval may take up to 30 minutes from the time the City inspector is contacted.

J. A plumbing permit and subsequent inspection will be required in the event the existing water meter is moved more than 2' from its existing location. The Contractor is responsible for applying for and obtaining the proper permits required, including any fees, and for scheduling the final inspection. Any repairs or revisions required, as well as any permit reapplications or reinspections, as a result of a failed plumbing inspection shall be made by the Contractor at no additional cost to the Owner.

1.08 BID ITEM SLR.13 ADDITIONAL COPPER SERVICE LINE, >60 LF

A. The quantity to be paid under this Bid Item shall be equal to the additional LF greater than 60, used to complete either the full or partial replacement of the water service line in entirety. Measurement and payment for this Bid Item will be made without consideration of the diameter of the service line or the means and methods used to complete the water service replacement.

B. All work and requirements for the completion of either full or partial service line replacement apply to this Bid Item.

C. This Bid Item is for the total length of the service line replaced and will only be made once for each service line.

D. Measurement and payment for the initial 60 LF of either partial or full replacement of the service line will be made under the respective diameter and replacement extent classification of Bid Items SLR.1 through SLR.12.

1.09 BID ITEM SLR.14 SLR, SHPO ZONE W/ ARCHEOLOGIST

A. The quantity to be paid under this Bid Item shall be equal to number of sites in the SHPO Zone where an archeologist will inspect the excavation to determine if any historical artifacts are observed in the excavation area. Measurement and payment for

this Bid Item will be made without consideration of the diameter of the piping, the type of work being completed, or the means and methods used to complete the work.

B. All work and requirements for the completion of either full or partial service line replacement or other work apply to this Bid Item.

C. Payment shall only be made once for each excavation site.

D. No backfilling of the excavation shall occur until the archeologist confirms that the site is free of historical artifacts and can be backfilled. This Bid Item accounts for the Contractors time, material and labor until the site is cleared by the archeologist. Payment for this Bid Item will only be made once for each service line. The Contractor should assume that the archeological investigation may take up to 1 hour for each site.

E. Measurement and payment for the actual service line replacement work will be made under the respective diameter, length and replacement extent classification of Bid Items SLR.1 through SLR.13.

1.10 BID ITEM M.1 CUT & CAP, ABANDONED HOUSE SERVICE:

A. The quantity to be paid under this Bid Item shall be equal to the actual number of residential service lines cut, capped, and accepted by Engineer.

B. Measurement and payment for this Bid Item will be made without consideration of the diameter of the service line.

C. The unit price for this item shall constitute providing all material, labor and equipment to cut and cap a lead or galvanized service line to an abandoned property including but not limited to: installation, delivery, storage and handling of materials; protecting existing facilities; all excavation; permanent and temporary shoring; dewatering; all piping, fittings and adapters; backfill and compaction; removal and disposal of excess material; and restoration where not specifically included in other Bid Items.

D. The unit price for this item shall constitute full compensation for the excavation and associated tasks for each lead or galvanized service line cut and capped regardless of depth and location. Work includes, but is not limited to locating the existing curb box; removal and disposal of existing sidewalk, driveway, curb and paving as necessary to complete the service line abandonment; disconnection and abandonment of existing service line material; and documentation of work completed.

E. The Contractor will be required to file and pay for an excavation permit to complete the work. All permitting efforts and fees related to excavation is considered incidental and are to be included in the unit price for the work.

F. City inspectors will provide the final approval regarding the acceptance of the abandonment work. No backfilling of the excavation shall occur until this approval is provided. The service line will be repaired as directed if the abandonment is not approved by the City Inspector. This work will be completed at no additional cost to the

City. Contractor time, material and labor costs associated with obtaining this approval is considered incidental to the work. The Contractor should assume that the inspection approval may take up to 30 minutes from the time the City inspector is contacted.

1.11 BID ITEM M.2 SANITARY LATERAL INSPECTION:

A. The quantity to be paid under this Bid Item shall be equal to the actual number of residential sanitary sewer laterals inspected. The extents of this Bid Item include the connection at the municipal sewer main to the cleanout outside the home or the exterior basement wall if no cleanout exists.

B. The unit price for this item shall constitute providing all material, labor and equipment to complete a full CCTV inspection of the residential sewer lateral for properties where the water service line will be partially or completely replaced, including but not limited to: protecting existing facilities; documentation and provision of inspection data; and other associated work to provide a complete inspection.

C. The unit price for this item shall constitute full compensation for the inspection of the residential sewer lateral as specified, regardless of depth and location. Work includes, but is not limited to locating the existing access point; control of flow within the sewer and lateral; and documentation of work completed.

1.12 BID ITEM M.3 SANITARY LATERAL REPAIR

A. The quantity to be paid under this Bid Item shall be equal to the actual number of residential sanitary sewer laterals repaired and accepted by Engineer. The extents of this Bid Item will be as necessary to replace lateral piping determined to be in a deteriorated structural state prior to the start of the service line replacement work.

B. The unit price for this item shall constitute providing all material, labor and equipment to complete the repair of a residential sanitary sewer lateral, including but not limited to: installation, delivery, storage and handling of materials; protecting existing facilities; providing alternate or temporary service if needed; all excavation; permanent and temporary shoring; dewatering; all piping, fittings and adapters; connecting to existing facilities, piping and fittings; backfill and compaction; removal and disposal of excess material; restoration where not specifically included in other Bid Items; and all necessary items and work to provide a working residential sanitary sewer lateral.

C. The unit price for this item shall constitute full compensation for the excavation and associated tasks for each sewer lateral repair completed as specified, regardless of depth and location. Work includes, but is not limited to locating the existing sewer lateral; removal and disposal of existing sidewalk, driveway, curb and paving as necessary to complete the repair; removal and disposal of deteriorated or damaged lateral piping; installation of a new piping and couplings; reconnection of new and existing components; and documentation of work completed.

D. Repairs required to be made as a result of damage caused by the Contractor will not be paid under this or any other Bid Item. The Contractor will be responsible to repair any

residential sewer lateral damaged by the Contractor during the execution of the work at no additional cost to the Owner.

E. The Contractor will be required to file and pay for an excavation permit to complete the work. All permitting efforts and fees related to excavation is considered incidental and are to be included in the unit price for the work.

F. City inspectors will provide the final approval regarding the acceptance of the lateral repair work. No backfilling of the excavation shall occur until this approval is provided. The sanitary lateral will be re-repaired as directed if the repair is not approved by the City Inspector. This work will be completed at no additional cost to the City. Contractor time, material and labor costs associated with obtaining this approval is considered incidental to the work. The Contractor should assume that the inspection approval may take up to 30 minutes from the time the City inspector is contacted.

1.13 BID ITEM M.4 LSM, UNSTABLE TRENCH BOTTOM

A. The quantity to be paid under this item shall be equal to the actual number of cubic yards of low strength concrete material placed to stabilize the foundation of an excavation when the installation of aggregate does not provide a suitable foundation.

B. The unit price for this item shall constitute providing all material, labor and equipment to complete the placement of LSM, including but not limited to: installation, delivery, storage and handling of materials; protecting existing facilities; all excavation; permanent and temporary shoring; dewatering; removal and disposal of excess material and documentation of work completed.

C. Placement of LSM shall only be made at the direction of the Engineer.

D. Excavation and placement of aggregate to stabilize the trench shall be considered incidental to this Bid Item and all other bid items.

E. This Bid Item is only for providing and placing the LSM. Measurement and payment for the infrastructure work completed will be made under the respective bid item.

1.14 BID ITEM M.5 TRAFFIC CONTROL, FLAGMEN / POLICE ASSISTED

A. The quantity to be paid under this item shall be equal to the number of hours flagmen or police are required to maintain traffic control as required by the traffic control permit.

B. The unit price for this item shall constitute providing all material, labor and equipment, including police vehicles, to maintain the safe flow of traffic when specifically required by the traffic control permit, and not required simply for Contractor’s convenience.

C. The unit price for this item shall constitute full compensation for all labor, equipment, materials, filing and acquisition of permits, permit fees, and other incidental work necessary to perform the work in accordance with the traffic control permit for the specific site and as required by local laws and regulations.

D. Measurement for payment shall be based on the actual number of hours that traffic control is provided by off-duty police officers or flagmen during the work, regardless of the number of officers or flagmen required to maintain traffic. Traffic controls will be paid only for the time controls are in place and being implemented and not a cumulative total for each man hour worked by each police officer or flagman. The Contractor will not be compensated for travel and set-up / break-down time of the traffic control measures.

E. Static traffic controls such as cones, barricades, barrels, arrowboards, vehicles and truck mounted attenuators are considered incidental to this, and all other Bid Items.

1.15 BID ITEMS M.6 AND M.7 TREE REMOVAL

A. The quantity to be paid under this item shall be equal to the actual number of trees removed according to the diameter of the tree measured at a point 6" above grade.

B. The unit price for this item shall constitute providing all material, labor and equipment to completely remove a tree, including but not limited to: protecting existing facilities; notifications; offering wood to homeowner; chipping and removal of branches; arborist to proper identify and dispose of diseased trees; all excavation and stump removal, backfill and compaction; disposal of excess material; restoration where not specifically included in other Bid Items; and all necessary items and work to provide complete, tree removal.

C. Measurement of the tree diameter shall be made between the narrowest points across the center of the tree stump.

D. Tree removals shall only be completed at the direction of the Engineer and upon receiving authorization from the property owner to remove the tree.

1.16 BID ITEM M.8 EXPLORATORY EXCAVATION

A. The quantity to be paid under this item shall be equal to the actual number of excavations completed that provide the ability to identify the material of construction of the existing water service line. This work will only be completed for service lines that were not identified during the Phase V Hydrovac Exploration Contract. A single excavation will be made at the estimated location of the existing curb stop or where directed by the Engineer.

B. The unit price for this item shall constitute full compensation for the excavation, restoration, and associated tasks for each excavation completed as specified, regardless of depth and location. Work includes, but is not limited to locating the existing curb box or service line, confirmation and documentation of the material of construction for the existing water service line, backfilling of excavation, and restoration of disturbed areas.

C. Replacement of the water service line shall be made to the extents necessary if the service line material is identified as lead, galvanized steel or other non-copper material.

Measurement and payment for this work will be made under the appropriate Bid Item SLR.1 through SLR.12.

D. Exploratory excavation work will only be conducted at the direction of the Engineer.

1.17 BID ITEM OPM.1 CREDIT FOR OWNER PROVIDED MATERIALS, ¾" COPPER SERVICE LINE (60' COIL)

A. The quantity of this Bid Item to be credited from the Contractor to the Owner shall be equal to the actual number of 60' coils of ¾" Type K copper provided by the Owner to the Contractor.

B. The unit price for this Bid Item shall constitute full compensation credit from the Contractor to the Owner for the provision of 60' coils of ¾" Type K copper by the Owner to the Contractor.

C. This Bid Item will not be considered in the overall cost of the Contract.

D. This Bit Item is for the provision of material only. Measurement and payment for actual service line replacement work will be made under the appropriate Bid Item SLR.1 through SLR.3.

E. The Contractor will be responsible for picking up the copper coils from the City of Flint's Water Service Center, 3310 E. Court Street and delivering the coils to the appropriate work sites.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRECONSTRUCTION CONFERENCE:

A. Engineer will schedule and conduct preconstruction conference in accordance with General Conditions and this section.

B. Meeting will be conducted before Contractor starts Work at site.

C. Location: At location to be selected by Engineer and Owner.

D. Attendance.

1. Contractor's Project Manager(s).

2. Contractor's Resident Superintendent(s).

3. Contractor's "hands-on" person designated by Contractor to submit Shop Drawings to Engineer.

4. Subcontractors' or suppliers' representatives Contractor may desire to invite or Engineer may request.

5. Engineer's representatives.

6. Owner's representatives.

7. Local utility representatives, if applicable.

E. Suggested format includes, but not be limited to following:

1. Project safety and traffic controls.

2. Execution of the work.

3. Disposal of spoils material.

4. Presentation of preliminary progress schedule in accordance with Section 01 32 17 "Construction Progress Schedules" and preliminary schedule of Shop Drawing and sample submissions in accordance with Section 01 33 00 "Submittals" of Contract Documents.

5. Check of required bonds and insurance policies prior to Notice to Proceed.

6. Liquidated damages.

7. Procedures for handling submittals such as substitutions and Shop Drawings.

8. Direction of correspondence and coordinating responsibility.

9. Progress meetings with the Engineer.

10. Equal opportunity requirements.

11. Provisions for inventory of material stored on-site or Owner-provided materials.

12. Unit pricing, application for progress payment, and progress payment procedures.

13. Change Order procedures.

14. Contractor's proposed Health and Safety Plan.

15. Contractor's proposed Quality Control Plan.

16. Construction sequencing and stipulated construction and constraints.

1.02 PROGRESS MEETINGS WITH ENGINEER:

A. In addition to other regular project meetings for other purposes (as indicated elsewhere in the Contract Documents), hold general progress meetings, as discussed at the pre-construction meeting, with times coordinated with preparation of payment requests. Meeting dates shall be established by the Engineer. Require every entity then involved in the planning, coordination or performance of work to be properly represented at each meeting. Include, when applicable:

1. Owner

2. Consultants

3. Separate contractors (if any)

4. Principal subcontractors

5. Suppliers/manufacturers/fabricators

6. Governing authorities

7. Special supervisory personnel and others with an interest or expertise in the progress of the work.

B. Suggested format includes, but not limited to following:

1. Review each entity's present and future needs including interface requirements

2. Construction sequence, coordination and shutdown requirements

3. Construction schedule and progress reporting

4. Deliveries

5. Access

6. Site utilization

7. Temporary facilities and services

8. Hours of work

9. Safety, hazards and risks

10. Housekeeping

11. Submittals

12. Change managements (request for quotation, change directives, change orders)

13. Contract administration logs (request for information, etc.)

14. Documentation of information for payment requests

C. Discuss whether each element of current work is ahead of schedule. Determine how behind-time work will be expedited and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within the Contract Time. Review everything of significance which could affect the progress of the work.

D. Within five days after each progress meeting date, the Engineer will forward copies of the minutes-of-the-meeting, to the Contractor.

E. Immediately following each progress meeting where revisions to the Progress Schedule/Critical Path Schedule have been made or recognized (regardless of whether agreed to by each entity represented), revise the Schedule. Reissue revised Schedule within 10 working days after meeting.

F. At intervals matching the preparation of payment requests, revise and reissue the Schedule to show actual progress of the work in relation to the latest revision of the Schedule.

1.03 CONSTRUCTION FOREMEN'S MEETING:

A. Schedule weekly.

B. Location: Contractor's field office or on-site.

C. Attendance.

1. Resident superintendent.

2. Subcontractor's foremen.

D. Suggested Agenda.

1. Health and safety.

2. Review agenda of Work progress since previous meeting.

3. Proposed progress and schedule for succeeding Work period.

4. Field observations, problems, and conflicts.

5. Problems which affect construction schedule.

6. Coordination and shutdown requirements.

1.04 HEALTH AND SAFETY MEETING:

A. Schedule Biweekly.

B. Location: Contractor's field office or on-site.

C. Attendance.

1. Resident superintendent.

2. Subcontractor's foremen.

3. Contractors. Health and Safety Manager

4. Owner's Health and Safety Representative

5. Engineer's Health and Safety Representative

D. Suggested Agenda.

1. Health and safety statistics.

2. Review Work progress since previous meeting.

3. New staff and training requirements.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01 32 17

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide Construction Progress Schedules as indicated and specified.

B. Summary:

1. Section includes administrative and procedural requirements for planning, monitoring, and documenting the progress of construction during performance of the Work, including the following:

a. Startup construction schedule.

b. Contractor’s construction schedule.

c. Construction schedule updating reports.

C. The Contractor has the obligation and responsibility at all times to plan and monitor all of its activities, anticipating and scheduling its staff, materials, plant and Work methods in a manner that is likely to ensure completion of the Work in accordance with the terms and conditions of the Contract and at a rate that will allow it to be completed within the Contract Time.

1.02 SUBMITTALS:

A. Submit in accordance with Section 01 33 00.

B. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.

2. PDF electronic file.

C. Startup construction schedule.

1. Within 15 days after execution of the AGREEMENT, submit three copies of a preliminary schedule indicating planned operations during first 60 days. Include cost of activities expected to be completed before submission and acceptance of the complete schedule.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

E. Construction Progress Schedule and Updating Reports: Submit with Applications for Payment.

1.03 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

1.04 COORDINATION:

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL:

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat work area and / or crew as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer. The durations shall be determined based upon resource planning under contractually-defined on-site work conditions. The Engineer may require that the duration of major activities be calculated by the scheduling software on the basis of the planned rate of daily production. In calculating activity durations, normal inclement weather shall be considered.

2. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal" in schedule. Coordinate submittal review times in Contractor’s construction schedule with submittal schedule.

3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow no fewer than 20 days for Engineer’s administrative procedures necessary for certification of Substantial Completion.

4. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

D. Recovery Schedule:

1. When periodic update indicates the Work is 14 or more calendar days behind the current accepted schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

2. If, at any time, the Work is behind schedule with respect to the progress schedule currently in force, and if the Engineer believes there is a risk of the Work not being completed within the Contract Time as a result of such delay, the Contractor shall take all necessary measures to make up for such delay either by increasing staff, equipment, or by amending its Work methods, whichever is applicable, with no change to the Contract Price.

E. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART):

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.03 CONTRACTOR’S LOOK-AHEAD SCHEDULES:

A. The Contractor shall provide short interval “look ahead” schedules bi-weekly, identifying Work that has been performed during the past two weeks and activities that are planned for the next four weeks. The short interval schedule shall be consistent with the progress schedule currently in force.

B. The Look-Ahead Schedules shall generally reflect the Work associated with the Detailed Progress Schedule. The activities in the Look-Ahead Schedules shall be identified by the same number coding as the Detailed Progress Schedule and revised as necessary.

C. The final format of the look-ahead schedules will be determined by the Engineer and Owner.

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE:

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of accepted schedule to Engineer, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. When revisions are made, distribute updated schedules to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

SECTION 01 32 33

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide construction photographs pertinent to the Contract work during the Contract period as specified.

1. Section includes administrative and procedural requirements for the following:

a. Preconstruction photographs.

b. Periodic construction photographs.

c. Final completion construction photographs.

1.02 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

1. Pre-construction photographs documenting existing site conditions at each property where work will occur.

2. Photographs documenting new connections to the water distribution main and / or the new curb stop prior to backfilling at each property where a portion of the water service connection has been replaced.

3. Post-construction photographs documenting final site conditions at each property where work has occurred.

B. Digital Photographs: Submit image files within three days of taking photographs.

1. Digital Camera: Minimum sensor resolution of eight megapixels.

2. Format: Minimum 3200 x 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.

3. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project and Owner’s project number.

b. Name of Engineer.

c. Name of Contractor.

d. Date and location (address) photograph was taken.

e. Description of vantage point, indicating location, direction (by compass point), and elevation of construction.

f. Unique sequential identifier keyed to accompanying key plan.

1.03 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Photographer to use techniques, material and equipment capable of producing photographs of high quality and resolution.

C. Photographer to be available on call on one day notice when requested by Engineer and be prepared to respond on shorter notice in unusual or unexpected conditions.

D. Dates for photography at site to be coordinated with Engineer and Engineer to be present during photographic periods at site unless approved otherwise by Engineer.

E. Photographer to make and retain detailed records of all photographs by photographer under this Contract:

1. The records to be in sufficient detail to support any attestation that may be required of photographer.

2. Photographer to retain such records for a period not less than two years from the final acceptance of entire work under this Contract.

1.04 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA:

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of eightmegapixels, and at an image resolution of not less than 3200 x 2400 pixels.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS:

A. Photographer: Engage a qualified photographer to take construction photographs.

B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.

D. Pre-construction Photographs: Before starting construction, take photographs of Project site, including existing items to remain during construction, from different vantage points at each property.

1. Flag or otherwise identify excavation areas before taking photographs.

2. Take a minimum of two photographs to show existing conditions adjacent to property before starting the Work.

3. Take a minimum of two photographs of the exterior of existing buildings to accurately record physical conditions at start of construction.

4. Take a minimum of two photographs of the interior of existing buildings to accurately record physical conditions at start of construction.

5. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

E. Post-replacement Construction Photographs: Take a minimum of two photographs each, as applicable, of new service line connections to the water distribution main and of the service line connections at the new curb stop. Photographs shall be taken after all connections are fully complete and prior to backfilling at each property where a portion or all of the water service connection has been replaced.

F. Final Completion Construction Photographs: Take a minimum of two photographs each of the site, interior and exterior of the property upon completion of the work at each property.

3.02 ROUTE PHOTOGRAPHY REQUIRED:

A. Provide progressive photographs of equipment hauling routes before commencement of construction:

1. Progressive photographs of route starting at one end of route and progressing to other end then reverse progressive photography back to point of beginning.

2. Each exposure to overlap preceding exposure by 1/4 to 1/3 of the frame.

3. Additional photographs of features along route as directed by Engineer.

B. During Construction:

1. Bi-weekly to illustrate the condition of the route(s). Work photographed in previous sessions only photographed again sufficiently to provide progressive continuity of work unless otherwise directed by Engineer.

C. Upon Completion of All Construction Work:

1. Progressive photographs of route in same manner as that specified before commencement of Contract Work.

2. The route may be photographed in increments when work in that increment is completed and when approved by Engineer. Each increment photography to overlap other increment photography sufficiently such that all photographs provide progressive views of the route throughout.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals.

1. Shop Drawings.

2. Construction Photographs.

3. Contractor’s Responsibilities.

4. Submission Requirements.

5. Review of Shop Drawings.

6. Distribution.

7. General Procedures for Submittals.

8. Certificate of Design.

9. Certificates of Compliance.

10. Schedules.

B. Additional general submission requirements are contained in Paragraph 6.17 of the General Conditions.

C. Detailed submittal requirements will be specified in the technical specifications section.

1.02 DEFINITIONS:

A. Written and graphic information that require Engineer’s responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Portable Document Format (.pdf): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.03 SUBMITTALS:

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with Contractor's construction schedule.

2. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.

b. Specification Section number and title.

c. Submittal category: Action; informational.

d. Description of the Work covered.

e. Scheduled date for Engineer's final release or acceptance.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS:

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with purchasing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on accepted submittal schedule.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

4. The Contractor shall revise and resubmit rejected submittals and those requiring corrections or verification of information in a timely manner such that the overall progress of the Work is not impeded.

5. Coordination of Submittal Times: The Contractor shall prepare and transmit each submittal sufficiently in advance of performing the related Work or other applicable activities, or within the time specified in the individual Sections of the Specifications, so that the installation will not be delayed by processing times, including rejection and resubmittal (if required), coordination with other submittals, purchasing, delivery, and similar sequenced activities. No extension of

Contract Time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

B. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow 15 working days for review of each resubmittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.

2. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Engineer**,** containing the following information, as applicable:

a. Project name.

b. Date.

c. Name and address of Engineer.

d. Name of Contractor.

e. Name of firm or entity that prepared submittal.

f. Names of subcontractor, manufacturer, and supplier.

g. Category and type of submittal.

h. Submittal purpose and description.

i. Specification Section number and title.

j. Specification paragraph number or drawing designation and generic name for each of multiple items.

k. Indication of full or partial submittal.

l. Transmittal number, numbered consecutively.

m. Submittal and transmittal distribution record.

n. Other necessary identification.

o. Remarks.

E. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

F. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with acceptance notation from Engineer’s action stamp.

G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with acceptance notation from Engineer’s action stamp.

1.05 CONSTRUCTION PHOTOGRAPHS:

A. The Contractor shall provide construction photographs in accordance with requirements specified in Section 01 32 33.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES:

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as .pdf electronic files.

a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.

B. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

C. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineer and owners, and other information specified.

E. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.02 DELEGATED-DESIGN SERVICES:

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW:

A. Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents prior to submission to the Engineer. Mark with approval stamp before submitting to Engineer.

B. Contractor review shall verify the following:

1. Catalog numbers and similar data

2. Conformance with the Contract Documents

C. If a submittal shows any deviation from the requirements of the Contract Documents, the Contractor shall make specific mention of the deviations in the Transmittal Form furnished by the Engineer and provide a description of the deviations in a letter attached to the submittal.

D. The review and approval of submittals or product data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will not have responsibility for any such errors and omissions.

E. No portion of the work requiring a submittal or product data shall be started nor shall any materials be installed prior to the approval or qualified approval of such item by the Engineer. Any materials purchased or on-site construction accomplished which does not conform to accepted submittals and data shall be at the Contractor's own risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity with the requirements of the Contract.

F. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ENGINEER’S ACTION:

A. The Engineer's review is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the Contract Documents or from departures therefrom. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for techniques of assembly, and for performing work in a safe manner.

B. Submittals will be reviewed for the Contractor’s approval stamp. Submittals not stamped by the Contractor will be returned without any action.

C. The review of submittals and data will be general. They shall not be construed:

1. as permitting any departure from the Contract requirements;

2. as relieving the Contractor of responsibility for any errors or omissions, including details, dimensions, and materials;

3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.

D. If the submittals or data as submitted describe variations and show a departure from the Contract requirements which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

E. Submittals will be returned to the Contractor under one of the action codes indicated below and defined on the transmittal form furnished by the Engineer.

1. Marking: No Exception Taken.

a. When submittals are marked as "No Exception Taken," Work covered by submittal may proceed provided it complies with Contract Documents. Acceptance of Work depends on that compliance.

2. Marking: Make Corrections Noted.

a. When submittals are marked as "Make Corrections Noted," Work covered by submittal may proceed provided it complies with Engineer's notations or corrections on submittal and with Contract Documents. Acceptance of Work depends on that compliance. Resubmittal not required.

3. Marking: Amend and Resubmit.

a. When submittals are marked as "Amend and Resubmit," do not proceed with Work covered by submittal. Do not permit Work covered by submittals to be used at Project site or elsewhere where Work is in progress.

b. Revise submittal or prepare new submittal in accordance with Engineer's notations in accordance with resubmittal requirements of this section. Resubmit without delay. Repeat if required to obtain different action marking.

4. Marking: Rejected; See Remarks.

a. When submittals are marked as "Rejected; See Remarks," do not proceed with Work covered by submittal. Work covered by submittal does not comply with Contract Documents.

b. Prepare new submittal for different material or equipment supplier or different product line or material of same supplier complying with Contract Documents.

5. Marking: For Information Only.

a. When submittals are marked as “For Information Only,” the Engineer will review the submittal but take no action.

b. It will be recorded as “For Information Only”. Work covered by this submittal may proceed provided it complies with the Contract Documents.

6. Marking: Not Required for Review.

a. When submittals are marked as “Not Required for Review,” the Engineer has not reviewed the submittal and it is being returned.

b. Work covered by this submittal may proceed provided it complies with the Contract Documents.

F. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any Work done in relation to revisions which are not specifically pointed out to the Engineer which are deemed, by the Engineer, not to be in accordance with the Contract Documents.

G. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

H. If the Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer. The submittal and the product data sheet reviews do not authorize changes in Contract Price or Contract Time. Changes involving Contract Price or Contract Time are authorized only by a signed Change Order, in accordance with the General Conditions.

I. When the submittals have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

J. Material and equipment delivered to the Site will not be paid for until the pertinent submittals have been reviewed and accepted by the Engineer.

3.03 CERTIFICATE OF DESIGN:

A. If specifically specified in other Sections of these Specifications, the Contractor shall submit the applicable Certificate of Design for each item required, Form 01 33 00-1, completely filled in and signed and sealed by a registered professional engineer.

3.04 CERTIFICATES OF COMPLIANCE:

A. Certificates of Compliance as specified in the specifications shall include and mean certificates, manufacturer's certificates, certifications, certified copies, letters of certification and certificate of materials.

B. The Contractor shall be responsible for providing Certificates of Compliance as specified in the technical specifications. Certificates are required for demonstrating proof of compliance with specification requirements and shall be executed in six copies unless otherwise specified. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Supplier, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Supplier from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

3.05 SCHEDULES:

A. Provide all schedules specified in Articles 2.05B, 2.07, 14.01 and elsewhere in the General Conditions.

B. Article 14.02 of the General Conditions, Progress Payments, shall be subject to meeting the Schedule Requirements of Section 01 33 00, Table 01 33 00-1. No progress payment identified in Section 01 33 00, Table 01 33 00-1over the limits identified will be made until the milestones set in this table are satisfied.

Table 01 33 00-1

Section	Submittal	Payment Milestone
01 32 17	Project schedule is submitted and reaches no exceptions taken status.	Prior to 5% payment
01 33 00	Shop drawings are submitted and reach no exceptions taken status.	Prior to 25% payment.
01 77 00	Record documentation is submitted and reaches no exceptions taken status.	Prior to 95% payment.
01 77 00	Punch list is completed and corrected.	Prior to 95% payment.

END OF SECTION

Form 01 33 00-1

CERTIFICATE OF DESIGN

The undersigned hereby certifies that he/she is a Professional Engineer registered in the state of Michigan and that he/she has been employed by (Name of Contractor) _____ to design _____ in accordance with Specifications Section _____ for the (Name of Project) _____ The undersigned further certifies that he/she has performed similar designs previously and has performed the design of the _____; that said design is in conformance with all applicable local, state, and federal codes, rules, and regulations and professional practice standards; that his/her signature and Professional Engineer (P.E.) Stamp have been affixed to all calculations and drawings used in, and resulting from, the design; and that the use of that stamp signifies the responsibility of the undersigned for that design.

The undersigned hereby certifies that he/she has Professional Liability Insurance with limits of $1,000,000.00 and a Certificate of Insurance is attached.

The undersigned hereby agrees to make all original design drawings and calculations available to the Town/City of _____ or Owner's representative within seven (7) days following written request therefore by the Owner.

_____	_____
P.E. Name	Contractor's Name
_____	_____
Signature	Signature
_____	_____
Title	Title
_____	_____
Address	Address

SECTION 01 35 43

PROTECTION OF ENVIRONMENT

PART 1 - GENERAL

1.01 SUMMARY:

A. Contractor, in executing Work, shall maintain Work areas on- and off-site free from environmental pollution that would be in violation of federal, state or local regulations.

B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.

C. Any contamination shall be reported by the Contractor to the Owner, the Engineer and the Michigan Department of Environmental Quality (DEQ) and cleaned up as per DEQ requirements.

D. The Contractor shall be responsible for the protection of the natural environment of the Site and surrounding areas, both land and water. Protection of the environment must start with avoidance and prevention, and then control/mitigation, compensation, or enhancement (in order of descending preference).

E. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as sedimentation or filtration systems, hay bales, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, storm sewers, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.

F. Ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

G. Schedule and conduct all work in a manner that will minimize the level of noise escaping the site, especially at night and on weekends.

H. Payment:

1. Consider Work specified in this section incidental and include payment as part of appropriate lump sum or unit prices specified in Bid Form.

1.02 REFERENCES:

A. United States Environmental Protection Agency (USEPA):

1. EPA-72-015: Guidelines for Erosion and Sedimentation Control Planning and Implementation

2. EPA 43019-73-007: Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity

B. Federal Environmental Protection Act and applicable regulations.

C. Michigan Department of Environmental Quality.

1.03 SUBMITTALS

A. Submit shop drawings in accordance with the requirements of Section 01 33 00 "Submittals".

B. Prior to commencing any Work on this Contract and not later than fifteen (15) Working Days following receipt of the Notice to Proceed, the Contractor shall submit Environmental Protection shop drawings for the Engineer's review and approval. Submit shop drawings for the following:

1. Plans and sketches showing areas proposed to be used for construction storage, the Contractor's Site office, vehicle cleaning, equipment fueling and associated access routes.

2. Surface drainage and storm sewer control plan.

3. Erosion and sediment control plan

4. Waterways control plan.

5. Tree protection plan.

6. Mud and dust control plan.

7. Noise control plan.

8. Fuels and lubricants storage and dispensing control plan .

9. Construction Equipment Cleaning control plan.

10. Spills response and spills reporting plan.

11. Excavation spoils disposal plan

12. Historical resources contingency plan.

13. Fuel spills contingency plan

1.04 PROTECTION OF STORM SEWERS:

A. Prevent construction material (including volatile liquid wastes such as oil, chemicals, paints), pavement, concrete, earth or other debris from entering existing storm sewer or sewer structure.

1.05 PROTECTION OF WATERWAYS:

A. Observe rules and regulations of the State of Michigan and U.S. Federal agencies prohibiting pollution of lakes, streams, rivers or wetlands by dumping of refuse, rubbish, dredge material or debris.

1. Permits shall be obtained by Contractor at Contractor's cost.

B. The Contractor shall not cause or permit action to occur which would cause an overflow to existing waterways. Provide holding ponds or accepted method which will divert flows, including storm flows and flows created by construction activity, to prevent excessive silting of waterways or flooding damage to property.

C. Comply with procedures outlined in U.S. EPA manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning and Implementation", Manual EPA-72-015 and "Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity", Manual EPA 43019-73-007.

1.06 PROTECTION OF TREES:

A. No trees are to be cut down unless shown on the Contract Drawings or designated by the Engineer.

B. The Contractor shall take precautions to prevent damage to existing trees and shrubs, protect branches and foliage, protect trunks and stems, and prevent machinery from travelling over roots within the 'drip-line' of the trees by placing and maintaining snow fencing around each tree outside of the 'drip-line'. The Contractor shall not pile excavated material within the 'drip-line of existing trees.

C. Where damage does occur, it must be reported by the Contractor to the Engineer and repaired or replaced by a qualified person as directed by the Engineer. In the event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, the Contractor shall treat damage by corrective pruning, bark tracing, application of a heavy coating of tree paint, and other accepted horticultural and tree surgery practices.

1.07 DISPOSAL OF EXCESS EXCAVATED AND OTHER WASTE MATERIALS:

A. Excess excavated material not required or not suitable for backfill and other waste material shall be disposed of in accordance with local regulatory requirements. No spoils materials shall be stored on site or at a location without written approval from the designated storage location.

B. Provide watertight conveyance for liquid, semi-liquid or saturated solids which tend to bleed during transport. Liquid loss from transported materials is not permitted, whether being delivered to construction site or hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at selected disposal site.

1.08 PROTECTION OF AIR QUALITY:

A. Minimize air pollution by requiring use of properly operating combustion emission control devices on construction vehicles and equipment and encourage shutdown of motorized equipment not in use.

B. Do not burn trash on or adjacent to construction site.

C. If temporary heating devices are necessary for protection of Work, they shall not cause air pollution.

D. The Contractor shall conduct operations of dumping rock and of carrying rock away in trucks in such a way as to minimize dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water them to prevent dust. Strictly adhere to all applicable environmental regulations for dust prevention.

1.09 THAWING OF FROZEN GROUND:

A. Contractor is not authorized to utilize fires as a means to thaw frozen ground.

1.10 USE OF CHEMICALS:

A. Chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall be approved by U.S. EPA or U.S. Department of Agriculture and any other applicable regulatory agency.

B. Use and disposal of chemicals and residues shall comply with manufacturer's instructions.

1.11 NOISE CONTROL:

A. Conduct operations to cause least annoyance to residents in vicinity of Work, and comply with applicable local ordinances.

B. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines.

C. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.

D. Line storage bins and hoppers with material that will deaden sounds.

E. Conduct operation of dumping rock and of carrying rock away in trucks so as to cause minimum of noise and dust.

F. Route vehicles carrying rock, concrete or other material over such streets as will cause least annoyance to public and do not operate on public streets between hours of 5:00 PM and 7:00 AM, or on Saturdays, Sundays or legal holidays unless accepted by Engineer.

G. No excessive idling of motorized equipment is permitted.

H. Where necessary, the Contractor shall place noise attenuation devices (barriers) around the Contractor's construction equipment.

I. Submit a plan to mitigate construction noise and to comply with noise control ordinances, including methods of construction, equipment to be used, and acoustical treatments.

1.12 MUD AND DUST CONTROL:

A. Due to close geographic location of Project to residential homes, take special care in providing and maintaining temporary site roadways, Owner's existing roads, and public roads used during construction operations in clean, dust free condition.

B. Comply with local environmental regulations for dust control. If Contractor's dust control measures are considered inadequate by Engineer, Engineer may require Contractor to take additional dust control measures.

C. The Contractor shall employ only wet type equipment for saw cutting and concrete grinding to control dust nuisance. There shall be no cutting prior to the Engineer's and Owner's approval.

D. The Contractor shall obtain the Engineer's acceptance before chemicals for dust control are used. Sodium chloride is not permitted for dust control.

E. All trenches and disturbed areas created during the execution of the Work that will produce dust shall be maintained dust free by an application of calcium chloride at the Engineer's direction.

F. The Contractor shall not use calcium chloride on access roads.

G. The Contractor shall transport dusty materials in covered haulage vehicles.

H. The Contractor shall be responsible for a prompt and complete clean up of all dirt and mud deposited on the public and/or private property as a consequence of the execution of the Work. In the event that the Contractor fails to comply with this obligation the Owner may proceed with the necessary clean up and charge all the costs for the cleanup to the Contractor.

I. The Contractor shall wash mud from construction vehicles before leaving the construction Site.

J. The Contractor shall wash and clean the following roads at the end of each work day during the Contract:

1. Major traffic routes and City streets impacted by construction activities.

1.13 CLEANING OF EQUIPMENT

A. The Contractor shall keep construction equipment clean so that no debris is deposited on any public roadway. The Contractor shall identify a designated vehicle cleaning area within the working limits of the Contract. The Contractor shall contain all construction debris in this designated area only. The Contractor shall dispose of debris off Site at an approved facility.

B. The Contractor shall ensure that debris cleaned from equipment cannot gain access to storm sewers and watercourses.

1.14 FUELS AND LUBRICANTS:

A. Comply with local, state and federal regulations concerning transportation and storage of fuels and lubricants.

B. The Contractor shall designate an area within the working limits to be used exclusively for fueling of construction equipment. The Contractor shall carry out all refueling in this area only. Refueling of backhoes or shovels will be allowed at locations other than the accepted refueling areas, but not closer than 30 feet from any watercourse or storm sewer inlet.

C. Fuel storage area and fuel equipment shall be approved by Owner prior to installation. Submit containment provisions to Engineer for approval.

D. The Contractor shall submit to the Engineer for review prior to starting the Work, procedures for the interception and rapid clean-up and disposal of fuel spillages which may occur. The Contractor shall ensure that the materials required for the clean-up of fuel spillages are readily accessible on Site at all times.

E. The cleaning of equipment in streams and lakes and the emptying of fuel, lubricants and pesticides into watercourses or storm sewers is prohibited. The Contractor shall contain fuel, lubricants, pesticides and construction debris and dispose of it off Site in approved locations.

F. Report spills or leaks from fueling equipment or construction equipment to Engineer and cleanup as required by local, state or federal regulations.

G. Owner may require Contractor to remove damaged or leaking equipment from Project site.

1.15 CONTINGENCY AND EMERGENCY RESPONSE PLANS:

A. General

1. The Contractor shall adopt a pollution preventative strategy to fulfill its commitment to protecting public and worker health and safety, and the environment. Through this strategy, the potential issues and emergency events that can be anticipated shall be identified by the Contractor and procedures put in place by the Contractor to minimize their potential occurrence.

2. To address any unanticipated events, the Contractor shall develop Contingency and Emergency Response Plans and implement these plans during the performance of the Work.

B. Spills Response and Spills Reporting:

1. Prior to commencing construction, the Contractor shall be responsible for preparing a Spills Response Plan. The Spills Response Plan must address the response, containment, and cleanup of an accidental spill. It must take care of the specific roles and responsibilities of construction staff, accountability, reporting and documentation. Specifically, the plan must include:

a. the names and the telephone numbers of the persons in the local municipalities to be notified forthwith of a spill

b. the names and the telephone numbers of the representatives of the fire, the police and the health departments of the local municipalities who are responsible to respond to emergency situations

c. the names and the telephone numbers of the companies experienced in the control and clean-up of hazardous materials that would be called upon in an emergency involving a spill

d. the Contractor's proposal for the immediate containment and control of the spill, the clean-up procedures to be initiated immediately and any other action to be taken to mitigate the potential environmental damage while awaiting additional assistance, and,

e. the name and the telephone number of the Contractor's representative responsible for preparing, implementing, directing and supervising the contingency plan

2. The Contractor shall submit for the Engineer's review, a copy of the Spills Response plan and shall make the appropriate changes to it based upon the comments received.

3. In the event of a spill or other emission of a pollutant caused by the execution of the Work into the natural environment, the Contractor shall immediately notify the

following of the spill, of the circumstances thereof, and of the action taken or intended to be taken with respect thereto:

a. The Michigan Department of Environmental Quality

b. The Owner

c. The owner of the pollutant, if known,

d. The person having control of the pollutant, if known,

e. The Engineer

4. The Contractor shall make the necessary allowances to ensure the immediate availability of the products with which to effect temporary repair to broken pipelines and other services so the spill or other emission of a pollutant is immediately controlled and stopped and to mitigate the damages. The Contractor shall do everything practicable to restore the natural environment.

5. The Contractor shall prepare a written report of the spill, and the spill event is to be recorded in the Contractor's log book. The report must contain the following information, at a minimum:

a. Date and time spill occurred.

b. Estimated volume of spill.

c. Duration of the spill.

d. Cause and discovery of the spill.

e. Cleanup and recovery measures taken.

f. Name of hauler or outside contractors called in to assist with cleanup and recovery measures.

g. Personnel on the scene.

h. Names of parties and agencies notified and the date and time of notification of each.

i. Steps to be taken to prevent a reoccurrence of the spill.

C. Fire Contingency Plan

1. The Contractor shall develop and submit a Fire Contingency Plan to ensure a rapid response to a fire thereby minimizing the threat to worker and public safety, and the environment.

2. The plan must include, but is not limited to an explanation of the purpose of the plan and when the plan is triggered, an explanation of relevant roles and responsibilities, and accountability for implementing the plan, and provision of fire prevention training and equipment for implementing the plan.

1.16 NOTIFICATIONS:

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.17 IMPLEMENTATION:

A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when accepted by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.

C. Implementation of the Contingency and Emergency Response Plans

1. The responsibility for implementing the Contingency and Emergency Response Plans shall lie with the Contractor. Specific responsibilities include:

a. Reviewing the Contingency Plans and Emergency Response Plans and identifying any issues / concerns and providing suggested changes / updates;

b. Ensuring that all construction staff are trained in Contingency Plan Implementation and Emergency Response Techniques and that they have the appropriate equipment on hand;

c. Providing advice to construction staff on proper emergency response procedures;

d. Auditing the Contractor’s response to events resulting in the activation of its Contingency Plans and Emergency Response Plans;

e. Initiating actions to correct any response deficiencies identified through the audit process and reporting it;

f. Maintaining emergency response records for review by the Engineer and the appropriate regulatory agencies.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01 42 13

DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. General: Basic Contract definitions are included in the General Conditions.

C. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

D. "Directed": A command or instruction by Engineer. Other terms including "requested," "ordered," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

E. "Hydrovac excavation": A means of soil extraction using pressurized water or air for breaking ground and a vacuum to remove soil from the excavation. This process is also referred to as "hydro-excavation".

F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

I. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

J. "Provide": Furnish and install, complete and ready for the intended use.

K. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

L. "Elevation": The figures given on the Drawings or in the other Contract Documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Engineer.

M. "Rock": The word "rock," wherever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding 1 cubic yard in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed as "rock."

N. "Earth": The word "earth", wherever used as the name of an excavated material or material to be excavated, shall mean all kinds of material other than rock as above defined.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01 43 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This section covers Quality Assurance and Quality Control requirements for this contract.

B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors, and suppliers and for assuring the quality specified in the Technical Specifications is achieved.

C. Refer to the General Conditions Article 6 - Contractor's Responsibilities.

1.02 SUMMARY:

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:

1.03 REFERENCES:

A. American Society for Testing and Materials (ASTM):

1. E329: Standard Specification for Agencies Engaged in Construction Inspection and/or Testing

1.04 DEFINITIONS:

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

D. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

E. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

F. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

G. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

H. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.05 CONFLICTING REQUIREMENTS:

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum

within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.06 SUBMITTALS:

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

1.07 CONTRACTOR'S QUALITY-CONTROL PLAN:

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

C. Monitoring and Documentation: Maintain testing and inspection reports including log of accepted and rejected results. Include work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.08 REPORTS AND DOCUMENTS:

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections.

B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.09 QUALITY ASSURANCE:

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

D. Codes and Standards: Refer to General Conditions Article 3 - Contract Documents: Intent, Amending, Reuse of the General Conditions.

E. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and Engineer.

F. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. The Contractor shall not use material and equipment for any purpose other than that intended or specified unless the Engineer authorizes such use.

G. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

1.10 MATERIALS AND EQUIPMENT:

A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.

B. The Contractor shall comply with manufacturer’s printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur where the contract documents are more stringent than the manufacturer’s printed instructions, the Contractor shall comply with the specifications. In cases where the manufacturer’s printed instructions are more stringent than the contract documents, the Contractor shall advise the Engineer of the disparity and conform to the manufacturer’s printed instructions. In either case, the Contractor is to apply the more stringent specification or recommendation, unless accepted otherwise by the Engineer.

1.11 QUALITY CONTROL:

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

3. Comply with manufacturers' instructions, including each step in sequence.

4. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

5. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

6. Perform Work by persons qualified to produce required and specified quality.

7. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

8. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

9. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

10. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

11. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 QUALITY CONTROL:

A. Quality control is the responsibility of the Contractor, and the Contractor shall maintain control over construction and installation processes to assure compliance with specified requirements.

B. Certifications for personnel, procedures, and equipment associated with special processes shall be maintained by the Contractor, available for inspection by the Engineer. Copies shall be made available to the Engineer upon request.

C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Engineer to supersede or void that responsibility.

3.02 REPAIR AND PROTECTION:

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SCOPE OF WORK:

A. The Contractor shall provide all temporary facilities for the proper completion of the work, as required and as specified.

1.02 USE CHARGES:

A. General: Costs for installation, removal and use of temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Engineer and subcontractors, Owner, testing agencies, and authorities having jurisdiction.

B. Sanitary Service:

1. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required by pertinent health and safety regulations.

2. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on adjacent property.

a. The Contractor shall not use the Owner's sanitary facilities.

C. Water Service from Existing System:

1. Contractor shall coordinate with, and receive written approval from the Owner or owner of the existing water distribution system before utilizing any private or public water sources.

2. Contractor is required to complete all permitting and pay all fees associated with the use of water from public or private sources.

3. Upon approval, the owner of the water system shall provide reasonable quantities of water at the then existing pressure from a mutually convenient hydrant of the water distribution system. The Contractor shall furnish all necessary pipe or hose extensions to conduct the water to the points of use and shall exercise due care not

to waste water. The Contractor shall not contaminate the water supply and shall comply with all applicable regulations and code requirements.

4. The Owner reserves the right to limit, suspend, or terminate the supply of water as set forth above should it consider such action to be necessary on account of damage to the distribution system, the necessity of conserving water, or other emergency. In this event, the Contractor shall obtain water from some other approved source, at his own expense.

1.03 TRAFFIC REGULATION:

A. Signs, Signals, And Devices:

1. Post mounted traffic control and informational signs as necessary to direct traffic around construction areas.

2. Maintain traffic cones, drums, and other static barricades as necessary to direct traffic around construction areas.

3. Flagperson Equipment: As required by local jurisdictions.

B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D. Haul Routes:

1. Confine construction traffic to designated haul routes.

2. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

E. Traffic Signs and Signals:

1. Provide signs approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.

2. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.

3. Relocate as Work progresses, to maintain effective traffic control.

F. Removal:

1. Remove equipment and devices when no longer required.

2. Repair damage caused by installation.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES:

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. The Contractor may maintain a temporary field office near the work for his own use during the period of construction at which readily accessible copies of all contract documents shall be kept. The office shall be located where it will not interfere with the progress of the work. In charge of this office there shall be a competent superintendent of the Contractor as specified under "Supervision of Work" in the AGREEMENT.

C. Temporary Storage Yards: The Contractor shall construct temporary storage yards for storage of Products that are not subject to damage by weather conditions. Contractor shall not use any areas, including local streets, parking lots, or abandoned properties for storage without receiving written authorization and consent from the City or property owner. Contractor is responsible for completing all applications, associated administrative tasks, and payment of all fees, including permits and insurance, required to obtain access and utilize the storage area.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL:

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION:

A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

B. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

C. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

3.03 SUPPORT FACILITIES INSTALLATION:

A. Permanent Roads and Paved Areas: Maintain roads and paved areas adequate for construction operations and local vehicular traffic.

1. Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust. Do not use chemical means of dust control without prior written approval from the Engineer. The use of petroleum products will not be allowed at any time.

2. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course as specified.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.

2. Maintain access for fire-fighting equipment and access to fire hydrants.

3. Unless described and approved under a Traffic Control Plan (TCP), conduct operations on the site so that the use of any roads by vehicles employed under this Contract will not restrict pedestrian and vehicular traffic thereon nor hinder the use of such facilities.

4. All roads within the work area may be used simultaneously by vehicles and pedestrians. The speed limit of 15 mph applies throughout the work areas, including the access roads and parking lots. Failure to comply with speed limit or to operate vehicles safely will result in possible removal of the staff from the plant.

C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

2. Remove snow and ice as required to minimize accumulations.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION:

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to local properties.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Protect trees and vegetation from damage during construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

3.05 OPERATION, TERMINATION, AND REMOVAL:

A. Maintenance: Maintain facilities in good operating condition until removal.

B. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION

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SECTION 01 57 13

EROSION CONTROL, SEDIMENTATION AND CONTAINMENT OF CONSTRUCTION MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide all work and take all measures necessary to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials (including excavation and backfill) within protected working area as to prevent damage to any stream or wetlands.

1.02 REFERENCES:

A. United Stated Environmental Protection Agency (USEPA):

1. Guidelines for Erosion and Sediment Control, Planning and Implementation.

2. Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity.

1.03 SUBMITTALS:

A. Provide submittals in accordance with Section 01 33 00.

B. Two weeks prior to the start of the work, submit to Engineer, for review, a plan with detailed sketches showing the proposed methods to be used for controlling erosion during construction.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Use acceptable procedures, including use of sediment barriers and inlet sediment traps.

C. Operations restricted to areas of work indicated on drawings and area which must be entered for construction of temporary or permanent facilities.

D. Engineer has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices or methods to control erosion.

PART 2 - PRODUCTS

2.01 BALES:

A. Hay or straw or other suitable material acceptable to Engineer.

PART 3 - EXECUTION

3.01 GENERAL:

A. Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste into or alongside any body of water, storm sewers, or into natural or man-made channels.

B. Design erosion and sediment controls to handle peak runoff resulting from storm events.

C. The Contractor shall be responsible for inspecting and maintaining these control measures to ensure their proper function and adequate sediment storage at all times. The Contractor shall remove sediment once it reaches 50 percent of the capacity of the structure. Sediment collected shall be disposed of offsite at the Contractor's cost.

3.02 INSTALLATION:

A. Install baled hay or straw erosion checks in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Engineer.

B. Construct diversions to intercept and divert runoff water from critical areas.

C. Discharge silt-laden water from excavations onto filter fabric mat and/or baled hay or straw sediment traps to ensure that only sediment-free water is returned to watercourses.

D. Do not dump spoiled material into any streams, wetlands, surface waters, or unspecified locations.

E. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands or surface waters.

F. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands, storm sewers, or natural or man-made channels leading thereto.

G. Prevent damage to vegetation adjacent to or outside of construction area limits.

H. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, storm sewers, or natural or man-made channels leading thereto, or unspecified locations.

I. Do not alter flow line of any stream unless indicated or specified.

END OF SECTION

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SECTION 01 61 00

CONTROL OF MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.02 DEFINITIONS:

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3. Comparable Product: Product that is demonstrated and accepted through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

1.03 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.04 DELIVERY STORAGE AND HANDLING:

A. Contractor shall arrange deliveries of materials and equipment in accordance with construction Progress Schedule, coordinate to avoid conflict with Work and conditions at site.

B. Comply with the requirements of Section 01 66 10.

C. Provide equipment and personnel to handle materials and equipment by methods recommended by manufacturer to prevent soiling or damage to materials or equipment, or their packaging.

D. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

E. Owner assumes no responsibility for damage or loss due to storage of materials and equipment.

F. Interior Storage:

1. Store with seals and labels intact and legible.

2. Store materials and equipment subject to damage by elements in weathertight enclosures.

3. Maintain temperature and humidity within ranges required by manufacturer’s instructions.

G. Exterior Storage:

1. Store fabricated materials and equipment above ground, on blocking or skids, to prevent soiling or staining. Cover materials and equipment subject to deterioration with impervious sheet coverings. Provide ventilation to avoid condensation.

2. Store loose granular materials in well-drained area on solid surfaces to prevent mixing with foreign matter.

3. Store materials such as pipe, reinforcing steel, structural steel, and equipment on pallets or racks, off ground.

H. Inspection and Maintenance:

1. Arrange storage to provide easy access for inspection, maintenance, and inventory.

2. Make periodic inspections of stored materials and equipment to ensure materials and equipment maintained under specified conditions are free from damage or deterioration, and coverings are in-place and in condition to provide required protection.

I. Contractor shall assume responsibility for protection of completed construction and repair and restore damage to completed Work equal to original condition.

1.05 WARRANTY:

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and

limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

1.06 PRODUCTS:

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

1.07 ACCEPTANCE OF MATERIALS:

A. Unless otherwise specified, only new materials shall be incorporated in the work. All materials furnished by the Contractor shall be subject to the inspection and acceptance of the Engineer. No material shall be delivered to the work without prior acceptance of the Engineer.

B. As specified in Section 01 33 00, the Contractor shall submit to the Engineer data relating to materials he proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications.

C. Any delay of acceptance resulting from the Contractor's failure to submit data promptly shall not be used as a basis of a claim against the Owner or the Engineer.

D. The materials used on the work shall correspond to the accepted submittals.

1.08 REUSE OF EXISTING MATERIAL:

A. Except as specifically indicated or specified, do not reuse existing materials in new Work.

1.09 MANUFACTURER’S INSTRUCTIONS:

A. Installation of equipment and materials shall comply with manufacturer’s instructions.

B. Handle, store, install, connect, and adjust materials in accordance with manufacturer’s written instructions and in conformance with Specifications.

1. If Site conditions or specified requirements conflict with manufacturer’s instructions, consult Engineer for further instructions. Do not proceed with Work without written instructions.

1.10 GENERAL MATERIAL AND EQUIPMENT REQUIREMENTS:

A. The requirements of this Paragraph shall constitute the standards for the material and equipment specified herein. Should these requirements conflict with the Supplier’s

recommendations or in any way be less stringent than the Supplier's requirements, they shall be superseded by the Supplier's requirements.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

A. Material and Equipment Incorporated into Work:

1. Conform to applicable specifications and standards.

2. Comply with size, make, type, and quality specified or as accepted by Submittal.

B. Do not use material or equipment for purpose other than for which it is designed or specified.

PART 3 - EXECUTION

3.01 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 01 66 10

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 GENERAL:

A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY:

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

B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment or materials be delivered to the site more than one month prior to installation without written authorization from the Engineer.

C. Carefully pack and crate equipment and materials for shipment.

D. Identify each component with durable identifying labels or tags securely attached to each piece of equipment, crate or container.

E. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

F. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.

G. Assume responsibility for equipment material and spare parts just before unloading from carrier at site.

H. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.

I. Provide equipment and personnel to unload all items delivered to the site.

J. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by Owner, perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

K. Pay all demurrage charges if failed to promptly unload items.

1.03 STORAGE AND PROTECTION:

A. Store and protect products and equipment in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer. Instructions shall be carefully followed and a written record of this kept by the Contractor for each product.

B. Arrange storage of products and equipment to permit access for inspection. Periodically inspect to make sure products and equipment are undamaged and are maintained under specified conditions.

C. Provide protective maintenance during storage consisting of manually exercising equipment, inspecting mechanical surfaces for signs or corrosion or other damage, lubricating, applying any coatings as recommended by the equipment manufacturer necessary for its protection and all other precautions to assure proper protection of all materials and equipment stored and for compliance with manufacturers' requirements related to warranties.

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

E. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01 74 23

CLEANING UP

PART 1 - GENERAL

1.01 SUMMARY:

A. Execute cleaning during progress of Work and at completion of Work.

B. Refer to specification sections for specific cleaning for Products or Work.

1.02 DISPOSAL REQUIREMENTS:

A. Conduct cleaning and disposal operations to comply with local codes, ordinances, regulations, and anti-pollution laws. Do not burn or bury rubbish or waste materials on Project site. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION:

A. During execution of work, clean site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. Unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

C. Cover or wet excavated material leaving and arriving at the site to prevent blowing dust. Clean the public access roads to the site of any material falling from the haul trucks.

D. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor’s operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

E. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

F. Provide on-site containers for collection and removal of waste materials, debris, and rubbish in accordance with applicable regulations.

3.02 FINAL CLEANING:

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

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

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

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Leave Project area clean and ready for occupancy.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY:

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.

2. Final completion procedures.

3. Final cleaning.

4. Repair of the Work.

1.03 SUBSTANTIAL COMPLETION PROCEDURES:

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in Contract Documents, including project record documents, final completion construction photographic documentation, damage or settlement surveys, and similar final record information.

3. Submit closeout submittals specified in Contract Document Sections, including specific warranties, workmanship bonds, and similar documents.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Terminate and remove temporary facilities from Project site, along with construction tools, equipment and materials.

2. Complete final cleaning and restoration requirements.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.04 PROJECT RECORDS DOCUMENTS

A. The Contractor shall record any actual revisions to the Work and maintain one set of the following Project Record Documents on Site:

1. Contract Drawings, Specifications, and Addenda.

2. Change Orders, Field Orders, and other written notices.

3. Shop drawings, Product data, and samples.

4. Project Record Drawings.

B. The Contractor shall record information on the Project Record Documents concurrent with construction progress and store these documents separately from the documents used for construction.

1. The Owner will supply a set of Contract Drawings. The Contractor shall mark thereon all revisions as the Work progresses in order to produce a set of as-built drawings.

2. The Contractor shall note any changes made during construction by any of the Contractor's forces or those of any Subcontractors.

3. The Contractor shall dimension the locations of buried or concealed Work, especially piping, valves and fittings, with reference to exposed structures.

4. Certificates of Substantial Completion shall not be issued until as-built drawings are complete and submitted.

5. Measured locations of internal utilities and appurtenances which are concealed in construction, referenced to visible and accessible features of the Work.

6. Changes in the Work caused by Site conditions, or originated by the Owner, the Engineer, the Contractor, or Subcontractors and by addenda, supplemental drawings, Site instructions, supplementary instructions, change orders, correspondence, and directions of any regulatory authorities.

1.05 FINAL COMPLETION PROCEDURES:

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.06 LIST OF INCOMPLETE ITEMS (PUNCH LIST):

A. Engineer will provide a punchlist of outstanding work items to be addressed by Contractor prior to final payment and issuance of a Notice of Substantial Completion. The punchlist will identify each area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 REPAIR OF THE WORK:

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction, including replacement of defective materials. Restore areas damaged during construction.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide site clearing as indicated and in compliance with Contract Documents.

B. Section Includes:

1. Clearing and grubbing.

2. Tree and shrub protection and removal.

3. Removal of debris related to clearing operations.

1.02 DEFINITIONS:

A. Caliper: Instrument used to measure tree diameter.

B. Clearing: Removal and disposal of above-ground items defined herein.

C. Grubbing: Removal and disposal of below-ground items defined herein.

1.03 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Permits:

1. Obtain Land Disturbance Permit from an accepted Erosion and Sediment Control Plan. See General Conditions for additional requirements. Submit copy of permit to Engineer.

C. All tree pruning, tree repair, and tree removal shall be performed by competent workers.

1.04 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

PART 2 - PRODUCTS

2.01 ACCESSORIES:

A. Tree Wound Paint: Bituminous based paint formulated for tree wounds.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify temporary erosion and sediment control measures are installed before commencing with any other work at the site.

B. Verify location and existence of all underground utilities and structures by contacting utility owners. Go to "Call Before You Dig" to receive state-specific information. Access this information by dialing 811 or going to http://call811.com/state-specific.aspx.

C. Provide 72-hour notice to existing utility owners, prior to beginning construction.

D. Contact utility companies and authorities to make arrangements for handling and disposal of utilities encountered during construction.

3.02 PREPARATION:

A. Protect trees and vegetation. Do not cut or injure trees and vegetation outside of immediate work area.

B. Protect all underground utilities and structures. If damage occurs, immediately notify the utility owner immediately.

C. Protect site features to remain from damage by construction equipment and vehicular traffic.

D. Identify waste disposal area(s) for disposal of removed materials. Contractor should provide written authorization form disposal site(s) acknowledging the use of the facility to dispose of removed materials.

3.03 RESTORATION:

A. Existing surfaces, features, utilities, or structures that are to remain but are damaged during construction shall be restored to at least the condition in which they were found immediately before work began, unless noted otherwise.

B. Restore damaged utilities to the satisfaction of the utility owner.

C. Restore damaged private property to the satisfaction of the property owner.

3.04 CLEARING:

A. Remove and dispose of off site:

1. Trees, snags, brush, shrubs, downed timber, decayed wood, and other vegetative growth.

2. Rocks, tiles, lumps of concrete, trash piles, debris, refuse and rubbish. Remove all evidence of their presence from the work area.

B. Clear ground within limits of work, unless otherwise noted.

C. Manual cutting of trees, stumps, and stubs during clearing shall be as close to ground surface as practicable but no higher than 6 inches above ground for small trees (8 inches or less), and not higher than 12 inches above ground for larger trees (greater than 8 inches).

D. Obey all federal, state and local regulations and guidance regarding the cutting and disposal of diseased trees and vegetation.

3.05 GRUBBING:

A. Remove and dispose of all stumps, buried logs, matted roots, roots larger than 2 inches and organic materials off site at an approved facility.

B. Roots larger than 2 inches in diameter shall be removed to a depth of 12 inches and roots larger than 1/2-inches in diameter to a depth of 6 inches.

C. Areas designated to receive pavement or structures shall be grubbed a depth of 18 inches. Measure depths of cut from existing ground surface or proposed finished grade, whichever is lower.

D. Depressions made by grubbing shall be filled with suitable material and compacted to conform to original adjacent grade.

E. Do not grub areas within drip line of trees to remain to avoid damage to roots.

3.06 TREE AND SHRUB REMOVAL:

A. Remove trees and shrubs within work area by felling or cutting individual vegetation and grubbing only as directed by Engineer and authorized by property owner.

B. Remove root and stump as described under Paragraph 3.05 above.

3.07 PRUNING:

A. Trim dead branches 1-1/2-inches or more in diameter and branches to heights and in a manner as indicated. Neatly cut limbs and branches close to the bole of the tree or main branches. Paint cuts more than 1-1/4-inches in diameter tree wound paint.

3.08 BURNING:

A. Burning is not permitted on site.

3.09 CLEANING:

A. Promptly dispose of excess and unsuitable material off site at an approved facility.

B. Remove debris, junk, and trash from site.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris before entering public or private property, adjacent to site.

3.10 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 70 00.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide dewatering as indicated and in compliance with Contract Documents.

B. Design, furnish, operate, maintain, and remove temporary dewatering systems to control groundwater and surface water to maintain stable, undisturbed subgrades, and permit work to be performed under dry and stable conditions. Work to be done as part of dewatering includes, but is not limited to:

1. Lower the groundwater level.

2. Lower hydrostatic pressure.

3. Prevent surface water from entering the excavation during construction.

4. Implement erosion control measures for disposing of discharge water.

C. Groundwater within the excavation area shall be lowered to at least 2 feet below the lowest excavation levels as specified and as indicated.

D. Common dewatering methods include, but are not limited to, sump pumping, deep wells, well points, vacuum well points or combinations thereof.

E. The Contractor shall obtain the required permits for discharge from the Contractor’s dewatering systems in accordance with 40 CFR Part 122. The discharge location shall be in accordance with permit requirements.

1.02 REFERENCES:

A. Code of Federal Regulations, Title 40 – Protection of Environment (CFR):

1. 40 CFR Part 122: EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.

1.03 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Qualification of the Contractor’s dewatering specialist's or firm's qualifications a minimum of 4 weeks prior to dewatering work. The submittal shall include, but not be limited to:

a. Qualifications of specialist's or firm's Registered Professional Engineer.

b. Qualifications of specialist's or firm's field representative who will oversee the installation, operation and maintenance of the dewatering system.

2. Submit a dewatering plan at least 2 weeks prior to start of dewatering work. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:

a. Dewatering plan and details stamped and signed by a Registered Professional Engineer registered in the state where the project resides.

b. Certificate of Design: Refer to Section 01 33 00.

c. A list of equipment including, but not limited to, pumps, prime movers, and standby equipment.

d. Detailed description of dewatering, maintenance, and system removal procedures.

e. Erosion and sedimentation control measures, and methods for disposal of pumped water.

f. List of all applicable laws, regulations, rules, and codes to which dewatering design conforms.

g. List of assumptions mode for design of dewatering systems, including but not limited to groundwater levels, soil profile, permeabilities, and duration of pumping.

3. A modified dewatering plan within 24 hours, if open pumping from sumps and ditches results in boils, loss of fines or softening of the ground.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Employ the services of a dewatering specialist or firm having the following qualifications:

1. Have completed at least 5 successful dewatering projects of equal size and complexity and with equal systems within the last 5 years.

C. If subgrade soils are disturbed or become unstable due to dewatering operation or an inadequate dewatering system, notify the Engineer, stabilize the subgrade, and modify system to perform as specified.

D. Notify the Engineer immediately if settlement or movement is detected on structures. If the settlement or movement is deemed by the Engineer to be related to the dewatering, take actions to protect the adjacent structures and submit a modified dewatering plan to the Engineer within 24 hours. Implement the modified plan and repair damage incurred to adjacent structures.

E. Immediately notify the Engineer if oil or other hazardous materials are encountered after dewatering begins.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

1.06 SITE CONDITIONS:

A. Subsurface Conditions: Refer to Division 00.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Provide casings, well screens, piping, fittings, pumps, power and other items required for dewatering system.

B. Provide sand and gravel filter around the well screen. Wrapping geotextile fabric directly around the well screen shall not be allowed.

C. Provide auxiliary dewatering equipment in the event of breakdown. Equipment shall consist of pumps and hoses and be stored on site. Provide at least 1 pump for every 5 pumps used.

D. Provide and maintain erosion and sedimentation control devices as indicated or specified and in accordance with the dewatering plan.

E. Provide temporary pipes, hoses, flumes, or channels for the transport of discharge water to the discharge location.

F. Provide cement grout having a water cement ratio of 1 to 1 by volume.

3.01 INSTALLATION:

A. Execution of earth excavation, installing earth retention systems, and dewatering shall not commence until the related submittals have been reviewed by the Engineer with all

Engineer's comments satisfactorily addressed and the geotechnical instrumentation has been installed.

B. Provide and maintain dewatering system in accordance with the dewatering plan.

C. Carry out dewatering program in such a manner as to prevent undermining or disturbing foundations of existing structures or of work ongoing or previously completed.

D. Do not excavate until the dewatering system is operational.

E. Unless otherwise specified, continue dewatering uninterrupted until all structures, pipes, and appurtenances below groundwater level have been completed such that they will not be floated or otherwise damaged by an increase in groundwater elevation.

F. Discontinue open pumping from sumps and ditches when such pumping results in boils, loss of fines, softening of the ground, or instability of the slopes. Modify dewatering plan and submit revised plan to the Engineer for acceptance.

G. Where subgrade materials are disturbed or become unstable due to dewatering operations, remove and replace the materials in accordance with Section 31 23 33.

H. Dewatering Discharge:

1. Install sand and gravel filters in conjunction with well points and deep wells to prevent the migration of fines from the existing soil during the dewatering operation.

2. Transport pumped or drained water to discharge location without interference to other work, damage to pavement, other surfaces, or property.

3. Provide separately controllable pumping lines.

4. The Engineer reserves the right to sample discharge water at any time.

5. Immediately notify the Engineer if suspected contaminated groundwater is encountered. Do not pump water found to be contaminated with oil or other hazardous material to the discharge locations.

I. Install and maintain erosion/sedimentation control devices at the point of discharge as indicated or specified and in accordance with the dewatering plan.

J. Removal:

1. Do not remove dewatering system without written acceptance from the Engineer.

2. Backfill and compact sumps or ditches with screened gravel or crushed stone wrapped with geotextile fabric in accordance with Section 31 23 33.

3. All dewatering wells shall be abandoned upon completion of the work, and completely backfilled with cement grout.

3.02 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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SECTION 31 23 33

TRENCHING AND BACKFILL

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide trenching and backfill as indicated and in compliance with Contract Documents.

B. Section includes:

1. Trench excavation width and safety.

2. Backfill materials and placement.

3. Utility identification using marking tape and trace wire

4. Soil and aggregate materials.

5. Compaction and testing.

1.02 REFERENCES:

A. American Association of State and Highway Transportation Officials (AASHTO) Publications:

1. M147: Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses.

B. ASTM International (ASTM):

1. C33: Specification for Concrete Aggregates.

2. C150: Standard Specification for Portland Cement.

3. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

4. D75: Standard Practice for Sampling Aggregates.

5. D421: Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants.

6. D422: Test Method for Particle-Size Analysis of Soils.

7. D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3).

8. D1557: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft3).

9. D2321. Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

10. D2419: Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

11. D2434: Standard Test Method for Permeability of Granular Soils (Constant Head).

12. D2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

13. D2488: Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).

14. D2940/D2940M: Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.

15. D4318: Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

16. D4832: Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.

17. D6938: Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

C. Occupational Safety and Health Administration (OSHA) Standards and Regulations:

1. 29 CFR 1926, Subpart P: Safety and Health Regulations for Construction, Excavations.

D. Measurement and Payment: Section 01 29 01

1.03 CLASSIFICATION OF EXCAVATION:

A. Excavation is considered incidental to other work for the entire project and is not classified. Excavation is not classified, except where rock excavation is authorized outside specified or indicated limits of excavation.

1.04 DEFINITIONS:

A. Percent Compaction or Compaction Density: The field dry density of compacted material, expressed as a percentage of the maximum dry density.

B. Field Dry Density or Field Density: In-place density as determined by ASTM D6938 (Nuclear Method).

C. Maximum Dry Density: Laboratory density as determined by ASTM D698 (Standard Proctor) or ASTM D1557 (Modified Proctor) and occurring at the optimum moisture content of the soil being tested.

D. Pipe Embedment: Comprised of the following or combination thereof:

1. Foundation: Required only when the native trench bottom does not provide a firm working platform or the necessary uniform and stable support for the install pipe.

2. Bedding: Placed directly underneath the pipe and brings the trench bottom to grade. Provides a firm, stable, and uniform support of the pipe.

3. Haunching: From bottom of pipe to springline.

4. Initial Backfill: From top of bedding or foundation to 6 inches above top of pipe, unless noted otherwise.

5. Final Backfill: Above the initial backfill to the original or finish grade or to a level below that required for the trench restoration area.]

6. Backfill: Includes initial and final backfill.

1.05 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Temporary excavation and shoring drawings for worker protection in accordance with the Contract Documents.

2. Gradation analysis.

3. Dewatering plan including disposition of groundwater.

4. Materials Sources: Name of source, location, date of sample, sieve analysis, and laboratory compaction characteristics.

5. Test and Evaluation Reports:

a. Field density testing reports: Provide results from field density testing of prepared subgrade and compacted fill.

b. Grain-size analysis.

c. Laboratory compaction characteristics of soils.

d. Water content.

6. Compaction method and removal sequence of shoring.

7. Mix design and test results for controlled low-strength material (CLSM).

1.06 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Sample backfill materials in accordance with ASTM D75.

C. Provide testing in accordance with Part 3 of this section.

1. Employ an independent testing laboratory accredited by the American Associates of State Highway and Transportation Officials (AASHTO) Accreditation Program.

2. Minimum of three years experience in sampling, testing and analysis of soil and aggregates, and monitoring field compaction operations. Minimum of three references from previous work.

D. Protect excavations by shoring, bracing, sheet piling, underpinning or other methods required to prevent cave-in of loose soil. Protection shall be in accordance with OSHA 29 CFR 1926, Subpart.

1.07 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Provide geotextile fabric in rolls wrapped with protective covering to protect geotextile fabric from mud, dirt, dust, and debris. Label each roll of geotextile fabric with number or symbol to identify production run.

C. Protect geotextile fabric from sunlight during transportation and storage. Do not leave geotextile fabric exposed to sunlight for more than two weeks during installation operations.

PART 2 - PRODUCTS

2.01 BACKFILL MATERIALS:

A. Suitable Material: Material from on-site excavation or permitted off-site sources that meets all of the specified requirements for its intended use and is not unsuitable. Wet subgrade material which meets other requirements for suitable material is suitable.

B. Unsuitable Material: Material that fails to meet requirements for suitable materials; or contains any of the following:

1. Organic clay, organic silt, or peat; as defined in ASTM D2487 and visually determined in ASTM D2488.

2. Vegetation, wood, roots, leaves, and organic, degradable material.

3. Stones or rock fragments over 6 inches in any dimension.

4. Porous biodegradable matter, excavated pavement, construction debris, rubbish, or refuse.

5. Ice, snow, frost, or frozen soil particles.

C. Foundation Material: Native material if solid foundation. MDOT 34R-34G if soft foundation or water present. CLSM if stable foundation cannot be achieved with stone.

D. Granular Fill: MDOT 23A crushed limestone.

E. Sand:

1. MDOT Class II granular material free from clay balls, organic matter, and other deleterious substances.

F. Select Borrow:

1. Well-graded, coarse-grained soil; classified in accordance with ASTM D2487.

2. Soil particles: ASTM C33, physical property requirements.

3. Gradation: Table 31 23 33-1.

Table 31 23 33-1

Sieve Designation (Square Mesh)	Percentage Passing (By Weight)
3 inches (75 mm)	100
1-1/2 inches (37.5 mm)	70-100
3/4 inches (19.0 mm)	50-85
No. 4 (4.75 mm)	30-60
No. 50 (300 micrometers)	10-25
No. 200 (75 micrometers)	0-5

G. Controlled Low-Strength Material (LSM):

1. CLSM shall consist of a mixture of portland cement, aggregate, fly ash, water, and admixtures conforming to the following:

a. Portland Cement: ASTM C150.

b. Aggregate: ASTM C33

c. The soluble sulfate content shall not exceed 0.3 percent by dry weight.

d. Water: Potable quality.

e. Water-Cement Ratio: 3.5:1, maximum.

f. Fly Ash: ASTM C618.

g. The minus No. 200 (75 micrometer) sieve fraction shall be non-plastic.

2. Proportion the CLSM to achieve a flowable, non-segregating, self-consolidating non-shrink slurry. The water content shall not exceed that required to provide a mix that will flow, can be pumped, and will maintain the soil in suspension without segregation of the aggregate while being placed. Proportion the aggregate, cement, and water either by weight or by volume. Use as little cement for each cubic yard of material produced as necessary to make the CLSM flowable.

3. The unconfined compressive strength at seven days shall be minimum of 50 psi and a maximum of 100 psi per ASTM D4832.

4. The temperature of the CLSM discharged into the trench shall be below 90 degrees F.

5. Prior to construction, perform trial mixes of the CLSM to verify placing and strength characteristics. Determine compressive strength per ASTM D4832. Notify Engineer at least one week prior to trial mix preparation. Submit mix and test results to Engineer.

2.02 EQUIPMENT:

A. Compaction equipment shall be capable of consistently achieving the specified compaction requirements.

2.03 UTILITY IDENTIFICATION:

A. Marking Tape: Use type specifically manufactured for marking and locating underground utilities. Acid- and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004 inch, minimum strength of 1,750 psi lengthwise and 1,500 psi crosswise. Provide tape manufactured with foil core at least 0.35-mil thick to enable detection by metal detection when tape is buried up to 3 feet deep. Tape shall bear continuous printed inscription describing specific utility. Tape color shall follow APWA ColorCodes and shall be as follows, Blue, Potable water systems.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify that dewatering support systems are in place before commencing with excavation.

B. Verify that excavation safety and support systems meeting the requirements of OSHA 29 CFR 1926, Subpart P are in place before commencing with excavation.

1. Minimum slopes for laying back excavations or materials are contained in OSHA 29 CFR 1926, Subpart P; Appendices A and B.

2. Minimum requirements for shoring and bracing are contained in OSHA 29 CFR 1926, Subpart P; Appendix C.

C. Verify that fill materials submittals have been accepted by Engineer before commencing with work requiring the use of these materials.

D. Verify that erosion and sediment control measures are in place and functioning properly.

E. Immediately notify the Engineer if unexpected subsurface facilities or suspected hazardous materials are encountered during excavation. Discontinue affected work in area until notified to resume work.

3.02 PREPARATION:

A. Contact 811, Michigan No Dig for utility markouts prior to the start of work.

B. Underpin adjacent structures that could be damaged by excavation work.

C. Cut pavement with saw or pneumatic tools to prevent damage to remaining pavement. Dispose of large pieces of demolished pavement before proceeding with excavation.

3.03 PROTECTION OF IN-PLACE CONDITIONS:

A. Comply with the requirements specified in Section 01 14 14.

B. Support and protect from damage – existing pipes, poles, wires, fences, curbs, property line markers, and other features or structures which must be preserved in place to avoid being temporarily or permanently relocated.

C. Excavation Near Existing Structures:

1. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.

2. Excavate test pits near, or at intersection with, existing utilities or underground structures to determine the exact location of existing features.

D. Excavation Near Private Property:

1. Record existing condition of features on adjacent property by means of dated photographs or cameras. Provide construction photographs according to Section 01 32 33.

2. Enclose uncut tree trunks adjacent to work in wooden boxes of such height necessary to protect tree from injury due to piled material, equipment, or operations. Operate excavating machinery and cranes so as to prevent injury to overhanging branches and limbs.

3. Protect cultivated hedges, shrubs, and plants which would otherwise be damaged by the work.

4. Where protection of vegetation is not possible, dig up, temporarily transplant, and maintain. After active construction operations in the area have ceased, transplant vegetation to the original positions and provide water and nursery care until growth is re-established.

5. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces. Provide protection on pavement or tracks if construction traffic is unavoidable.

3.04 RESTORATION:

A. Restore private property and structures promptly. Begin restoration work within 24 hours of when damage occurred.

B. Existing surfaces, features, or utilities that are to remain but are damaged during construction shall be repaired or replaced to at least the condition in which they were found immediately before work began, unless noted otherwise.

C. Damaged Trees To Remain: Cut all damaged branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with an application of grafting wax or tree healing paint. Replace damaged trees which subsequently die or continue to show lack of growth due to damage, one year after substantial completion.

D. Cultivated Vegetation: Includes, but is not limited to: hedges, shrubs, and plants. Vegetation that is damaged shall be replaced with equal kind and of at least the quality before work began.

3.05 TRENCH EXCAVATION:

A. Provide dewatering system to allow for working conditions in dry, stable soil. Properly dispose of water to avoid damage to property and in accordance with laws and regulations. Lower groundwater table prior to excavation and keep a minimum of 24 inches below lowest excavation subgrade until structure has sufficient strength to withstand soil and water pressures.

B. Sheet and brace trenches, excavations, and adjacent structures to comply with laws and regulations and to provide protection of life, property, and the Work. Where close sheeting is necessary, drive to prevent adjacent soil from entering excavation. Remove close sheeting only when removal would not damage property or the Work. Sheeting left in place shall be cut off 18 inches below ground surface.

C. Preserve material below and beyond the lines of excavations.

D. Locate stockpiled excavated material at least 3 feet from edge of excavations to prevent cave-ins or bank slides.

E. Open excavations overnight ae not permitted unless otherwise authorized by the Owner or Engineer. Steel plating shall not be used to protect any open excavations authorized by the Owner or Engineer. Plating shall be a minimum of ¾" thick and be of adequate size to support all legal axle loads. Plating shall overlap existing pavement by at least two feet on all sides of the edge of the excavation.

3.06 AUTHORIZED OVER-EXCAVATION:

A. Remove rock for a depth of 6 inches and backfill with bedding material.

3.07 UNAUTHORIZED EXCAVATION:

A. Contractor is responsible for backfilling unauthorized excavations with bedding material.

3.08 BACKFILL:

A. Fill to lines and grades necessary to provide finish grades.

B. Use a placement method that does not disturb or damage other work or existing features.

C. Maintain fill materials within 3 percent of optimum moisture, to attain required compaction density.

D. Place and compact material in equal continuous layers.

E. Maximum compacted depth is 6 inches for aggregate materials and 8 inches for soil materials, unless noted otherwise.

3.09 CLSM PLACEMENT:

A. Provide batching equipment to obtain the proper weights of soil, cement, water, and admixtures. Measuring devices shall be sensitive to a 2 percent variation above or below the actual weights required. Volumetric batching may be used, provided the same accuracy required for weight batching is maintained.

B. Design and operate the mixers used for mixing the CLSM so that the CLSM, as discharged from the mixer, is uniform in composition and consistency throughout each batch.

C. Place the CLSM so that it flows easily into all openings in the excavated trench. In some cases, such as trenches on a slope, a stiffer mix may be required to prevent it from flowing down the trench. In this case, use vibration to ensure that the CLSM completely fills all spaces.

D. Do not place backfill above the pipe until the CLSM has reached the initial set. Place and maintain a 6-inch cover of moist backfill cover until additional backfill is placed. If the ambient temperature is 50 degrees F or less, place an additional 6-inch cover of backfill over the moist backfill cover prior to the end of the working day.

E. Whenever freezing temperatures are imminent, maintain the CLSM at a temperature of not less than 50 degrees F for 24 hours after placement. The temperature of the mix shall be 50 degrees F or greater at the time of placement. Monitor the temperature by placing a thermometer in the CLSM immediately after sampling at the placement site. When freezing weather appears imminent, make ready at the placement site materials that may be required for protection of the CLSM. Delay placement of CLSM until adequate provisions for protection against weather are made. Do not place CLSM bedding in pipe trenches when the trench bottom or walls are frozen or contain frozen material. Backfill placed as cover over the CLSM is prohibited from containing any frozen material.

3.10 COMPACTION:

A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified, or if not specified - at a level slightly lower than optimum.

B. Compaction Density: Provide trench backfill densities according to Table 31 23 33-2. The values listed are minimum percentages, unless noted otherwise.

Table 31 23 33-2	
Area	Percentage of Maximum Dry Density as defined by ASTM D1557 (Modified Proctor)
Trench Backfill, under pavement, slabs	95
Trench Backfill, under structures or within 25 feet of structures	95
Trench Backfill, through embankment	98
Trench Backfill, under exterior concrete slab and sidewalks	95
Trench Backfill, open or grassed areas	95

3.11 UTILITY IDENTIFICATION:

A. Install marking tape over all site utilities, 12 inches below finish grade.

3.12 FIELD QUALITY CONTROL:

A. Compaction shall be deemed to comply with the specifications when no more than 1 test of any 3 consecutive tests falls below the specified relative compaction. The one test shall be no more than 3 percentage points below the specified compaction. The Contractor shall pay the costs for any retesting or additional testing of work not conforming to the specifications.

B. Where compaction tests indicate a failure to meet the specified compaction, the Contractor will take additional tests every 50 in each direction until the extent of the failing area is identified. Rework the entire failed area until the specified compaction has been achieved.

C. Perform particle size distribution and gradation analyses using ASTM D422 and following standard practices in ASTM D421. Perform one test for every source and submit results to Engineer for acceptance. Repeat the moisture density test for every 5,000 cubic yard of material used.

D. Perform field density testing in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

E. Evaluate field density test results in relation to maximum dry density as determined by testing material in accordance with ASTM D1557 (Modified Proctor).

F. Perform tests in accordance with ASTM D4318 to determine Liquid Limit, Plastic Limit and Plasticity Index and submit test results to Engineer for acceptance. Minimum of one test per 5,000 cubic yard of soil for use as fill material and whenever classification of material is in doubt as determined by the Engineer.

G. Location of field density tests shall be mutually acceptable to testing laboratory and the Engineer as recommended by the Engineer.

H. Frequency of field density tests:

Table 31 23 33-3	
Area	Frequency
Trench (Structural Areas)	1 per lift for every 1,000 linear feet of trench
Trench (Non-Structural Areas)	1 per alternate lift for every 1,000 linear feet of trench
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

I. Owner may retain the services of an independent testing laboratory to conduct confirmatory testing and inspection.

3.13 ADJUSTING:

A. Shrinkage:

1. Backfill to a height above finished grade which will allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least one percent of total height of backfill measured from stripped surface to top of finished surface.

2. Supply specified materials and build up low places, without additional cost if embankment or backfilling settles so as to be below the indicated level for proposed finished surface at any time before final acceptance of the work.

3.14 PROTECTION:

A. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.

3.15 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 31 50 00

EXCAVATION SUPPORT SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide excavation support systems as indicated and in compliance with Contract Documents.

B. Design, furnish and install excavation support systems to maintain lateral support, prevent loss of ground, limit soil movements to acceptable limits and protect from damage existing and proposed improvements including pipelines, utilities, structures, roadways, railroads and other facilities.

C. The requirement of specified excavation support systems does not relieve the Contractor from the responsibility of furnishing and installing proper temporary excavation support systems in other areas where required.

D. Common types of excavation support system include, but are not limited to; singular or multiple stages comprised of cantilevered or internally braced soldier piles and lagging, steel sheetpile wall, timber sheetpile wall, trench box, or combinations thereof. Trench box temporary excavation support system is only acceptable for pipe or utility trench excavations approved by the Engineer. Temporary unsupported open cut excavation with stable sloping sides is allowed in accordance with OSHA requirements.

E. Extraction of steel sheetpile wall, timber sheetpile wall, or solider piles are not permitted unless otherwise indicated, specified or approved by the Engineer.

F. Wherever the word "sheeting" is used in this section or on the contract documents, it shall be in reference to any type of excavation support system specified except trench box.

G. Construction of the excavation support systems shall not disturb the existing infrastructure or the completed proposed infrastructure. Damage to such infrastructure shall be repaired at Contractor’s expense.

H. Adjacent structures are those that are bear upon soils above the proposed excavation depth and within a distance equal to twice the total depth of the excavation away from the closest edge of the excavation. Monitor and protect adjacent structures as specified and indicated.

I. Bear the entire cost and responsibility of correcting any failure, damages, subsidence, upheaval or cave-ins as a result of improper installation, maintenance or design of the excavation support systems. Pay for all claims, costs and damages that arise as a result of the Work performed at Contractor’s expense.

1.02 REFERENCES:

A. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29: Subpart P - Excavations, Trenching and Shoring.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00.

1. Submit the following qualifications four (4) weeks prior to the construction:

a. Qualifications of Contractor's excavation support system designer as specified in Paragraph 1.04.C.

b. Qualifications of Contractor's excavation support system installer as specified in Paragraph 1.04.D.

c. Qualifications of Contractor's excavation support system installation supervisor as specified in Paragraph 1.04.E.

2. Submit an excavation support plan stamped and signed by a Registered Professional Engineer at least two weeks prior to start of the construction. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor remains responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:

a. Proposed excavation support system(s), details, location, layout, depths, extent of different types of support relative to existing features and the permanent structures to be constructed, and methods and sequence of installation and removal.

b. Certificate of Design: Refer to Section 01 33 00.

c. A list of all design assumptions, including safety factors used for the excavation support system(s) and all lateral pressures used for each system.

d. Requirements of dewatering during the construction.

e. Minimum lateral distance from the edge of the excavation support system for use for vehicles, construction equipment, and stockpiled construction and excavated materials.

f. List of equipment used for installing the excavation support systems.

3. Submit a Construction Contingency Plan specifying the methods and procedures to maintain excavation support system stability if the allowable movement of the adjacent ground and adjacent structures is exceeded.

4. For excavation support systems left in place, submit the following as-built information prior to backfilling and covering the excavation support systems:

   a. Survey locations of the excavation support systems, including coordinates of the ends and points of change in direction.

   b. Type of the excavation support system.

   c. Elevations of top and bottom of the excavation support systems left in place.

1.04 QUALITY ASSURANCE:

A. Provide in accordance with Section 01 43 00.

B. Conform to the requirements of the OSHA Standards and Interpretations: "Part 1926 Subpart P - Excavation, Trenching, and Shoring".

C. Prepare design, including calculations and drawings, under the direction of a Professional Engineer registered in the State of Michigan where the project is located and having the following qualifications:

1. Not less than ten (10) years experience in the design of specific excavation support systems to be used.

2. Completed not less than five (5) successful excavation support system projects of equal type, size, and complexity within the last five (5) years.

D. Excavation Support System Installer's Qualifications:

1. Not less than three (3) year experience in the installation of similar types and equal complexity as the proposed system.

2. Completed not less than three (3) successful excavation support systems of similar type and equal complexity as the proposed system.

E. Install all excavation support systems under the supervision of a supervisor having the following qualifications:

1. Not less than five (5) years experience in installation of systems of similar type and equal complexity as the proposed system.

2. Completed at least five (5) successful excavation support systems of similar type and equal complexity as the proposed system.

F. All welding shall be performed in accordance with AWS D1.1.

1.05 DESIGN CRITERIA:

A. Design of excavation support systems shall meet the following minimum requirements:

1. Support systems shall be designed for earth pressures, hydrostatic pressure, equipment, temporary stockpiles, construction loads, roadways, railroads, and other surcharge loads.

2. Design a bracing system to provide sufficient reaction to maintain stability.

3. Limit movement of ground adjacent to the excavation support system to be within the allowable ground deformation as specified.

4. Design the embedment depth below bottom of excavation to minimize lateral and vertical earth movements and provide bottom stability. Toe of braced temporary excavation support systems shall not be less than 5 feet below the bottom of the excavation.

5. Design excavation support systems to withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.

6. The design location of the excavation support wall shall be determined such that the installed wall and bracing system components are all located outside the limits of the permanent infrastructure. Construction tolerances shall be considered in determining the plan location.

1.06 DELIVERY, STORAGE AND HANDLING:

A. Provide in accordance with Sections 01 66 10 and as specified.

B. Store sheeting and bracing materials to prevent sagging which would produce permanent deformation. Keep concentrated loads which occur during stacking or lifting below the level which would produce permanent deformation of the material.

1.07 PROJECT CONDITIONS:

A. Subsurface Conditions: Refer to Section 00 21 13.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Structural Steel: All soldier piles, wales, rakers, struts, wedges, plates, waterstop and accessory steel shapes shall conform to ASTM A36.

B. Steel Sheet Piling: ASTM A572, continuous interlocking type.

C. Timber Lagging Left in Place: Pressured treated per AWPA standards.

D. Concrete: Section 03 30 00.

E. Tamping tools adapted for backfilling voids after removal of the excavation support system.

F. Provide specific trench box sizes for each pipe and utility excavation with structural capacity of retaining soil types as described in OSHA's 29 CFR Part 1926 Subpart P.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Installation of the excavation support systems shall not commence until the related earth excavation and dewatering submittals have been reviewed by the Engineer with all Engineer’s comments satisfactorily addressed.

B. Install excavation support systems in accordance with the excavation support plan.

C. Do not drive sheeting within 100 feet of concrete less than seven (7) days old.

D. Carry out program of excavation support in such a manner as to prevent undermining or disturbing foundations of existing structures of Work ongoing or previously completed.

E. Bottom of the trench box excavation support system shall be above the pipe invert prior to installing the pipe.

F. Notify utility owners if existing utilities interfere with the excavation support system. Modify the existing utility with the utility owner’s permission or have the utility owner make the modifications at Contractor’s expense.

3.02 REMOVAL OF EXCAVATION SUPPORT SYSTEMS:

A. Sheeting shall be left in place unless otherwise indicated.

B. When indicated, remove the excavation support system without endangering the constructed or adjacent structures, utilities, or property. Immediately backfill all voids left or caused by withdrawal of excavation support systems with bank-run gravel, screened gravel or select borrow by tamping with tools specifically adapted for that purpose.

C. The excavation support system left-in-place shall be cut-off a minimum of 2 feet below the bottom of the next higher foundation level or a minimum of 5 feet below finished grade.

D. Conduct survey of the locations and final cut-off elevations of the excavation support systems left in place.

3.03 CONTRACT CLOSEOUT:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 33 05 12

HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This Specification covers the installation of water service pipe by horizontal directional drilling (HDD) for residential connections and local road crossings. Horizontal directional drilling is a trenchless excavation method which is accomplished in two phases. The first phase consists of drilling a pilot hole along a designed directional path. The second phase consists of pulling the pipe into the pilot hole. Horizontal directional drilling is accomplished using a specialized horizontal drilling rig with ancillary tools and equipment.

B. The proposed HDD installations will be part of a lead or galvanized steel pipe replacement program. Addresses of houses where pipes are to be replaced will be provided to the Contractor prior to the start of work and as work progresses.

1.02 SCOPE OF WORK:

A. The work shall be performed in accordance with the Contract Documents and shall include all labor, equipment, and materials necessary to accomplish, but not limited to, the following tasks:

1. Transportation of all equipment, labor, and material to and from each property.

2. Setup of horizontal drilling rig or rod pusher, and other ancillary equipment at each property as defined by the results of vacuum excavation (hydrovac) investigations conducted previously.

3. Drilling the pilot hole along the alignment as defined for the replacement. Using a downhole guidance system, maintain survey control along the entire alignment to ensure compliance with specified tolerances. Survey control shall be by inclination and azimuth of drill bit. In addition, a separate surface tracking system shall be constantly monitoring the depth, location, pitch and roll of the drill bit throughout the full depth and length of the alignment.

4. Reaming the pilot hole, if needed, to a diameter suitable for installation of the fabricated carrier pipe pull section(s).

5. Installation of the pipe section(s) including any necessary joining and capping for the final connections. Final connections of pipeline installations will be done by the Contractor.

6. Transportation and proper offsite disposal of all excess drilling fluid and cuttings.

7. Clean-up and restoration of all work areas.

1.03 REFERENCES:

A. American Petroleum Institute (API): RP 13B-1, 1990. Standard Procedure for Field Testing Water-Based Drilling Fluids, First Edition, Dallas, Texas

B. American Society of Civil Engineers (ASCE):

1. ASCE Manuals and Reports on Engineering Practice No. 108, Pipeline Design for Installation by Horizontal Directional Drilling, Second Edition (2014)

2. Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, ASCE/CI 38-02

C. American Society for Testing and Materials (ASTM): ASTM F2620 – Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

D. Common Ground Alliance (CGA): CGA Best Practices - Version 14.0 "The Definitive Guide for Underground Safety and Damage Prevention"

E. HDD Consortium: Horizontal Directional Drilling Good Practices Guidelines, 3rd Edition

1.04 TEMPORARY WORKSPACE AND ACCESS:

A. Workspace and access are defined by the Engineer.

1.05 QUALITY ASSURANCE:

A. HDD Firm shall have been performing this specialty work for a minimum of 2 years and completed 5 projects of similar complexity successfully within that period.

B. HDD operations shall be performed under the full-time supervision of a drill rig superintendent having the following minimum requirements:

1. Not less than five (5) years experience in HDD projects of similar type and equal complexity as the proposed HDD project.

2. Successfully installed a minimum of 500 water service lines ranging from ¾" to 2" in diameter.

3. Trained and certified at a minimum in the following:

a. OSHA 10-Hour Construction Industry

b. First Aid and CPR

c. Traffic Protection

d. Electrical Awareness

e. Equipotential Bonding and Grounding

C. Horizontal directional drilling shall be conducted in accordance with these specifications and the standards of care for the industry. Refer to the Horizontal Directional Drilling Good Practice Guidelines and the CGA Best Practices.

1.06 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00:

1. The following information shall be submitted:

a. Qualifications of the HDD Firm.

b. Qualifications of the HDD Firm's proposed drill rig superintendent.

c. Qualifications of the HDD rig operator.

d. Safety plan including company safety manual and emergency procedures.

2. All procedures, descriptions, and shop drawings shall be submitted not less than 2 weeks prior to commencing any horizontal directional drilling activities at each site. These include but are not limited to:

a. A detailed schedule and description of procedures for pipe delivery, pilot hole drilling, reaming, testing and pull back.

b. Traffic control plan.

c. Cut sheet of pilot hole location instrumentation/guidance systems.

d. Cut sheet of the drill rig or rod pusher and its pullback and torque capacities.

e. Method of collection, permits required, and location for disposal of all drilled spoils and excess drilling mud.

f. Layout drawings showing: placement of pipe adjacent to streets; locations of topside equipment within the rig side and pipe side workspace.

3. During the HDD operations the Contractor shall submit daily progress reports to the Engineer. The report shall include the work performed, potential conflicts with other aspects of the project, and the progress at the end of each day.

4. Construction Contingency Plan specifying the methods and procedures to overcome construction hazards, such as, but not limited to: damage to all adjacent

utilities (i.e., water, drainage); encountering subsurface obstructions during pilot hole drilling and pipeline pull-back; pipeline misalignment (horizontal/vertical); drilling mud loss, hole collapse, pipe collapse, sinkholes in the overburden soils.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Provide ¾" to 2-inch Type K copper pipe as required or as directed by the Engineer.

B. All other materials required for construction shall also be supplied by Contractor.

2.02 WATER:

A. The Contractor shall be responsible for obtaining any water required. Provide documentation from the water supplier authorizing use or withdrawal of the water. Contractor is responsible for any payments required for the use and withdrawal of water.

2.03 INSTRUMENTATION:

A. Contractor shall at all times provide and maintain a tracking system which will accurately locate the pilot hole, measure drill string axial and torsional loads, and measure drilling fluid discharge rate and pressure. The Engineer shall have access to these instruments and their readings at all times.

PART 3 - EXECUTION

3.01 PROTECTION OF UNDERGROUND UTILITIES:

A. Contractor shall undertake the following steps prior to commencing drilling operations in a location which may contain underground facilities.

1. Contact 811, Michigan No Dig for utility markouts prior to the start of work.

2. Positively locate and stake all existing lines, cables, or other underground utilities including exposing any facilities which are located within 10 feet of the designed drilled path.

3. Modify drilling practices and downhole assemblies to prevent damage to existing utilities. Where in doubt as to locations of buried structures, conduct additional potholing as required to identify the location of existing infrastructure.

B. The Contractor shall, at no additional cost to the Owner, be responsible for repairing any utility or structure which is damaged during construction activities.

3.02 PILOT HOLE:

A. Conduct drilling operations using materials and equipment in accordance with HDD Consortium, Horizontal Directional Drilling Good Practices Guidelines. Operator's log book shall include as a minimum:

1. Pipe installation number or street address.

2. Depth of bore path start, midway, and finish.

3. Pitch and steering commands required.

4. Notes including obstructions or other performance observations.

B. Record Drawing: Contractor shall provide a drawing and a tabulation of coordinates, referenced to the drilled entry point, which accurately describes and documents the location and type size of each pipeline installed by HDD methods.

3.03 PULL BACK:

A. Pull Back: The pipe shall be pulled back in a continuous non-stop operation in order to prevent the pipe from seizing.

B. Pulling Loads: The maximum allowable tensile load imposed on the pipe pull section shall be equal to 50 percent of the specified minimum yield strength of the pipe.

C. Torsional Stress: A swivel shall be used to connect the pull section(s) to the reaming assembly to minimize torsional stress imposed on the section(s).

D. Pull Section Support: The pull section(s) shall be supported throughout the entire pull back procedure so that the pull section(s) move freely above and below ground such that the pipe is not damaged.

E. External Collapse Pressure: The pull section shall be installed in the reamed hole in such a manner that external pressures are minimized. Any damage to the pipe resulting from external pressure during installation shall be the responsibility of Contractor.

3.04 DRILLING FLUID CONTROLS:

A. Composition: The composition of all drilling fluids proposed for use shall be in accordance with API Specification 13A; API Recommended Practice 13B; and API Bulletin 13D and submitted. No fluid shall be utilized that does not comply with permit requirements and environmental regulations.

B. Recirculation: May be used at the Contractor's discretion, but is not required.

C. Disposal: Disposal of excess drilling fluids shall be the responsibility of Contractor and shall be conducted in compliance with all environmental regulations, right-of-way and

workspace agreements, and permit requirements. Procedures for the disposal of drilling fluids shall be submitted to the Engineer for review.

D. Inadvertent Returns: Contractor shall employ his best efforts to maintain full annular circulation of drilling fluids. Drilling fluid returns at locations other than the entry and exit points shall be minimized. In the event that annular circulation is lost, Contractor shall take steps to restore circulation. Inadvertent surface returns of drilling fluids shall be immediately contained with hand placed barriers (i.e. hay bales, sands bags, silt fences, etc.) and collected using pumps as practical. If the amount of the surface return is not great enough to allow practical collection, the affected area shall be diluted with fresh water and the fluid will be allowed to dry and dissipate naturally.

E. Small collection sumps less than 5 cubic yards may be used if the amount of surface return exceeds that which can be contained with hand placed barriers. If the amount of surface return exceeds that which may be contained and collected using small sumps, drilling operations shall be suspended until surface return volumes are controlled.

F. Inadvertent Depressions, Sinkholes, Loss of Ground or Support for Adjacent Utilities: Contractor shall be responsible for backfilling all lost ground and adjacent streets such that emergency vehicle access is maintained 24-hours a day. Utilities shall be supported to maintain their function.

3.05 JOINING PIPE SECTIONS

A. Contractor will not be permitted to use multiple segments of pipe to complete the new service line installation. Contractor shall use a single continuous segment of copper piping to complete all water service line replacements.

3.06 FIELD TESTING:

A. Keep detailed records where provided by independent testing agency; otherwise, all testing shall be done in the presence of the Engineer.

B. Drilling mud testing shall be in general accordance with the equipment and procedures identified in API RP13B.

3.07 CONTRACT CLOSEOUT:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 33 10 00

WATER UTILITIES AND SERVICE CONNECTIONS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Pipe and fittings for water distribution piping including municipal distribution piping and residential service lines, accessories and appurtenances.

1.02 REFERENCES:

A. American National Standards Institute (ANSI)

1. NSF Standard 61: Drinking Water System Components – Health Effects

B. American Society of Mechanical Engineers (ASME):

1. B16.1: Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.

2. B16.18: Cast Copper Alloy Solder Joint Pressure Fittings.

3. B16.22: Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

C. ASTM International (ASTM):

1. A53: Standard Specifications for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

2. A126: Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

3. A307: Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

4. A536: Standard Specification for Ductile Iron Castings.

5. A743: Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.

6. B88: Standard Specification for Seamless Copper Water Tube.

D. American Water Works Association (AWWA):

1. C104/A21.4: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

2. C105/A21.5: Polyethylene Encasement for Ductile-Iron Pipe Systems.

3. C110/A21.10: Ductile Iron and gray Iron Fittings, 3 Inch Through 48 Inch for Water and Other Liquids.

4. C111/A21.11: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

5. C116/A21.16: Protective Fusion Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron fittings for Water Supply Service.

6. C150/A21.50: Thickness Design of Ductile Iron Pipe.

7. C151/A21.51: Ductile-Iron Pipe, Centrifugally Cast, for Water.

8. C153/A21.53: Ductile Iron Compact Fittings, 3-Inch through 24-Inch and 54-Inch Through 64-Inch for Water Service.

9. C500: Metal-Seated Gate Valves for Water Supply Service.

10. C509: Resilient-Seated Gate Valves for Water Supply Service.

11. C550: Protective Interior Coatings for Valves and Hydrants.

12. C600: Installation of Ductile-Iron Water Mains and Their Appurtenances.

13. C602: Cement-Mortar Lining of Water Pipelines in Place - 4 in. and Larger

14. C651: Disinfecting Water Mains

15. C800: Underground Service Line Valves and Fittings.

16. C810-17: Replacement and Flushing of Lead Service Lines

E. United States Environmental Protection Agency (EPA)

1. EPA Guidance: Steps to Lead Safe Renovation, Repair and Painting

F. Factory Mutual (FM):

1. FM Approved: Factory Mutual Approval Guide.

G. NSF International (NSF):

1. 61: Drinking water system components Health effects

1.03 DEFINITIONS:

A. Appurtenances: Additional piping items as required to provide a complete piping system suitable to convey water as specified and intended. These items may or may not be specified, but are necessary to complete the piping system.

1.04 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Pipe materials.

2. Pipe fittings.

3. Pipe couplings.

4. Pipe thrust restraint.

5. Valves.

6. Accessories.

7. Appurtenances.

8. Water purity test results indicating chlorine residual.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Instructions: Provide manufacturer's installation instructions for pipe, valves, curb stops and boxes, corporation stops, and copper water service piping.

D. Field Test Reports: Provide results for hydrostatic and bacteriological tests.

E. Project Record Documents: Provide actual locations of piping mains, valves, connections, curb boxes, corporation stops, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

F. Health and Safety Plan for all work occurring on site. Plan should include information related to site safety protocols, confined space entry, emergency conditions, and general conformance with OSHA and MiOSHA requirements.

1.05 SPARE PARTS:

A. Comply with the requirements specified in Section 01 61 00.

1.06 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Perform Work in accordance with Owner standards.

C. Contractor shall perform all service line replacement work in accordance with AWWA C810-17: Replacement and Flushing of Lead Service Lines.

D. Valves: Manufacturer's name, UL/FM and pressure rating marked on valve body.

E. Materials used shall comply with American Iron and Steel (AIS). Materials specified that do not comply with AIS shall not be used.

1.07 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. During loading, transportation and unloading, prevent damage to pipes and fittings. Load and unload each pipe under control at all times. Under no circumstances will a dropped pipe be used unless inspected and accepted by Engineer. Place skids or blocks under each pipe in the shop and securely wedge pipe during transportation.

C. Deliver and store valves in shipping containers with labeling in place.

1.08 WARRANTY:

A. Provide standard product warranties for piping materials and as required by Owner.

PART 2 - PRODUCTS

2.01 WATER PIPE:

A. General:

1. Fittings: Suitable for and compatible with pipe material and class with which they are used.

2. All material for watermains shall be NSF/ANSI 61 compliant.

B. Ductile Iron Pipe and Fittings:

1. Manufacturers: U.S. Pipe, Clow, American, or acceptable equivalent product.

2. Thickness design conforming to AWWA C150 / A21.50.

3. Pipe: AWWA C151 / 21.51, Pressure Class 350 for mechanical and push on joints in buried service. Minimum thickness Class 52.

4. Fittings: Ductile iron, AWWA C110 / A21.10 or C153 / 21.53, match wall thickness of adjacent pipe.

5. Joints: AWWA C111 / A21.11, rubber gasketed for push-on or mechanical joint.

6. Lining: Double thickness cement mortar conforming to AWWA C104 / 21.4.

7. Exterior Coating: Asphaltic coating, AWWA C151 / A21.51, for buried pipe and fittings.

8. Jackets: AWWA C105 / A21.5 polyethylene jacket.

9. Bolts and Nuts:

   a. Tee head bolts and hexagonal nuts: AWWA C111 / A21.11.

   b. Number, size, and length: AWWA C111 / A21.11.

   c. Material: Type 316 stainless steel.

C. Copper Tubing

1. ASTM B 88, Type K, annealed, supplied in a continuous coil with no joints if possible, and complete with, if joints are required, compression type flared joint couplings.

2. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.

3. Joints: Compression connection or AWS A5.8, BCuP silver braze.

4. Only lead-free solder shall be used.

5. Working Pressure: Minimum of 100 psi.

2.02 VALVES:

A. Gate Valves:

1. Manufacturers: Mueller or East Jordan Iron Works.

2. Valves to conform to NSF Standard 61.

3. AWWA C509 or C515, iron body, bronze trim, non-rising stem with square nut and right-hand open direction.

4. Single wedge meeting ASTM A536 with resilient seat.

5. Mechanical joint ends.

6. Conventional packing or double O rings. Valves capable of being repacked or O-rings replaced while under pressure.

7. Type 316 stainless steel bolts and bronze nuts for stuffing box follower.

8. Internal and external wetted parts to be coated with a fusion bonded epoxy in accordance with AWWA C550.

9. Provide one operating wrench of length to operate deepest valve.

B. Ball Valves:

1. Manufacturers: Nibco, NCI, or acceptable equivalent product.

2. Class 600, 1,000 psi WOG rated full port ball type valves, each complete with a forged brass or bronze body with compression inlet and outlet ends, forged brass cap and blowout-proof stem, solid forged brass Teflon coated ball, rubber seats and stem seals, and a removable lever handle.

3. Valves shall be up to 2 inches. Ball valves greater than 2 inches are unacceptable.

2.03 MANUAL OPERATORS:

A. Operator force not to exceed 40 lbf under any operating condition, including initial breakaway. Gear reduction operator when force exceeds 40 lbf.

B. Operator to be self-locking type or be equipped with self-locking device.

C. Worm and gear operators to be one-piece design worm-gears of gear bronze material. Worm hardened alloy steel with thread ground and polished. Traveling nut type operators to have threaded steel reach rods with internally threaded bronze or ductile iron nut.

D. Buried service operators on valves shall have a 2-inch AWWA operating nut. Enclose moving parts of valve and operator in housing to prevent contact with the soil.

E. Buried valves shall have extension stems, bonnets, and valve boxes.

2.04 VALVE BOXES:

A. Manufacturers: Tyler Pipe or acceptable equivalent product.

B. Provide cast-iron valve boxes, rated for vehicular traffic.

C. Extension type with slide-type adjustment, flared base and 3/16-inch minimum thickness of metal.

D. Cast the word “WATER” in cover. Adapt box length, without full extension, to depth of cover required over pipe at valve location.

2.05 BEDDING AND COVER MATERIALS:

A. As specified in Section 31 23 33.

2.06 THRUST RESTRAINT:

A. Mechanical Joint Restraint

1. Manufacturers: Ebba Iron Megalug or acceptable equivalent product.

2. Restraint devices for pipe consisting of multiple gripping wedges incorporated into a follower gland meeting requirements of AWWA A21.10.

   a. Mechanical joint restraint shall require conventional tools and installation procedures per AWWA C600, retaining full mechanical joint deflection during assembly and allowing joint deflection after assembly.

   b. Provide actuation of the gripping wedges ensured with torque limiting twist off nuts.

   c. Provide restraint devices listed by UL, 3 inch through 24 inch size and designed by Factory Mutual, 3 inch through 12 inch size.

3. 350 psi working pressure rating with 2 to 1 minimum safety factor

4. Gland body, wedges and wedge actuating components: Grade 65-45-12 ductile iron in accordance with ASTM A536.

5. Mechanical joint restraint incorporated into the design of the follower gland.

B. Push-On Restrained Joint Pipe: Provide joint restraint and conforming joint to AWWA C111/21.11, fabricated to be easily disassembled. Provide assembly and disassembly kits.

2.07 MECHANICAL COUPLINGS:

A. Manufacturer: Smith-Blair or acceptable equivalent product.

B. Dresser Style 38, long sleeve unless otherwise shown or specified. Pressure rating at least equal to that of associated pipeline.

2.08 ACCESSORIES:

A. Tapping Sleeves: Ductile- or cast-iron, split-sleeve type with flanged or grooved outlet, and with bolts, follower rings and gaskets on each end of sleeve suitable for maximum working pressure of 150 psi. Bolts shall be Type 304 stainless steel with square heads and hexagonal nuts. Longitudinal gaskets and mechanical joints with gaskets shall be as recommended by manufacturer of sleeve. Comply with AWWA C223

B. Tapping Valves: Provide tapping valves that conform to gate valves, specified herein. Provide tapping valves suitable for installation with tapping sleeves and pipe used, designed for minimum water working pressure of 150 psi, and have clear waterway equal to full nominal diameter of valve. Ends to comply with ANSI B16.1, Class 125.

C. Tapping saddles shall have ASTM A395 ductile iron body and Type 316 stainless steel straps and hardware.

D. All new fittings and accessories shall be 100% lead-free.

E. Corporation Stops

1. Manufacturers: Ford Meter.

2. Standard corporation stop thread conforming to AWWA C800 on the inlet end, with compression pattern flared tube coupling.

F. Service (Curb) Stops

1. Manufacturers: Ford Meter.

2. Water-works inverted-ground-key type, oval or round flow way, tee handle, without drain.

G. Tapping Saddles

1. For 4" diameter and smaller water mains.

2. Manufacturers: Smith-Blair or approve equal.

3. Saddle will comply with AWWA C800 and NSF61. Body shall be ductile iron meeting ASTM A536. Outlet to be threaded NPT and gasket shall be Buna-N conforming to NSF 61.

4. Single mounting straps shall be at least 2" while. Multiple straps shall each be 1-½" wide.

5. Bolts, nuts and washers shall be Type 304 stainless steel coated to protect from galvanic corrosion

6. Pressure rating of saddle shall meet or exceed rating of existing or new piping.

H. Parts shall be bronze with female compression-pattern flared tube coupling design for hydrostatic test pressure at least 200 psi.

I. Service Boxes: Cast iron box by Tyler Pipe. Service boxes shall be extension type of length required for depth of line, with either screw or slide-type adjustment. Boxes shall have housings of sufficient size to completely cover service stop or valve and shall be complete with the word "WATER" cast into the cover.

2.09 DISINFECTION CHEMICALS:

A. Refer to Section 33 13 00.

2.10 APPURTENANCES:

A. Provide appurtenances for a complete piping system suitable for operation, and in conformance with Project Documents.

2.11 SHOP PAINTING/COATINGS:

A. Unless noted otherwise, provide standard manufacturer paint and coatings for piping, valves, and accessories to prevent corrosion for the life of the component.

2.12 SHOP TESTING:

A. Test pipes, valves, and applicable accessories per manufacturer requirements, and as required by referenced Standards.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify existing conditions.

B. Mark pipe and fittings "Rejected" and remove from site when cracked or has received a severe blow.

3.02 PREPARATION:

A. Contact 811, Michigan No Dig for utility markouts prior to the start of work.

B. Ream pipe and tube ends and remove burrs.

C. Remove scale and dirt, on inside and outside, before assembly.

D. Prepare pipe connections to equipment with flanges or unions.

E. Machine cut with milling type cutters, knives, or saws. Chamfer cut ends of cut segments. Cutting by means of snap cutters, torch, or hammer and chisel is not allowed. Examine for possible cracks after cutting. Reject cracked sections of pipe.

F. Excavate pipe trench in accordance with Section 31 23 33 for work of this Section. Hand trim excavation for accurate placement of pipe and to remove soil from other nearby utilities.

3.03 WATER PIPE INSTALLATION:

A. Maintain separation of water main from sewer as follows:

1. Parallel Installation

a. Under normal conditions water mains shall be laid at least 10 feet horizontally from a sewer or sewer manhole. The distance shall be measured edge-to-edge.

b. Under unusual conditions when local conditions prevent a horizontal separation of 10 feet the water main may be laid closer to a sewer or sewer manhole provided that the bottom (invert) of the water main shall be at least 18 inches above the top (crown) of the sewer;

c. Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved water pipe, pressure tested in place without leakage prior to backfilling; and

d. The sewer manhole shall be of watertight construction and tested in place.

2. Crossing

a. Under normal conditions water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer whenever possible

b. Under unusual conditions when local conditions prevent a vertical separation described, the following construction shall be used:

(1) Sewers passing over or under water mains shall be constructed of AWWA approved water pipe, pressure tested in place without leakage prior to backfilling;

(2) Water lines passing under sewers shall, in addition, be protected by providing:

(a) A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line;

(b) Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the waterline; and

(c) That the length of the water line be centered at the point of the crossing so that joints shall equidistant and as far as possible from the sewer.

c. No water pipes shall pass through or come in contact with any part of a sewer manhole.

B. Before assembly, remove dirt and chips from inside pipe and fittings.

C. Install ductile iron piping and fittings to AWWA C600.

D. Joints and Couplings

1. Push-on Joints

a. Insert gasket into groove bell. Apply thin film of nontoxic gasket lubricant over inner surface of gasket in contact with spigot end.

b. Insert chamfered end into gasket. Force pipe past it until it seats against socket bottom.

2. Mechanical Joints

a. Wire brush surfaces in contact with gasket and clean gasket.

b. Lubricate gasket, bell, and spigot with soapy water.

c. Slip gland and gasket over spigot, and insert spigot into bell until seated.

d. Seat gasket and press gland firmly against gasket.

e. After bolts inserted and nuts made finger-tight, tighten diametrically opposite nuts progressively and uniformly around joint by torque wrench.

E. Form and place concrete for thrust blocks at each fitting or change of direction of pipe main.

F. Establish elevations of buried piping to ensure not less than 4-feet of cover.

G. When pipe laying not in progress, close open ends of pipe with temporary watertight plugs. If water in trench, do not remove plug until danger of water entering pipe passed.

H. Backfill trench in accordance with Section 31 23 33

3.04 VALVE INSTALLATION:

A. Set valves on solid bearing.

B. Center and plumb valve box over valve. Set box cover flush with finished grade.

C. Install tapping sleeves and tapping valves in accordance with manufacturer's recommendations.

D. Install valves according to applicable AWWA Standards.

E. Set box so top is flush with finished surface and so box does not bear on valve, or pipe.

3.05 SEWER LATERAL INSPECTION

A. Contractor shall be required to video document the condition of each residential sewer lateral prior to the start of any service line replacement or related work.

B. Documentation may be made from the house to the connection at the municipal sewer using a lateral push camera or the inspection may be made from the municipal sewer to the house using a lateral camera launched from a CCTV inspection camera located within the municipal sewer. Inspections starting at the house will be completed from a cleanout outside of the house. The inspection will be completed from the municipal sewer to the house if no external cleanout exists.

C. The camera equipment will be provided with a suitable distance-reading device to measure the location of the camera in the lateral, to an accuracy of ±0.5% of the length of the inspection.

D. Inspection video shall be a high-definition, color inspection MPEG for verification of existing internal sewer line conditions. The camera shall be provided with a light to adequately illuminate the interior of the pipeline during inspection.

E. The Contractor shall utilize a camera that has sufficient cable to provide a complete and continuous inspection in a single direction. No breaks, stops or pauses of the video during recording will be permitted.

F. If the inspection cannot be completed in a single direction due to an existing defect in the pipeline or because of bends or changes in direction that do not allow the camera to pass, a reversal inspection from the opposite end of the sewer lateral will be attempted.

G. Contractor will only be required to video document the condition of the sewer lateral. Defect coding of observations made during the documentation process are not required.

H. Contractor shall direct the camera through the lateral at a rate that will permit the condition within the lateral to be fully observed. Rate of inspection shall not exceed 0.50 ft / sec (30 ft / min).

I. The Contractor will notify the Engineer immediately when emergency condition such as a collapsed, surcharged or blocked sewer is observed.

J. Removal of Equipment that Becomes Stuck in the Sewer

1. Contractor is fully responsible for the inspection of the lateral. The Contractor should terminate the inspection if, in the Contractor's opinion, the camera may become lodged in the pipe due to a defect, change in direction, or other reason. The Contractor will be responsible to remove equipment stuck in the lateral at no additional cost to the Owner.

2. Notify the Engineer immediately if equipment becomes lodged within the sewer lateral.

3. Contractor shall initially attempt to remove such equipment for at least 1 hour. Following this initial attempt, advise the Engineer if the equipment cannot be freed and mark the position on the surface over the sewer where the equipment is lodged.

4. The Engineer will communicate to the property owner and the Owner, that the equipment cannot be freed and the need to arrange to have an excavation made to remove the equipment. The Contractor will be responsible for coordinating recovery efforts with the property owner and the Engineer. The Contractor will arrange to have an excavation made to remove the equipment within 1 hour after ending an initial attempt at removing the equipment without using excavation methods.

5. Refer to "Sewer Lateral Repair" below for additional information.

6. Upon removing the equipment and if necessary, repairing the lateral, Contractor shall repeat inspection of the lateral in accordance with the Contract Documents. No additional compensation will be made for reinspection of the sewer line as a result of the Contractor's equipment becoming stuck, and subsequently being removed, from the sewer lateral.

7. The Contractor shall not receive any additional compensation for equipment recovery and / or replacement costs, equipment and labor downtime, other incidental costs, work delays, re-mobilization, or re-scheduling of work should the equipment become stuck.

K. Submit video documentation in an MPEG format on a weekly basis and within 10 working days of inspection. Failure to submit video documentation will result in payment for this work item being withheld from the Contractor's payment application with no additional compensation being made by the City for withholding payments to the Contractor. Submission of poor quality documentation that does not allow for reasonable viewing, in the opinion of the Engineer, of the conditions within the sewer will be rejected. The Contractor will be required to re-televise and document the condition of the sewer lateral with no additional compensation being made for this rework.

L. Video files shall be submitted to the Engineer on an external hard drive or data stick. Inspection video will be saved with the file name of "XXX_YYYY.Z" where:

1. XXX represents the house number

2. YYYY represents the street name. Use only a 2-letter acronym to designate the word "Street", "Avenue", "Road", etc. No space(s) will be placed in the street name.

   a. St – Street

   b. Av – Avenue

c. Rd – Road

d. Bd – Boulevard

e. Ay – Alley

f. Wy - Way

3. Z represents the video number. Use "1" for the initial inspection effort and "2" for the subsequent reversal inspection, if necessary.

4. Example: Complete video inspection of the sewer lateral at 123 Main Street. File name will be "123_MainSt.1".

   Example: Partial video inspection of the sewer lateral at 123 Main Street where the initial inspection was abandoned because of a defect in the line. File name will be "123_MainSt.1" for the initial inspection video file and "123_MainSt.2" for the subsequent reversal inspection video file.

3.06 SEWER LATERAL REPAIR

A. Damaged segments of the residential sewer lateral will be replaced as exposed during the service line replacement work.

B. The lateral will be repaired using SDR 26 PVC pipe and a flexible Fernco coupling to connect the new piping to existing.

C. New piping will be of the same nominal diameter as existing.

D. Prior to final connection, Contractor will flush the sewer line to remove backfill and debris that may have entered the sewer during repair of the sewer.

E. Repair, backfill, and surface restoration will be completed in the same day.

F. The Contractor will not receive compensation for repair of sewer lateral piping observed during the lateral inspection to be in a structurally competent condition that is damaged by the Contractor during the replacement of water service lines.

3.07 WATER SERVICE LINE CONNECTIONS AND REPLACEMENT:

A. Residential Notifications

1. The Engineer will coordinate the initial notification to homeowners whose service line were determined to be lead, galvanized or other non-copper material and will need to be partially or completely replaced. This initial notification will request permission to replace the service line.

2. Up to two subsequent follow-up notification efforts will be made by the Engineer, as necessary, in an attempt to obtain authorization to replace the service line. The Engineer will document the efforts to obtain the authorization.

3. The Contractor is required to provide support to the Engineer, as necessary, to obtain authorization to replace the service line.

B. The Contractor shall coordinate work with the Engineer and local residents in order to minimize disruptions to residents and provide as much advance notice as possible with regard to upcoming work.

C. The Contractor will be responsible to document pre-construction conditions at each work site.

D. Service Line Replacement – General

1. Definitions

a. Complete replacement: Replacement of the entire service line, including curb stop and box, from the corporation stop at the municipal water main to the existing curb stop and from the existing curb stop to the water meter inside the residence.

b. Partial replacement, public side: Replacement of the entire service line, including curb stop and box, from the corporation stop at the municipal water main to the existing curb stop.

c. Partial replacement, private side: Replacement of the entire service line, including curb stop and box, from the existing curb stop to the water meter inside the residence.

2. The Engineer will provide the Contractor with a database of information collected during the Phase V Hydrovac Contract. This database will provide guidance to the Contractor regarding the extent, full or partial replacement, of the service line replacement work to be completed.

3. Prior to starting the replacement work, the water supply to the service line and the residence shall be shut off to avoid release of particulate lead into the house caused by vibration of the service during any excavation. The service line to be removed shall be isolated by shutting off appropriate valves at each end of the area to be removed.

4. Saw cut square and remove existing concrete or bituminous material as necessary or directed by the Engineer to facilitate service line replacement. Sidewalks and driveways, as applicable, will be cut at the nearest construction or control joint.

5. Contractor shall utilize appropriate trench and excavation shoring.

6. Contractor shall protect existing utilities and sewer lateral during the work. The Contractor will be responsible to repair any utilities damaged or disrupted during the work at no additional cost to the Owner.

7. Contractor is required to remove any fully exposed lead, galvanized or other non-copper service line material and associated fittings that are not scheduled to be used as part of the active service line. Existing service line material and associated fittings not exposed during the service line replacement work may be abandoned in place. Waste material shall not be buried on-site. Contractor is required to remove, transport and properly dispose of all waste materials at an off-site facility. Contractor is responsible for all permits and fees associated with the removal and disposal of waste material.

8. New service line pipe shall be measured and placed with enough material to replace existing service line piping with a single continuous piece of pipe. Contractor shall not use couplings to connect multiple pieces of pipe to form a single run of pipe.

9. Provide water service components, including corporation stop, Type K copper pipe, curb stop, curb box, and required fittings and couplings.

10. New corporation stops, curb stops and curb boxes will be installed. Existing curb stops and boxes will be removed and disposed of by Contractor. Existing corporation stops will be closed and abandoned in place.

11. New water service piping shall be installed from curb box to the house using horizontal directional drilling (HDD) methods. Work from the municipal water main to the curb box shall be completed using open cut and HDD methods as site conditions dictate.

    a. Contractor may need to use an intermediate HDD launching / receiving pit in the event of an extremely long service line or the presence of existing utilities.

12. New water service piping shall be installed with a minimum of four feet of cover.

13. Contractor shall provide and install fittings as required to make connections between new and existing infrastructure.

14. Contractor shall place a common masonry brick under the new curb stop such that the curb stop rests on top of the brick and is provided with a stable foundation.

15. In order to reduce the amount of material displacement and lead particulate, Contractor shall use a pipe cutter or similar shearing device to cut lead and galvanized service lines as opposed to a tool that would use a sawing or other abrasive action.

16. Contractor shall be equipped with appropriate safety equipment when working with lead and galvanized piping.

17. Wall Penetration

    a. Contractor will penetrate the wall of the house from the inside to the outside in order to install new service line.

    b. Upon installation of new service line, contractor will seal the wall penetration with a non-shrink grout to ensure that no groundwater is able to pass through the opening made for the service line. The penetration will be sealed on both the inside and outside of the wall.

18. Install a sampling port upstream of the meter that will allow a water sample to be collected. The port will consist of a tee fitting with a ball valve on the downstream (between the tee and the meter) run side of the tee and another ball valve along the branch side of the tee. Install short segments of copper piping as required to facilitate construction of the sampling port and installation of the ball valves.

19. After all required piping has been replaced and connections have been completed, flush the water from an outside connection (such as hose-bib or hose leading from the house side of the meter installation) to remove any particles in the service line and near point-of-entry. The flushing is best done, if possible and practical, before the meter is connected in the service using a "jumper" or straight pipe in place of the meter. The straight pipe will allow for a higher velocity flush and protects the meter from potential damage from lead pipe and other construction-related fragments. Flush at full velocity for at least 10 minutes.

20. Restoration

    a. Temporary restoration was completed by the hydrovac contractor when lead, galvanized, or other non-copper material was observed at the curb stop or confirmed inside the home. This observance dictates that the service line be replaced. Areas of temporary restoration will be disturbed only to the extent necessary to complete the work.

    b. Restoration will not occur until the service line is either partially or completely replaced. Restoration of disturbed areas will be the responsibility of the service line Contractor.

    c. The hydrovac contractor is required to maintain the temporary restoration until the property is assigned to a service line replacement contractor. Upon assignment, the service line Contractor will be responsible for the maintenance of the existing temporary restoration until the service line is replaced and the disturbed area restored. The service line Contractor should notify the Engineer if the temporary restoration has not been adequately maintained by the hydrovac contractor. The Engineer will make a determination with regard to further temporary restoration by the hydrovac

contractor or acceptance of the temporary restoration in an "as-is" condition by the service line Contractor.

d. Upon completion of the service line replacement, restoration will consist of crushed stone in areas where roadway, sidewalk and driveway were removed and full depth sand backfill of excavations in grassed areas. Similar materials will be used by the service line Contractor to maintain these areas until final restoration is completed.

e. Final restoration of pavement, concrete or grassed areas will be completed under a separate contract. The service line contractor will be responsible to maintain site restoration until the restoration contract is awarded to a new contractor.

21. The Contractor shall not backfill the excavation until the Engineer has recorded a photograph of the service line replacement work and the installation has been approved by the Owner.

E. Permits

1. The Contractor will be required to obtain, pay for, and maintain all permits as required by local, state and federal rules, regulations and laws. The City of Flint will not charge a fee for permits. The following permits are either anticipated or may need to be acquired to complete the work.

a. Traffic Control: Maintenance and rerouting of traffic and closing streets in order to maintain a safe and efficient work area. Contractor will be required to coordinate detours and road closures with the Owner and local emergency services dispatcher on a weekly basis.

b. Plumbing: Moving the residential water meter more than two feet in any direction inside the home after replacing the private side of the service line.

c. Excavation / Street Cut: Excavation and street cut work is conducted in a City of Flint street.

d. Water Services

e. Disposal: Disposal of waste material.

f. SHPO: Work occurring in the SHPO Zone of the City. An archaeologist will be on site to inspect excavations in this area. No backfill of the excavation will be completed without the archaeologist's approval. Contractor should plan and price the work in this area accordingly

3.08 LEAD PAINT PROTECTION:

A. Contractors are required to use lead safe work practices when working in homes constructed before 1978.

B. All power tools used must be equipped with a high-efficiency particulate air (HEPA) exhaust control to collect dust generated during the completion of the work.

C. Contractor shall contain the work area to prevent the escape of dust and debris.

1. The work area is the area that may become contaminated during the work. The size of the work area may vary depending on the method used to disturb lead-based paint and the amount of dust and debris that is generated as a result. The work area must be protected by plastic sheeting applied to the floor, ground or other applicable surfaces to prevent contamination of the home or exterior, from dust generated by the work.

2. The EPA's Renovation, Repair and Painting Rule requires that the work area be protected by plastic sheeting that extends a minimum of 6 feet for interior projects and 10 feet for exterior projects in all directions from the location where paint will be disturbed. For exterior renovations within 10 feet of the property line, vertical containment or equivalent extra precautions are required. The Rule further requires that protective plastic sheeting extend far enough from the location of paint disturbance so that all dust or debris generated by the work remains within the area protected by the plastic. The entire portion of the home or exterior that is protected by plastic sheeting, however large, is the work area.

3. Clearly post warning signs and establish barriers (tape, fencing, etc.) to prevent unauthorized persons and pets from entering the work area. Signs should be in the primary language of the occupants and contain the text "Warning – Lead Work Area" and "Poison, No Smoking or Eating".

D. Work Inside the House

1. Remove all objects from the work area, including furniture, rugs, and window coverings, or cover them with plastic sheeting with all seams and edges taped or otherwise sealed.

2. Cover the floor, including carpet, with taped-down plastic sheeting in the work area 6 feet from the area of paint disturbance or a sufficient distance to contain the dust, whichever is greater. If a vertical containment system is employed, floor covering may stop at the vertical barrier, providing it is impermeable, extends from floor to ceiling, and is tightly sealed at floors, ceilings, and walls.

3. Close windows and doors in the work area. Doors must be covered in plastic sheeting. When the work area boundary includes a door used to access the work area it must be covered in a way that allows workers to pass, but also confines dust

and debris to the work area. Cover the door with two layers of protective sheeting as described herein:

a. Cut and secure one layer of sheeting to the perimeter of the door frame. Do not pull the sheeting taut. Rather, leave slack at the top and bottom of the door before taping or stapling.

b. Cut a vertical slit in the middle of the sheeting leaving 6" uncut at the top and bottom. Reinforce with tape.

c. Cut and secure a second layer of sheeting to the top of the door.

4. Close and cover all open ducts in the work area with taped-down plastic sheeting.

5. All dust and debris generated during the work should be completely cleaned and removed from the property.

6. Ensure that all personnel, tools, materials, and other items, including the exteriors of containers of waste, are free of dust and debris before leaving the work area.

E. Work Outside the House

1. Cover the ground with plastic sheeting or other disposable impermeable material extending 10 feet beyond the perimeter of surfaces where the work will occur or a sufficient distance to collect falling paint debris, whichever is greater. If the work will affect surfaces within 10 feet of the property line, then vertical containment or equivalent extra precautions must be erected to prevent contamination of adjacent buildings and property.

2. Close all doors and windows within 20 feet of the work. On multi-story buildings, close all doors and windows within 20 feet of the work on the same floor as the work, and close all doors and windows on all floors below that are the same horizontal distance from the work.

3. Ensure that doors within the work area that will be used while the job is being performed are covered with plastic sheeting or other impermeable material in a manner that allows workers to pass through while confining dust and debris to the work area.

4. Contractor must take additional precautions as necessary in containing the work area to ensure that dust and debris from the work does not contaminate other buildings or other areas of the property or migrate to adjacent properties.

F. Contractor Protection

1. Contractor to comply with EPA, OSHA and Michigan guidelines regarding the protection of employees.

2. At a minimum, Contractor shall wear disposable protective clothing, disposable shoe covers to prevent tracking of dust from the work area, and headgear to protect the head from dust and debris.

3. Contractor shall utilize N-100 respiratory protection at a minimum when work will produce dust or paint chips.

4. Contractor is prohibited from smoking, drinking or eating in the work area.

G. Prohibited Practices

1. Use of open-flame burning or torching of painted surfaces.

2. Use of machines designed to remove paint or other surface coatings using high speed operation such as sanding, grinding, power planing, needle gun, abrasive blasting, or sandblasting, on painted surfaces is prohibited unless such machines have shrouds or containment systems and are equipped with a HEPA vacuum attachment to collect dust and debris at the point of generation. Machines must be operated so that no visible dust or release of air occurs outside the shroud or containment system.

3. Operating a heat gun on painted surfaces at temperatures greater than 1,100^{o}F.

H. The work area should be cleaned thoroughly and left clean at the end of every day. The work area must be completely free of dust and debris.

1. Remind residents to stay out of the work area until the work is complete.

2. Vacuum the work area with a HEPA vacuum cleaner frequently.

3. Clean tools at the end of the day.

4. Collect all paint chips and debris and seal in a heavy-duty bag.

5. Remove the protective sheeting. Mist the sheeting before folding it dirty side inward, and either tape shut or seal in heavy-duty bags. Sheeting used to isolate contaminated rooms from non-contaminated rooms must remain in place until after the cleaning and removal of other sheeting. Dispose of the sheeting as waste.

6. The Contractor must clean all objects and surfaces in the work area and within 2 feet of the work area, cleaning from higher to lower:

a. Clean walls with a HEPA vacuum or wiping with a damp cloth.

b. Thoroughly vacuum all remaining surfaces and objects in the work area, including furniture and fixtures, with a HEPA vacuum. The HEPA vacuum must be equipped with a beater bar when vacuuming carpets and rugs.

c. Wipe all remaining surfaces and objects in the work area, except carpet or upholstery, with a damp cloth. Mop uncarpeted floors thoroughly.

d. Return items moved to complete the work to their original locations.

I. Containment of Waste

1. Collect and control all waste generated. This includes dust, debris, paint chips, protective sheeting, HEPA filters, dirty water, cloths, mop heads, wipes, protective clothing, respirators, gloves, architectural components and other waste.

2. Use heavy plastic sheeting or bags to collect waste. Seal the bag securely with duct tape. Consider double bagging waste to prevent tears. Large components must be wrapped in protective sheeting and sealed with tape.

3. Bag and seal all waste before removing it from the work area.

4. Waste that has been collected from work activities must be stored to prevent access to and the release of dust and debris. Waste transported from renovation activities must be contained to prevent release of dust and debris.

5. All waste should be disposed of according to EPA, OSHA and state requirements. Contractor is responsible for the removal, transport and legal disposal, including permits and fees, of all waste generated.

3.09 REPAIR:

A. Repair any existing utilities, structures, or features damaged during installation of water utilities to property owner's satisfaction, and at no cost to property owner.

3.10 FIELD TESTING:

A. Hydrostatically test newly laid pipeline and valved section thereof in accordance with AWWA C600.

B. Perform system flushing and disinfection per Section 33 13 00 Disinfecting of Water Utility Distribution.

3.11 FIELD PAINTING/COATINGS:

A. Repair any shop painting/coatings damaged during storage or installation to property owner's satisfaction.

3.12 ADJUSTING:

A. Coordinate with Engineer and Owner for any field adjustments. The Engineer and Owner reserve the right to reject any field adjustments.

3.13 PROTECTION:

A. Protect installed water utilities from damage throughout storage, installation, testing, and final approval.

3.14 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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SECTION 33 13 00

DISINFECTING OF WATER UTILITY DISTRIBUTION

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide disinfecting of water utility distribution systems as indicated and in compliance with Contract Documents.

1. Disinfection of water mains in accordance with AWWA C651; except as modified below.

1.02 REFERENCES:

A. American Water Works Association (AWWA):

1. C651: Disinfecting Water Mains.

1.03 SEQUENCING:

A. Basic procedure for disinfecting water mains:

1. Inspecting materials to be used to ensure their integrity.

2. Preventing contaminating materials from entering the water main during storage, construction, or repair and noting potential contamination at the construction site.

3. Removing, by flushing or other means, those materials that may have entered the water main.

4. Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.

5. Protecting the existing distribution system from backflow caused by hydrostatic pressure test and disinfection procedures.

6. Documenting that an adequate level of chlorine contacted each pipe to provide disinfection.

7. Determining the bacteriological quality by laboratory test after disinfection.

8. Final connection of the accepted new water main to the active distribution system.

1.04 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Supervisor qualifications.

2. Equipment list.

1.05 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Regulatory Requirements:

1. Disinfection work shall be acceptable to Owner. If requirements of this section are in conflict with requirements of regulatory agencies, the latter shall govern.

C. Source Quality Assurance:

1. Perform Work in connection with disinfection under direction of experienced supervisor.

2. Use equipment in proper working condition and adequate for specified Work.

D. Prior to starting disinfection work, furnish detailed outline of proposed sequence of operation, manner of filling and flushing pipes, source and quality of water to be used, and disposal of wasted water.

E. Perform work in connection with disinfection under direction of experienced supervisor.

F. Use equipment in proper working condition and adequate for specified work.

1.06 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

1.07 PROJECT CONDITIONS:

A. Discharge of chlorinated water into watercourses or surface waters is regulated by the National Pollutant Discharge Elimination System (NPDES). Disposal of the chlorinated disinfection water and the flushing water is the Contractor's responsibility.

PART 2 - PRODUCTS

2.01 OWNER-SUPPLIED PRODUCTS:

A. The Owner will provide potable water for the first disinfection effort. Submit request for use of water from waterlines of Owner 48 hours in advance. If bacteriological testing

shows that the first disinfection effort was not successful, the Contractor will be charged, at the Owner's current rates, the cost of additional water for subsequent disinfection efforts.

2.02 MATERIALS:

A. Water: Use potable water for cleaning and disinfection.

B. Chlorine: Provide in accordance with AWWA C652.

1. Liquid Chlorine: Inject with a solution feed chlorinator and a water booster pump. Follow the instructions of the chlorinator manufacturer.

2. Calcium Hypochlorite (Dry): Dissolve in water to a known concentration in a drum and pump into the pipeline at a metered rate. Tablet form calcium hypochlorite may be used only for water mains up to 12 inches in diameter and less than 2,500 feet in length.

3. Sodium Hypochlorite (Solution): Further dilute in water to desired concentration and pump into the pipeline at a metered rate.

2.03 EQUIPMENT:

A. Submit list of equipment used for disinfecting work.

2.04 ACCESSORIES:

A. Chlorine Residual Test Kit: For measuring chlorine concentration, supply and use a medium range, drop count, DPD drop dilution method kit per AWWA C651, Appendix A.1. Maintain kits in good working order available for immediate test of residuals at point of sampling.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Isolate new work being disinfected from system to avoid possibility of contaminating materials entering distribution system.

B. Method of disinfection for water distribution systems shall conform to AWWA C651.

3.02 CHLORINE PREPARATION:

A. Liquid Chlorine:

1. Apply chlorine gas-water solution by means of solution feed chlorinating device or, if accepted by Engineer, dry gas may be fed directly through proper devices for

regulating rate of flow and providing effective diffusion of gas into water within unit being treated.

2. Provide chlorinating devices for feeding solutions of chlorine gas that prevent backflow of water into chlorine cylinder.

B. Calcium Hypochlorite:

1. Prepare granular calcium hypochlorite as water mixture before introduction into unit. Make dry powder into paste and thin to approximately 1 percent chlorine solution.

2. To prepare chlorine solution, add 1 pound of calcium hypochlorite (65 to 70 percent available chlorine) to 7½ gallons of water.

3.03 PIPELINE PREPARATION:

A. Flush units thoroughly to remove foreign material. Flush piping with a sufficient flow of potable water to produce a velocity of 5 fps for 10 minutes, or until all foreign materials have been removed and the flushed water is clear. Provide connections and pumps as required. Open and close valves, faucets, hose outlets, and service connections to ensure thorough flushing.

B. Release entrapped air at high points and fill units with disinfecting agent and water to allow disinfecting agent to come in contact with interior surfaces.

C. If complete venting cannot be accomplished through available outlets, provide necessary corporation cocks and vent piping.

3.04 APPLICATION OF DISINFECTANT:

A. Point of Application:

1. Apply chlorinating agent at supply end of unit being disinfected.

2. For pipes, apply disinfectant through corporation cock installed in top of pipe.

3. Place tablets in accordance with AWWA C651.

B. Rate of Application:

1. Introduce water at controlled rate in order to regulate chlorine dosage.

2. Proportion rate of chlorine mixture flow to rate of water entering unit so chlorine dose applied produces at least 25 mg/L chlorine residual after period of 24 hours.

3. Method of determining rate of flow of water into unit being disinfected shall be accepted by Engineer.

C. Isolating Systems:

1. Keep chlorine gas-water disinfecting solution and contaminated water from flowing into units previously chlorinated and flushed.

D. Quality:

1. Retain chlorinated water in unit long enough to destroy non-spore forming bacteria.

2. Minimum retention period shall be 24 hours with chlorine residual at end of this period of not less than 25 mg/L (ppm).

E. Disinfecting Valves:

1. Operate valves and appurtenances while line or unit is being disinfected to ensure surfaces of valves are disinfected.

F. Swabbing:

1. Flush and swab pipe, fittings or valves that must be placed in service immediately with 5 percent solution of calcium hypochlorite immediately prior to assembly.

2. Secure acceptance from Engineer before using this method of disinfection.

G. Valve Operation: Performed by Owner.

3.05 DISINFECTING METHODS:

A. Continuous Feed Method:

1. Introduce potable water into the pipeline at a constant measured rate. Feed the chlorine solution into the same water at a measured rate. Proportion the two rates so that the chlorine concentration in the pipeline is maintained at a minimum concentration of 50 mg/L. Check the concentration at points downstream during the filling to ascertain that sufficient chlorine is being added.

B. Slug Method:

1. Introduce the water in the pipeline at a constant measured rate. At the start of the test section, feed the chlorine solution into the pipeline at a measured rate so that the chlorine concentration created in the pipeline is at least 100 mg/L. Feed the chlorine for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it passes along the line, expose all interior surfaces to a concentration of at least 100 mg/L for at least three hours.

C. Disinfection of Valves, Blind Flanges, and Appurtenances:

1. During the period that the chlorine solution or slug is in the section of pipeline, open and close valves to obtain a chlorine residual at hydrants and other pipeline appurtenances. Swab exposed faces of valves and blind flanges prior to bolting flanges in place with a 1 percent sodium hypochlorite solution.

D. Disinfection of Connections to Existing Pipelines

1. Disinfect isolation valves, pipe, and appurtenances in accordance with AWWA C651, Section 4.7. Flush with potable water until discolored water, mud, and debris are eliminated. Swab interior of pipe and fittings with a 1 percent sodium hypochlorite solution. After disinfection, flush with potable water again until water is free of chlorine odor.

E. Disinfection of Tapping Sleeves and Line Stopping:

1. Flush exterior of pipe with potable water after removal of existing coating. Swab exterior of pipe with a 1 percent sodium hypochlorite solution. Disinfect per AWWA C651, Section 4.8. After completion of tapping and line stopping, swab interior of pipe, valves, and faces of flanges to be connected to bypass piping with a 1 percent sodium hypochlorite solution.

F. Confirmation of Residual:

1. After the chlorine solution applied by the continuous feed method has been retained in the pipeline for 24 hours, confirm that a chlorine residual of 50 mg/L minimum exists along the pipeline by sampling at hydrants and other points of access.

2. With the slug method, confirm by sampling as the slug passes each access point and as it leaves the pipeline that the chlorine concentration in the slug is at least 50 mg/L.

3.06 FINAL FLUSHING AND TEST:

A. Following chlorination, flush unit or system until replacement water in system is proven to be comparable in quality to water which will enter unit or system.

B. Above acceptable condition of water delivered by each unit or system shall continue for at least 2 days, as demonstrated by laboratory examination of samples. Laboratory tests shall show chlorine residual, after final flushing, of less than 1 mg/L (ppm).

C. Repetition of Flushing and Testing:

1. If initial treatment results in unsatisfactory bacterial test, repeat disinfection until satisfactory results obtained.

D. Prevent entry of contaminated water into previously disinfected units or systems.

3.07 BACTERIOLOGIC TESTS:

A. Collect two sets of samples per AWWA C651, Section 5.1, deliver to a certified laboratory within six hours of obtaining the samples, and obtain a bacteriologic quality test to demonstrate the absence of coliform organisms in each separate section of the pipeline after chlorination and refilling. Collect at least one set of samples from every 2,000 feet of the new water main and line stopping insertion point, plus one set from the end of the line and at least one set from each branch.

B. Repetition of Procedure: If the initial chlorination fails to produce required residuals and bacteriologic tests, repeat the chlorination and retesting until satisfactory results are obtained.

C. Test Facility Removal: After satisfactory disinfection, disinfect and replace air valves, restore the pipe coating, and complete the pipeline where temporary disinfection or test facilities were installed.

3.08 FIELD QUALITY CONTROL:

A. Owner will obtain samples for and submit to laboratory for analysis before system placed in service.

B. If safe samples not obtained using above procedure, Contractor shall add additional chlorine in amounts necessary to obtain safe samples.

3.09 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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Fast Start Exploration by Phase

Legend

Ward Groups

- Group 1
- Group 2
- Group 3
- Group 4
- Group 5

Phases

- P2
- P2-P4
- P3
- P4
- Wards Outline

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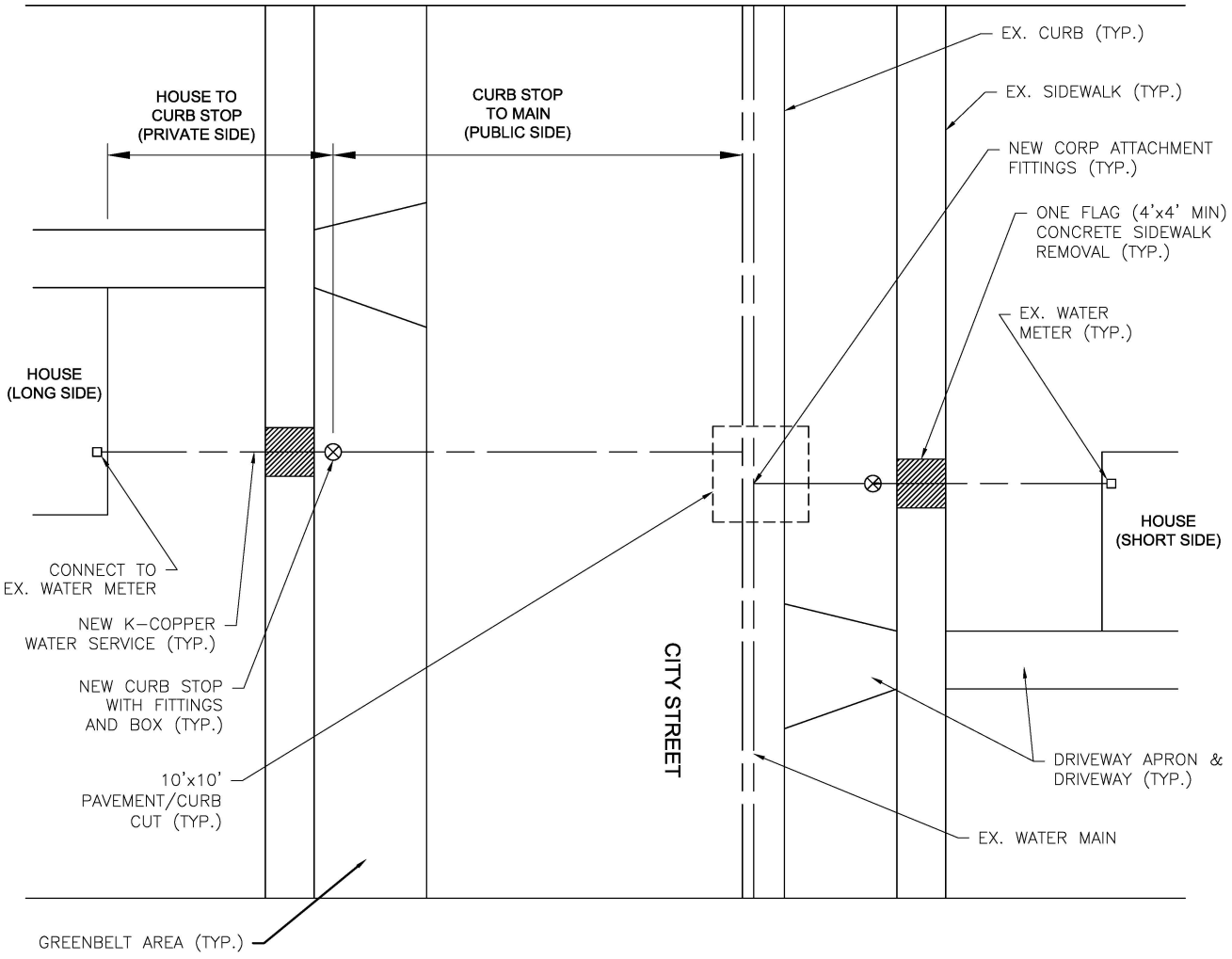
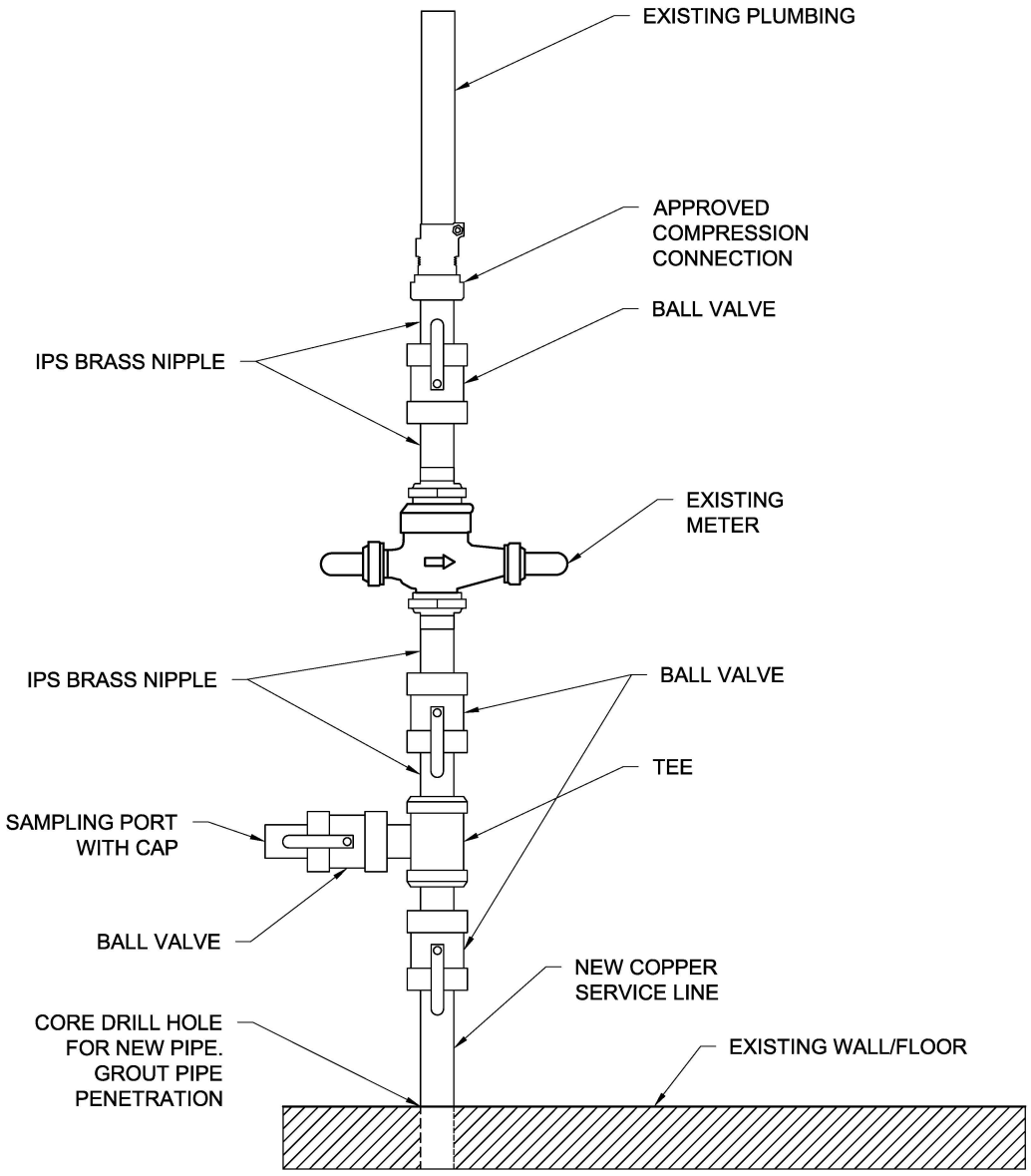
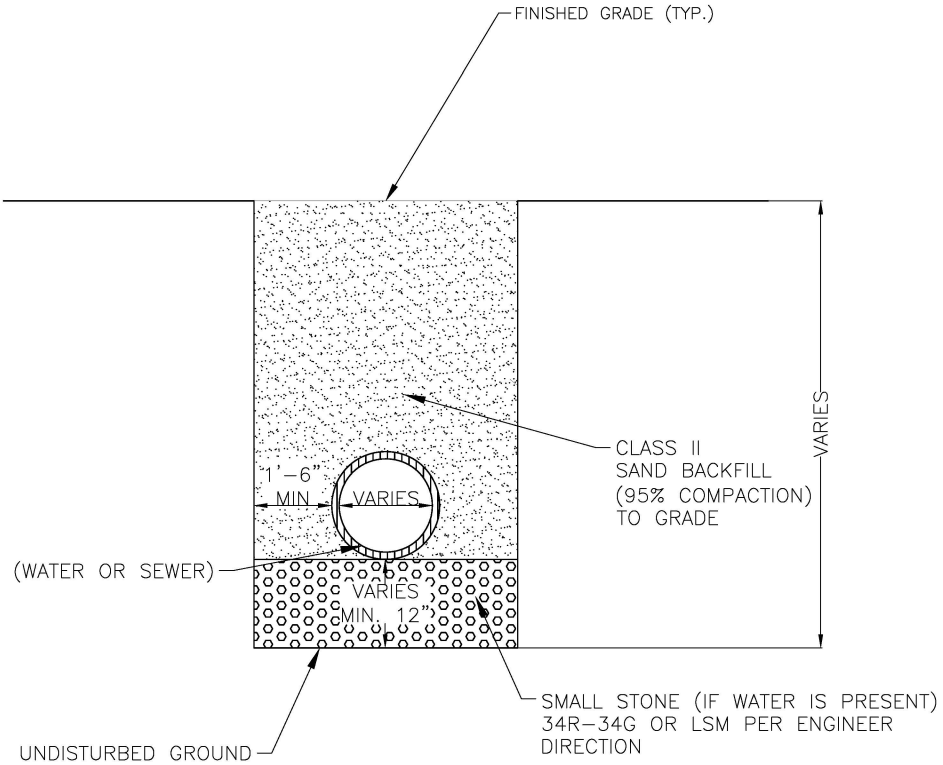


NOTES
1. ONLY REMOVE SIDEWALK TO THE EXTENTS NECESSARY TO COMPLETE SERVICE LINE INSTALLATION
2. SIZE OF NEW COPPER SERVICE LINE TO MATCH EXISTING
3. NEW CURB STOPS AND BOXES SHOULD BE LOCATED IN THE GREENBELT AREA UNLESS OTHERWISE DIRECTED BY THE ENGINEER
4. SERVICE LINE REPLACEMENT WORK OUTSIDE OF THE TYPICAL 10'X10' PAVEMENT CUT OR EXCAVATION AT THE CURB BOX SHALL BE COMPLETED USING HDD METHODS.

SERVICE LINE REPLACEMENT DETAIL



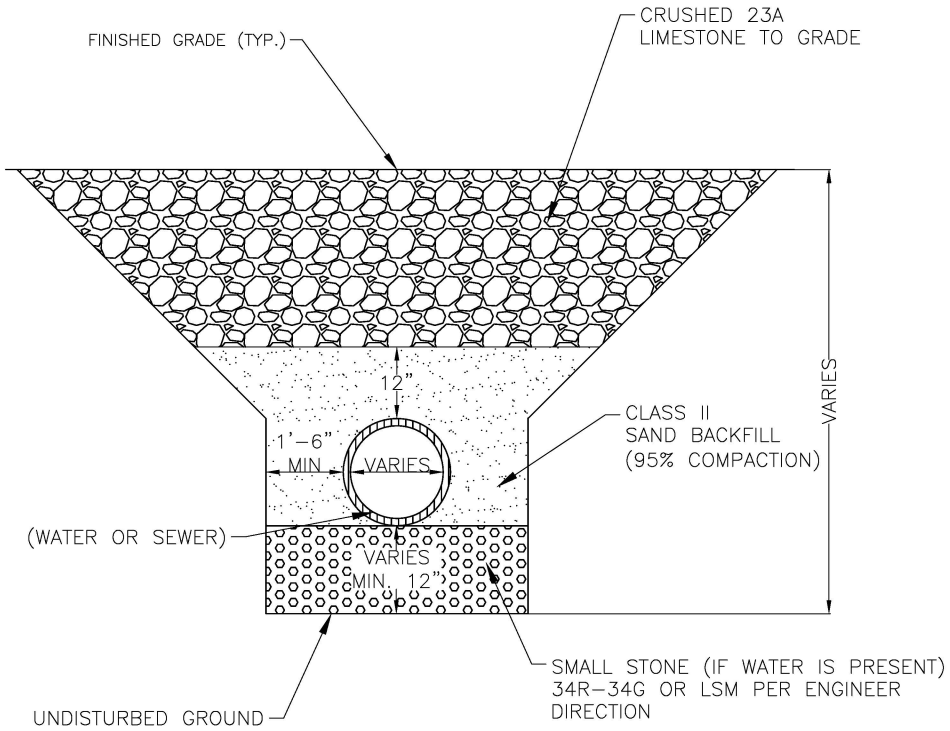
WATER METER CONNECTION DETAIL



NOTES

1. TRENCH SHALL BE FULLY SUPPORTED BY TRENCH BOXES OR OTHER SHORING METHODS AS PER OSHA STANDARDS.
2. ANY SOFT OR UNSUITABLE SOIL AT THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. IF DIRECTED BY ENGINEER, SOFT OR UNSTABLE SOIL SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED LIMESTONE OR LSM IF A STABLE TRENCH FOUNDATION CANNOT BE ACHIEVED USING CRUSHED STONE.
3. BACKFILL MATERIAL TO BE PLACED IN 12" LIFTS AND COMPACTED TO 95% DENSITY.

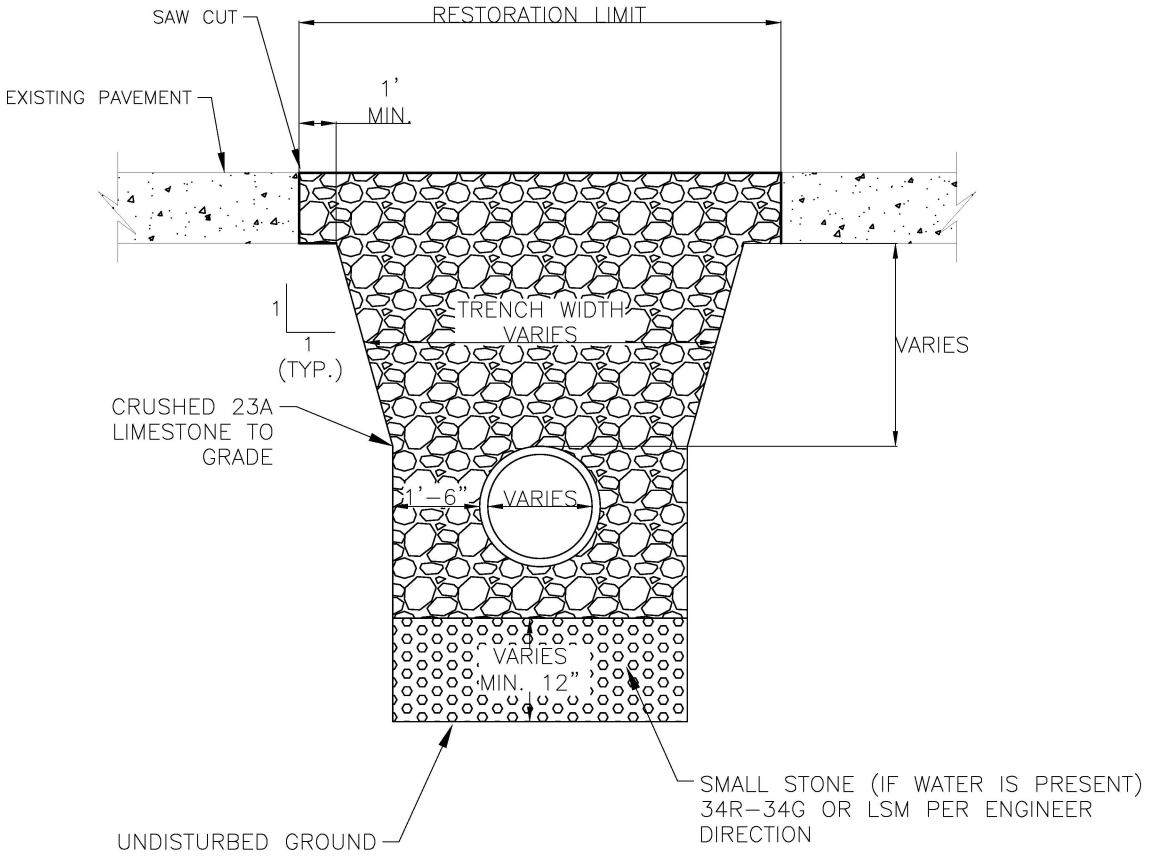
TRENCH DETAIL, LANDSCAPE AREA



NOTES

1. TRENCH SIDES SHALL BE FULLY SUPPORTED BY TRENCH BOXES OR OTHER SHORING METHODS AS PER OSHA STANDARDS.
2. ANY SOFT OR UNSUITABLE SOIL AT THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. IF DIRECTED BY ENGINEER, SOFT OR UNSTABLE SOIL SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED LIMESTONE OR LSM IF A STABLE TRENCH FOUNDATION CANNOT BE ACHIEVED USING CRUSHED STONE.
3. BACKFILL MATERIAL TO BE PLACED IN 12" LIFTS AND COMPACTED TO 95% DENSITY.

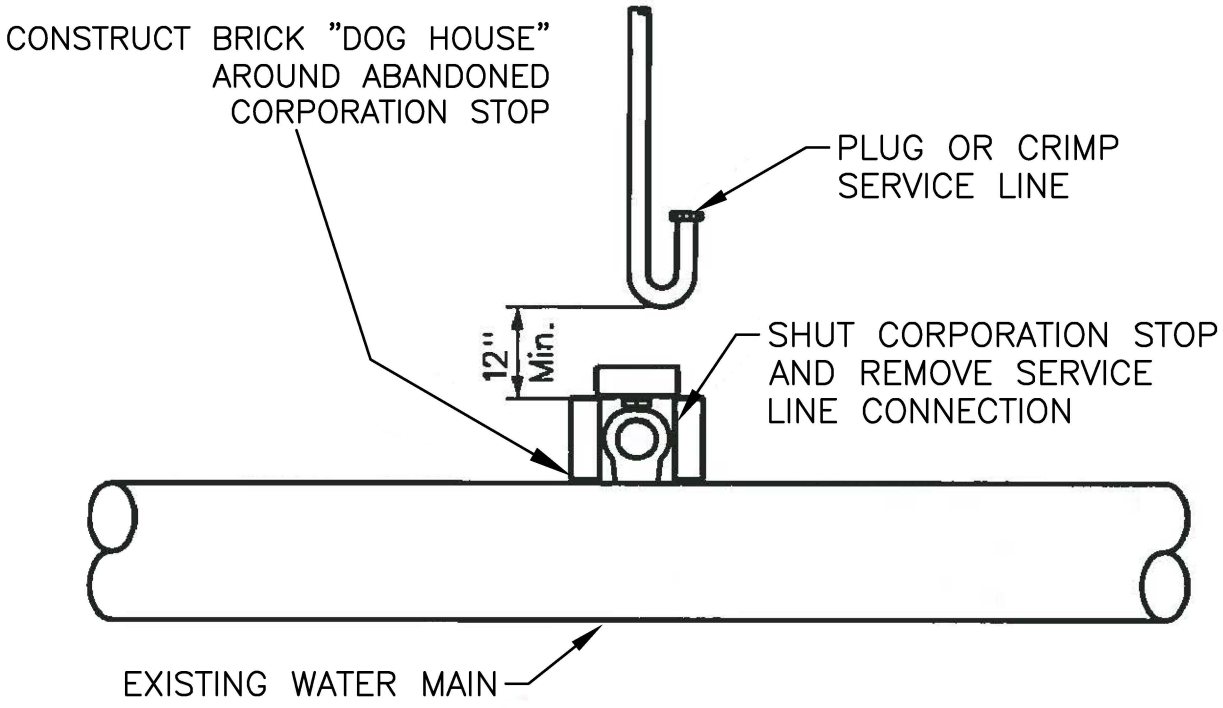
TRENCH DETAIL, SIDEWALK AND DRIVEWAY AREAS



NOTES

1. TRENCH SHALL BE FULLY SUPPORTED BY TRENCH BOXES OR OTHER SHORING METHODS AS PER OSHA STANDARDS.
2. ANY SOFT OR UNSUITABLE SOIL AT THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. IF DIRECTED BY ENGINEER, SOFT OR UNSTABLE SOIL SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED LIMESTONE OR LSM IF A STABLE TRENCH FOUNDATION CANNOT BE ACHIEVED USING CRUSHED STONE.
3. BACKFILL MATERIAL TO BE PLACED IN 12" LIFTS AND COMPACTED TO 95% DENSITY.

TRENCH DETAIL, STREET AREAS



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THE CITY OF FLINT, MI

MATERIAL DISPOSAL PLAN (MDP)

This form is to be submitted when removal and off-site disposal of excavation spoils, demolished material or other debris is required from a City of Flint project.

All excavated and demolished material from a construction site that is not to be reused must be properly removed and disposed at an approved facility. If the material is to be disposed of in the City of Flint, a permit or written authorization must be obtained from the City. If it is to be disposed of outside the City limits, documentation must be provided that the Contractor has complied with all the rules and regulations of the local community and that the disposal facility or property owner has given their approval to accept the material. One copy of this form must be completed for each disposal / stockpile site if the Contractor plans to use more than one site. A copy of this plan must be on file with the City and Engineer before initialing construction.

General Project Information and Certification

Date Submitted: _____ City of Flint Project No: 18-570

Contractor: _____ Project Name: Phase V Hydrovac SLR

In submitting this Material Disposal Plan (MDP), the above named contractor expressly certifies that all material to be removed from the construction site will be hauled in accordance with all applicable federal, state, and local highway and traffic rules, regulations and laws, and that the Material Disposal Plan meets all federal, state, and local rules and regulations with regard to the removal and disposal of this material.

Contractor Contact: _____ Title: _____

Signature: _____ Date _____

Disposal of Material within the City of Flint

Is the material to be disposed of within the City of Flint? Yes[1] _____ No _____

[1] Attach a copy of the disposal permit if the above answer is "Yes".

Disposal of Material outside of the City of Flint

Is the material to be disposed of outside of the City of Flint? Yes[2] _____ No _____

[2] Provide the following information if material is to be removed from the site and disposed outside the City of Flint.

Disposal Site: _____ Site Address: _____

Municipality: _____ _____

Is a permit for the above municipality required? Yes[3] _____ No _____

[3] Attach a copy of the municipal permit

Directions to Site _____

_____

Disposal Facility / Property Owner Acknowledgement

I hereby acknowledge that i have agreed to accept material from _____, to be disposed of at our facility / property as described above and that it is my understanding that the above named contractor will meet all federal, state, and local rules and regulations with regard to the removal and transport of this material.

Facility Owner:: _____ Title: _____

Signature: _____ Date _____

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ANSI/AWWA C810-17
(First Edition)

American Water Works Association

Dedicated to the World's Most Important Resource®

AWWA Standard

Replacement and Flushing of Lead Service Lines

Effective date: Nov. 1, 2017.
First edition approved by AWWA Board of Directors June 11, 2017.
This edition approved by AWWA Board of Directors June 11, 2017.
Approved by American National Standards Institute Sept. 1, 2017.

American Water Works Association | STANDARD | *Since 1881*

Approved American National Standard ANSI

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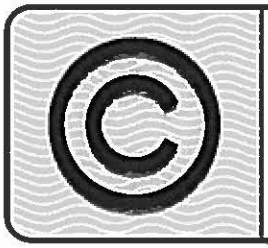

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Committee Personnel

The AWWA Standards Subcommittee on Lead Service Lines, which developed this standard, had the following personnel at the time of approval:

J. Eisnor, Halifax Water, Halifax, N.S., Canada	(AWWA)
J.A. Fleming,* Standards Council Liaison, Greater Cincinnati Water Works, Cincinnati, Ohio	(AWWA)
T.C. Gilbert, Onondaga County Water Authority, Syracuse, N.Y.	(AWWA)
S. Gould, Atkins, Austin, Texas	(AWWA)
M.E. Grahek, Los Angeles Department of Water and Power, Mojave, Calif.	(AWWA)
K.C. Morgan, KCM Consulting Services LLC, Phoenix, Ariz.	(AWWA)
K. Oberoi, Charleston Water System, Charleston, S.C.	(AWWA)
P.J. Olson,* Staff Advisor, American Water Works Association, Denver, Colo.	(AWWA)
S.D. Osborne, OSD LLC, Lexington, Mass.	(AWWA)
R.W. Roost, Lansing Board of Water and Light, Lansing, Mich.	(AWWA)
M.K. Schmelling, DC Water, Washington, D.C.	(AWWA)
R. Slabaugh, Arcadis, Indianapolis, Ind.	(AWWA)
F. Trinchini, City of Toronto–Toronto Water, Toronto, Ont., Canada	(AWWA)
C. Van Der Kolk, Zeeland Board of Public Works, Zeeland, Mich.	(AWWA)
S.H. Via, American Water Works Association, Washington, D.C.	(AWWA)
A.J. Weiss, Onondaga County Water Authority, Syracuse, N.Y.	(AWWA)

The AWWA Standards Committee on Distribution System Operations and Management, which reviewed and approved this standard, had the following personnel at the time of approval:

Kanwal Oberoi, *Chair*

General Interest Members

M.N. Agbodo, URS Corporation, Temecula, Calif.	(AWWA)
M.L. Altland, Hatch Mott MacDonald, Iselin, N.J.	(AWWA)
D.M. Flancher,* Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)
S. Gould, Atkins, Austin, Texas	(AWWA)

* Liaison, nonvoting

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H. Huddle, NAVFAC—Washington Public Works Department, Washington Navy Yard, D.C.	(AWWA)
S.R. Mason, Kimley-Horn and Associates Inc., Fort Worth, Texas	(AWWA)
B. McDonald, HDR Engineering, Phoenix, Ariz.	(AWWA)
K.C. Morgan, KCM Consulting Services LLC, Phoenix, Ariz.	(AWWA)
S.D. Osborne, OSD LLC, Lexington, Mass.	(AWWA)
P. Rogers, Georgia Southern University, Statesboro, Ga.	(AWWA)
D.S. Schwartz,* Standards Council Liaison, City of Waynesboro, Waynesboro, Va.	(AWWA)
A.J. Weiss, GHD Inc., Cazenovia, N.Y.	(AWWA)

Producer Members

D.A. Feuer, Woolpert Inc., Englewood, Colo.	(AWWA)

User Members

J.S. Czarnecki, Greenville Water, Travelers Rest, S.C.	(AWWA)
J.E. Dyksen, Suez Water, North Haledon, N.J.	(AWWA)
W.C. Gedney, Golden State Water Company, Ontario, Calif.	(AWWA)
M.E. Grahek, Los Angeles Department of Water, Los Angeles, Calif.	(AWWA)
C. Morissette, Ville de Montreal, Montreal, Que., Canada	(AWWA)
K. Oberoi, Charleston Water System, Charleston, S.C.	(AWWA)
G. Ramon, Little Rock Wastewater, Little Rock, Ark.	(AWWA)
D. Spencer, Powdersville Water District, Powdersville, S.C.	(AWWA)
J.W. Swertfeger, Cincinnati Water Works, Cincinnati, Ohio	(AWWA)

* Liaison, nonvoting

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

SEC.		PAGE
Foreword		
I	Introduction	vii
I.A	Background	vii
I.B	History	vii
I.C	Acceptance	vii
II	Special Issues	ix
II.A	Prioritizing Lead Service Line Replacement	ix
II.B	Optimizing Corrosion Control Treatment	ix
II.C	Reuse or Replacement of Service Line Fittings, Valves, and Water Meters	ix
II.D	Utility Communication Planning for Lead in Drinking Water	x
II.E	Grounding of Electrical Circuits on Piping	xi
III	Use of This Standard	xi
III.A	Purchaser Options and Alternatives	xi
III.B	Modification to Standard	xi
IV	Major Revisions	xi
V	Comments	xi

SEC.		PAGE
Standard		
1	**General**	
1.1	Scope	1
1.2	Purpose	1
1.3	Application	1
2	**References**	2
3	**Definitions**	2
4	**Requirements**	
4.1	Location and Replacement of Lead Service Lines	4
4.2	Partial Replacements	9
4.3	Communications and Instructions to Customers	12
4.4	Flushing Service Lines After Full or Partial Replacement	12
5	**Verification**	
5.1	Documentation of Construction Activities	14
5.2	Water Testing Following Replacement	14
Figure		
1	Typical Water Service Line Components	3

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C810.*

I. Introduction.

I.A. *Background.* Replacement of lead service lines and subsequent flushing are important processes for ensuring the delivery of safe drinking water. The AWWA Policy Statement on Lead Service Line Management supports protecting public health through the reduction of exposure to lead in drinking water and encourages communities to develop a lead reduction strategy that includes identifying and removing all lead service lines over time. This standard is intended to describe essential procedures for the replacement of lead service lines, including the following elements: appropriate tools and techniques; flushing a service line after replacement; factors to consider in optimizing flushing; instructions to inform customers affected by the replacement, including additional risk reduction measures; and verification of lead level management prior to return to service. Although partial replacements should be discouraged, this standard also describes procedures for partial replacement and repair situations where full service line replacement is not possible or practical.

This is the first edition of this standard and will likely result in valuable feedback from first users of the standard. As such, it is anticipated that a second edition with additional information and guidance will be necessary and issued well before AWWA's regular five-year revision schedule for standards.

I.B. *History.* Development of this standard was authorized by the AWWA Standards Council in 2015 and was assigned to the AWWA Standards Committee on Distribution Systems Operations and Management. A Subcommittee on Lead Service Lines was formed to draft the standard. This first edition of the standard was approved by the AWWA Board of Directors on June 11, 2017.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The

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American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.* Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. Specific policies of the state or local agency.
2. Two standards developed under the direction of NSF†: NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.
3. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,‡ and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 60 and 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI 60 and 61 do not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

ANSI/AWWA C810 does not address additives requirements. Thus, users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

---

* Persons outside the United States should contact the appropriate authority having jurisdiction.

† NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

‡ Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

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II. Special Issues.

II.A. *Prioritizing Lead Service Line Replacement.* Suggested items to consider when prioritizing lead service line replacement follow (not in order of priority):

- Any lead service line that is physically disturbed by dig-ins, excavations, repairs, or similar activities.
- Existing partial lead service line replacements.
- Lead service lines supplying schools, day care centers, or other identified sensitive populations as defined by the USEPA.
- Lead service lines where sample results are more than 15 ppb or other established health levels.
- Lead service lines located in scheduled underground infrastructure work or street restoration work zones that could be replaced concurrently, minimizing any negative impact to customers.
- Multiple lead services within a compact area (cost containment).
- Length of lead pipe present in a particular service line.
- Consideration of presence of lead goosenecks and galvanized service lines.

II.B. *Optimizing Corrosion Control Treatment.* Corrosion of piping and solder can be a primary source of lead contamination in drinking water. Optimizing corrosion control treatment may help a utility to minimize this source of lead contamination. Utilities may consider appropriate corrosion control treatments that include pH adjustment, alkalinity adjustment, addition of corrosion inhibitors, and other corrosion control treatments. Additional guidance on applying corrosion control treatments can be found in the AWWA Manual of Water Supply Practice M58—*Internal Corrosion Control in Water Distribution Systems*, the AWWA "Optimized Corrosion Control Treatment Primer," and the 2015 *Journal - AWWA* article "Strategies for Assessing Optimized Corrosion Control Treatment of Lead and Copper" (these documents are available through the AWWA Lead Resource page: www.awwa.org/lead).

II.C. *Reuse or Replacement of Service Line Fittings, Valves, and Water Meters.* The scope of this standard covers replacement of lead service lines. Utilities may choose to reuse or replace the related fittings, valves (corporation stops and curb stops), and water meters, based on the site-specific age and condition of those components and based on the utility-specific replacement schedules and practices. The Reduction of Lead in Drinking Water Act requires that all newly installed pipes, fittings, and fixtures meet the current definition of "lead free." The reuse of existing fittings (that may or may not meet the current definition of "lead free") is allowed by the Reduction of Lead in Drinking Water Act if reused in their original locations.

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II.D. *Utility Communication Planning for Lead in Drinking Water.* Water utilities are facing a new communications challenge related to lead in drinking water. Currently, utilities are required under the Safe Drinking Water Act to communicate lead risks when there is an exceedance of the lead action level as defined in the Lead and Copper Rule and annually as part of their consumer confidence reports. Utilities conducting mandatory lead service line replacements must meet specific outreach requirements targeting affected households. Beyond these requirements, many utilities also communicate lead exposure risks proactively in consumer confidence reports, on websites, and through other means.

Water utilities should be planning to communicate lead exposure risks in a proactive and targeted manner not only when lead service lines are repaired or replaced but also when routine maintenance work on water mains may disturb lead service lines. This change may dramatically alter the frequency of direct-to-customer lead communications and requires a new level of planning by utility managers and communicators.

Although the water utility and public health communities have made significant strides in reducing lead exposure, public health advocates and regulatory agencies are looking closely at the contribution of lead at the tap from lead service lines—particularly lead service lines that have been disturbed. Three typical scenarios raise concerns about elevated lead levels: lead service line replacement when required by the Lead and Copper Rule or proactively performed by the utility; infrastructure replacement when full or partial lead service line replacement occurs when other utility work is under way, such as during water main rehabilitation; and repairs to lead service lines.

Water providers should consider building on current communication plans to provide additional information to customers regarding lead and lead service line replacement. AWWA has assembled *Communicating About Lead Service Lines: A Guide for Water Systems Addressing Service Line Repair and Replacement* as a tool for preparing and expanding these communications (http://www.awwa.org/Portals/0/files/resources/publicaffairs/pdfs/FINALeadServiceLineCommGuide.pdf).

This guide is designed to help water utilities build on current communication strategies to address these new areas of concern and manage the increased frequency of communication with customers. It provides utilities with customizable messages and templates to communicate with customers in a variety of ways to better protect public health. For brevity, the content of the guide will not be repeated here.

Additional guidance on utility communications can be found on the Lead Service Line Replacement Collaborative website: http://www.lslr-collaborative.org/.

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II.E. *Grounding of Electrical Circuits on Piping.* If the lead service line is replaced with a nonmetallic pipe or if a nonconductive plastic coupling (dielectric coupling) is used within a few feet of the home, the home owner may need to take additional measures to ensure the structure has sufficient grounding. Historically, connection to the home piping system was used for grounding the home's electrical system. By removing the underground metal piping, an alternative grounding strategy may be needed.

All metal water systems should be "bonded." Failure to adequately bond the potable water piping systems to the electrical system increases the potential for both fire and electrocution should the piping system become energized (see National Electric Code).

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products and/or processes described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives.* This standard is written as though the replacement and flushing work will be performed by the purchaser's (generally the utility's) personnel. Where the work is to be performed using a separate contract or as part of a contract for replacing service lines,* appropriate provisions should be included in the purchase documents to ensure the constructor is specifically instructed as to its responsibilities. The following information should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C810, Replacement and Flushing of Lead Service Lines, of latest revision.
2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.
3. Details of other federal, state or provincial, and local requirements (Section 4).
4. Method of replacement to be used—open cut, trenchless on new route, or trenchless using existing route (Sec. 4.1).

III.B. *Modification to Standard.* Any modification of the provisions, definitions, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions. This is the first edition of this standard.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Engineering and Technical Services at 303.794.7711; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098; or email at standards@awwa.org.

* Refer to other AWWA standards and manuals for design criteria for various service line materials.

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ANSI/AWWA C810-17
(First Edition)



American Water Works Association
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AWWA Standard

Replacement and Flushing of Lead Service Lines

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes essential procedures for the replacement of lead water service lines and flushing following replacement. Essential procedures include the following: appropriate tools and techniques; flushing a service line after replacement; factors to consider in optimizing flushing; and instructions to provide customers affected by the replacement, including additional risk reduction measures. This standard also describes procedures for partial replacement and repair situations where complete lead service line replacement is not possible or practical.

Sec. 1.2 Purpose

The purpose of this standard is to define the minimum process requirements for the replacement of lead service lines and for flushing following replacement.

Sec. 1.3 Application

This standard can be referenced in the purchase documents for the replacement of lead service lines and can be used as a guide for the appropriate replacement tools and techniques, flushing practices and procedures, communications with customers, and verification of successful completion. The stipulations of this standard apply when this document has been referenced and only to the extent referenced.

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SECTION 2: REFERENCES

This standard references the following documents. In their latest editions, they form a part of this standard to the extent specified within the standard. In any case of conflict, the requirements of this standard shall prevail.

AWWA—*Communicating About Lead Service Lines: A Guide for Water Systems Addressing Service Line Repair and Replacement.*

Safe Drinking Water Act (SDWA), 42 USC* 300.

USEPA†—Lead and Copper Rule (LCR), 40 CFR 141.

SECTION 3: DEFINITIONS

The following definitions shall apply in this standard:

1. *Constructor:* The party who provides the work and materials for placement or installation.

2. *Corporation stop:* A valve attached to the water main to which a service line is connected. It is used to interrupt flow during installation or maintenance of the service line (see Figure 1).

3. *Curb stop:* A valve installed in the service line, generally at the property line, and accessible for operation from the surface of the ground for routinely interrupting flow through the service line (see Figure 1).

4. *Customer:* The person, company, or organization receiving potable water service from the utility to a specific premise.

5. *Gooseneck:* A sweeping bend in a service line where it connects to the water main, resembling the shape of a goose's neck, that will allow soil movement without damaging the service line (see Figure 1).

6. *Manufacturer:* The party that manufactures, fabricates, or produces materials or products.

7. *Potable water:* Water that is safe and satisfactory for drinking and cooking.

8. *Purchaser:* The person, company, or organization that purchases any materials or work to be performed.

* United States Code, 732 North Capitol Street, NW, Washington, DC 20401-0001.

† US Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.

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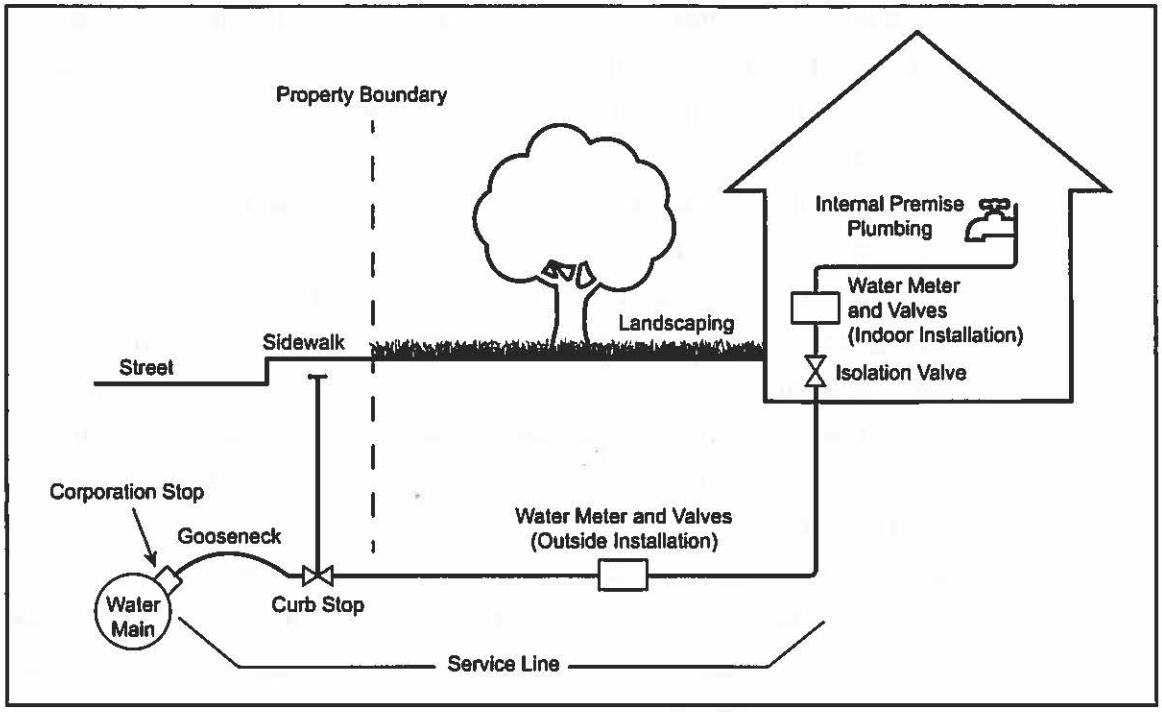

Figure 1 Typical water service line components

9. *Service line:* The pipe that runs between the utility's water main and the specific premises' plumbing, including both the portion owned by the utility, if any, and the private service line owned by the property owner (see Figure 1).

10. *Utility:* The organization or entity with the primary purpose of providing a designated area with potable water service.

11. *Water main:* The water pipe from which the domestic water supply is delivered by the utility to the service pipe leading to specific premises (see Figure 1).

12. *Water meter:* An instrument used for recording the quantity of water passing through the service line to specific premises. Water meters are typically installed with valves on inlet and outlet sides of the meter (see Figure 1).

SECTION 4: REQUIREMENTS

Materials shall comply with the requirements of the Safe Drinking Water Act and other federal regulations for potable water systems as applicable.

Water can be naturally corrosive and often dissolves lead as a result of water's contact with the service line as well as other plumbing components. A number of sampling and analytical techniques are available for customers to determine the

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level of lead in their drinking water. Some of these tests are collected and/or analyzed by the local water provider. Other tests may be conducted by the customers themselves but should be in compliance with sampling and analytical techniques accepted by the local utility. The data captured from the various tests can be used to assist the utility in adjusting the water chemistry by modifying the application of corrosion control chemicals.

Utility personnel should consider that the level of dissolved and particulate lead within the homes and/or businesses of their customers may be greater than the levels within their system based on the potential leaching from service lines and internal premise plumbing components. Lead service lines potentially represent the largest mass of lead in regular contact with potable water, hence the interest in removing lead service lines in their entirety. Utilities should also consider that lead levels may vary based on chemical and physical conditions, level of disturbance to the piping, sampling technique, and other factors when determining the number of samples to be collected. A single sample may not be adequate in determining how much lead is being released.

For planned lead service line replacements, the utility shall establish replacement agreements to be reviewed with and accepted by the customer before any work being accomplished. These agreements should detail the responsibilities of the customer as well as those of the utility and should be intended to reduce any ambiguity about what is to be accomplished and by whom. Any financial requirements essential to the completion of the project should also be identified.

Sec. 4.1 Location and Replacement of Lead Service Lines

The replacement of lead service lines can be generally accomplished by one of the following ways:

- Open cut full replacement—traditional technology with excavation on the full length of service line to be replaced.
- Trenchless replacement on new routes—methods such as directional drilling or pneumatic or hydraulic ramming tools (boring tools) to pull in the new service line on a new route (cutting and leaving the existing lead service in place and replacing it using a new service line).
- Trenchless replacement on existing routes—methods such as pipe splitting and/or pulling the existing lead service that is being replaced with a new pipe using the existing service line route (pipe splitting leaves the existing lead service in the ground, pulling removes the existing lead service line).

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4.1.1 *Locating lead service lines.* In order to replace the existing lead service line, the line must be appropriately identified and located. Some agencies have a database detailing the locations of their lead service lines. Such a record simplifies that portion of the replacement process. Other water providers do not have accurate records reflecting the locations of the lead assets. In this case, other means of identification shall be employed. It is highly recommended that utilities use more than one method of confirming the actual locations of the lead service lines. Utilities should record the service line material when observed during repairs, inspections, or other quality reports. Utilities should be aware that it is at times difficult to verify that a service line contains no portions made of lead, and that some degree of uncertainty may exist in a utility's inventory of lead service lines.

4.1.1.1 Identifying lead service lines at the meter, corporation stop, curb stop, or service box. Lead service lines can sometimes be identified at the main, curb stop, or meter box outside the house or adjacent to the meter inside the house. Typically, lead service lines have a distinctive "bulb-looking" section near the end at a brass, galvanized, compression, or other fitting that connects the service. The absence of the "bulb" section does not confirm the absence of lead. The observation of lead pipe in one location does not confirm the entire service line is lead. It is possible a portion of the lead service was previously replaced during repair or maintenance activity.

4.1.1.2 Using the scrape test to confirm the lead service line. Lead is a gray, nonmagnetic (a magnet will not stick to lead pipe), and relatively soft material compared with other pipe products. A coin scraped along the exterior of a lead pipe will create an indent and reveal a shiny-silver color. Care must be taken not to go too deep to avoid puncturing the pipe. Workers should use appropriate personal protective equipment, such as gloves and eye protection, to prevent exposure to lead. The scrape test identifies solid lead service lines. It will not identify lead-lined iron pipe.

4.1.1.3 Identifying lead service lines by water quality sampling. The concentration of lead found in the water sample can indicate if a lead service line is likely. A sample of the water from the service line should be taken to determine the level of lead. The line should be allowed to sit with no flow for at least 6 hours before sampling. Whether the water meter is inside the building, outside the building, or in an area that is unmetered, it is critical to flush a specific amount of water and then take a sample to be tested. The amount flushed prior to sampling should flush at least the volume of premise plumbing between the service line and the sampling tap. A single test may not be the most effective indicator of the existence of a lead service. The

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minimum lead concentration will be system specific, and multiple samples may be required to ensure the lead is not from lead solder or other internal plumbing sources. A low or nondetect lead sample cannot be used to verify the absence of a lead service line. Utilities should use care in interpreting water samples collected at one point in time because of the variability of lead occurrence in samples.

4.1.1.4 Utilizing hydro-excavation to determine the presence of lead. The hydro-excavation process creates a small boring hole to expose the service line at a depth at the water main, the curb box, and/or the meter box, allowing visual observation to identify whether the service line (or a portion) is lead or not. Care should be taken to minimize any physical disturbances to the pipe.

4.1.1.5 Full test-pit excavation. Dig or excavate a large pit down to the service line to expose the pipe. This method could physically disturb the pipe.

4.1.1.6 Other lead service identification techniques. A number of other techniques are used or offered for consideration to locate the presence of lead service lines. When considering other techniques, the utility should make sure such techniques minimize any physical disturbances to the pipe.

4.1.2 *Preparation.* Before the replacement of the lead service line, a number of related preparatory activities shall take place.

4.1.2.1 Customer notification. The impacted customers shall be notified to identify the process established for replacement, whether full or partial. Most agencies have agreements to be signed by both parties reflecting the responsibilities relative to the replacement effort. The type of replacement, the schedule, and other pertinent items shall be covered appropriately with the customer before the replacement activity. The customer notification should include any postreplacement responsibilities, such as flushing or the use of filters, and should include directions to the customer to make the workspace ready and safe prior to the replacement activity. Customers should also be made aware of the risks of a partial replacement, where applicable (see Sec. 4.2).

4.1.2.2 Underground utility locates. The location of other underground utilities shall be done prior to the work to avoid utility strikes and is critical to the success of the lead service line replacement. Locates shall be scheduled in a timely manner without disruption to the established work plan.

4.1.2.3 Lead service replacement plan. A replacement plan shall be established for the work crews to reflect the schedule of the effort, the typical amount of time the customers will be impacted, and so on. This information shall be used to inform the customer of the coming replacement activity and communicated to the customer in a timely manner.

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4.1.2.4 Water shutoff and service line isolation. Prior to beginning the replacement work, the water supply to the service line and the customer shall be shut off to avoid release of particulate lead into the customer's premises caused by vibration of the service during any excavation. The service line to be removed shall be isolated by shutting off appropriate valves at each end of the area to be removed.

4.1.3 *Open-cut full replacement of lead service lines.* The open-cut full replacement approach to lead service line removal involves the extraction of all the surface treatment and earth material above the level of the pipe. Care must be taken because other underground utilities, including the water main, may have not been properly located.

4.1.3.1 Proper equipment and material usage for open-cut full replacement. The excavation equipment used for the open-cut full replacement approach shall be sized to accommodate the full depth of the hole. Safety precautions shall be taken in consideration of the customer's property as well as any local pedestrian and/or vehicular traffic.

4.1.3.2 Use of adequate trench safety. Based on the depth of the excavation, an adequate level of trench safety shall be used to guarantee compliance with applicable requirements.

4.1.3.3 Lead service line removal. Once properly exposed and identified, the existing lead service line shall be disconnected from the main as well as the customer's side of the connection. When a utility elects to remove the lead pipe from the ground, the discarded lead line shall be carefully cut or bent into manageable sections and taken for processing for ultimate disposal. The amount of lead removed and the location of the removal along with any other pertinent information shall be documented. If the existing lead pipe is left in the ground, the impacted customer(s) should be made aware of the abandoned pipe.

4.1.3.4 Connecting the new service line. The new pipe shall be measured and placed with enough material to properly connect to the main as well as to the customer's side. The new pipe material shall comply with the requirements of the Safe Drinking Water Act and other federal regulations for potable water systems as applicable. When dissimilar metals are to be connected, a dielectric fitting shall be used to prevent galvanic corrosion (see Sec. II.E regarding grounding of electrical circuits on piping).

4.1.3.5 Backfill and surface restoration. Select bedding and/or a specified fill material, in conjunction with the identified surface treatment, shall be placed in a manner consistent with all applicable requirements to reduce or eliminate the possibility of settling beyond the allowable amount along the course of the excavation.

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4.1.4 *Trenchless replacement on new routes.* The directional drilling or pneumatic/hydraulic installation methods of replacing lead service lines make use of a pilot hole that is created by drilling or pneumatically or hydraulically pushing a rod into the soil from an open access pit at the main to an access pit at the meter box or at an area adjacent to the wall where the new service will be connected on the customer's side. In a number of these installation scenarios, the existing lead pipe is disconnected on either end and left in place. When the existing lead pipe is left in the ground, the impacted customer(s) should be made aware of the abandoned pipe.

4.1.4.1 Required access pits. Based on the length of the service to be replaced, access pits shall be excavated down to the depth of the main on one side and to the depth of the service connection on the customer's side. As with any excavation, utility locates shall be requested and received prior to the work being performed, and all applicable trench safety devices shall be used. If the distance between the access pits is great or other underground utilities that are a cause for concern exist, an intermediate access pit may be required.

4.1.4.2 Proper use of boring tools. The boring tool shall be placed in the launching access pit level and pointed in the direction of the receiving pit. The horizontal and vertical directions of the tool shall be monitored until it reaches the receiving pit. Proper service line installation depth is critical and must be maintained in accordance with local requirements.

4.1.4.3 Connecting the new service line. Once the boring tool reaches the receiving pit, the new service line shall be connected to the boring tool and pulled through the bore hole with enough length of the new service pipe material to add fittings to connect to the main as well as on the customer's side. When dissimilar metals are to be connected, a dielectric fitting shall be used to prevent galvanic corrosion (see Sec. II.E regarding grounding of electrical circuits on piping).

4.1.4.4 Backfill and surface restoration. Select bedding and/or a specified fill material, in conjunction with the identified surface treatment, shall be placed in the access pits in a manner consistent with all applicable requirements to reduce or eliminate the possibility of settling beyond the allowable amount along the extent of the excavation.

4.1.5 *Trenchless replacement on existing routes.* The pipe-splitting method employs the use of a tool pulled through the existing lead service line that splits the pipe. The existing lead service line remains in the ground and a new service line is pulled into place. Another related method is to disconnect the lead service on each end and to connect a fitting to one side with an extraction device and to connect

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the new pipe material on the other end in order to pull the new service into place, while removing the existing lead service line.

4.1.5.1 Required pipe- splitting and -pulling access pits. As in the directional drilling and pneumatic/hydraulic installation approaches, access pits shall be excavated to the depth of the main on one side and to the depth of the service connection on the customer's side. Other underground utility locates shall be obtained prior to the work, and all applicable trench safety devices shall be used.

4.1.5.2 Use of the splitting tool. Care must be taken to disconnect the existing lead service line and to cut it in a manner that facilitates pushing a cable through it with the splitting tool attached. The splitting tool is then used to displace the existing lead pipe and draws the new pipe material through it to the other end of the project. When the existing lead pipe is left in the ground, the impacted customer(s) should be made aware of the abandoned pipe.

4.1.5.3 Connecting the new service line. Once the splitting tool reaches the receiving access pit, the new service line shall be pulled through to allow enough material to adequately connect to both sides. When dissimilar metals are to be connected, a dielectric fitting shall be used to prevent galvanic corrosion (see Sec. II.E regarding grounding of electrical circuits on piping).

4.1.5.4 Backfill and surface restoration. Select bedding and/or a specified fill material, in conjunction with the identified surface treatment, shall be placed in the access pits in a manner consistent with all applicable requirements to reduce or eliminate the possibility of settling beyond the allowable amount along the extent of the excavation.

Sec. 4.2 Partial Replacements

4.2.1 *General.* It may not always be practical or possible to replace all of a lead service line at the same time. Coordination among the utility, the property owner, and constructor could result in situations in which partial replacement may be unavoidable. Although every effort shall be made to avoid partial replacements, it may be necessary to accommodate partial replacement situations as an interim measure. Partial replacement is not desirable because of the potential for increased release of lead into the water. This section describes additional requirements and recommendations for partial lead service line replacements.

4.2.2 *Existing conditions.* For services where partial replacements have previously occurred and a portion of the service still contains lead pipe, it is recommended that these locations be identified and re-evaluated for removal of the remaining material. For example, some utilities, property owners, or constructors,

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through the course of routine maintenance and repairs, may have replaced portions of lead services with alternative materials without having replaced the remainder of the service either to the main or into the property.

4.2.3 *Delayed replacement.* Situations will occur in which a lead service line might not be fully replaced and a portion is left for later replacement. Coordination among all stakeholders during a lead service line replacement is critical. When it is necessary to complete a total lead service line replacement where both the utility and the property owner are responsible for portions of the work (i.e., up to the property line and beyond the property line), all parties should perform the work in close succession to minimize the potential for utilization of the service before completion of the total replacement. However, there may be instances in which one party completes its portion of the work in advance of the other party being available or willing. The scope of replacement may be large for some communities, and thus the time required to complete all the work may be long. In either of the delay cases presented below, the utility shall record that all portions of the service have successfully been replaced after notification of successful completion of full replacement. Communications regarding the effect of partial service line replacement should occur as covered in Sec. 4.3.

4.2.3.1 Property owner delay. On completion of the utility-owned portion of a lead service line replacement, the property owner should complete replacement of their portion as well. However, given the logistics of this work and the likely need for the property owner to hire an independent contractor, there may be a period during which the old and new portions of the service will be connected to allow for the continued supply of water but the lead replacement is only partially complete. During the interim period, the property owner shall be provided clear guidance regarding the increased risk of lead entering the water associated with the partial-replacement condition. Refer to Sec. 4.3 with respect to communication during this period.

4.2.3.2 Utility delay. If a property owner replaces a portion or all of the service line from the home to the property line, the utility should make every effort to obtain documentation of the replacement for its inventory. In most cases the utility will learn of the work after it is completed. If the property owner notifies the utility in advance, the utility should try to schedule a mutually convenient time to perform its portion. When this is not achievable, the property owner shall be provided with clear guidance regarding the increased risk of lead entering the water associated with the partial-replacement condition. Refer to Sec. 4.3 with respect to communication during this period.

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4.2.4 *Partial replacement.* It is possible that a portion of the service may contain lead, be out of the utility's responsibility, and subsequently not be replaced. This circumstance may exist for a variety of reasons including cost, miscommunication, misunderstanding of the issues, ambivalence, or social defiance.

4.2.4.1 Property owner refusal. Given the potentially high cost associated with service line replacement and the challenges that may arise with performing the work, it is conceivable to anticipate that some property owners may elect to do nothing. When this condition occurs, the utility shall follow the recommendations presented herein for dielectric connection of dissimilar metals, flushing, and testing. Documentation of the refusal, or at a minimum documentation that a portion of lead material remains (including its location and quantity), will be important for the utility to maintain complete records of the lead service line replacement progress/program. The customer should receive all necessary information regarding future risk.

4.2.4.2 Incentive program verification. If financing or incentive programs are available to property owners, utilities will need to be cautious about validating that property owner portions of lead services have been replaced, in their entirety or at all. A method for verifying work performed and recording completed work will be necessary.

4.2.4.3 Cutting of lead service lines. After customer notifications and utility locates have been accomplished, the specific location of the lead pipe to be cut shall be identified. The proper cutting tools shall be identified to reduce the amount of lead displaced from the cut. A cutting tool such as a pipe cutter or pipe shearing device that reduces lead particles and disturbance is preferred to other tools that use a sawing or other abrasive action. The necessary safety equipment shall be used, including safety glasses and/or goggles and safety gloves. Care shall be taken while cutting the lead pipe to reduce the amount of lead shards from traveling and/or accumulating in the remaining service line sections. The lead service line sections remaining shall be connected and secured to reduce or eliminate the possibility of water leakage. When dissimilar metals are to be connected, a dielectric fitting shall be used to prevent galvanic corrosion. The discarded lead service line shall be carefully cut or bent into manageable sections for processing for ultimate disposal. The replacement section should be a pipe material in compliance with all federal, state, and local requirements. The amount removed as well as specific locations of the remaining sections should be documented. The replaced service line shall be turned on and checked for leaks

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in a manner that does not expose the customer's side to potential lead fragments. Flushing shall be accomplished in a manner consistent with Sec. 4.4.

Sec. 4.3 Communications and Instructions to Customers

4.3.1 *General.* It is important to inform all customers that may be affected by lead service line activities. The utility shall provide communication to customers regarding the following items:

1. Advanced notice of planned lead service line replacement projects (45 days prior is recommended).
2. Informational point-of-contact for the project.
3. Additional notice prior to actual planned work affecting service line (day prior).
4. On-site utility point-of-contact during construction.
5. Postconstruction instructions regarding customer flushing, use of a point-of-use (POU) filter or bottled water, water sampling, and testing to be completed.
6. Clear guidance regarding the increased risk of lead entering the water associated with a partial lead service line replacement condition (if a full-service line replacement was not completed). Customers with partial replacements should avoid consuming their water unless they are using a filter certified for lead removal or they should consume bottled water until sample results show that their lead levels are less than the regulatory guideline.

In addition to water shutoff and service-line-isolation actions (Sec. 4.1.2.4), customers should be advised not to use water during excavation and construction activities.

Additional guidance to utilities for completing these customer communications is available in the foreword of this standard and in the AWWA document *Communicating About Lead Service Lines: A Guide for Water Systems Addressing Service Line Repair and Replacement.*

Sec. 4.4 Flushing Service Lines After Full or Partial Replacement

4.4.1 *Flushing by the utility immediately after lead service replacement.* After all connections have been completed, flush the water from an outside connection (such as hose-bib or hose leading from the house side of the meter installation) to remove any particles in the service line and near point-of-entry. The flushing is best done, if possible and practical, before the meter is connected in the service using a "jumper" or straight pipe in place of the meter. The straight pipe will allow for a higher velocity flush and protects the meter from potential damage from lead pipe and other construction-related fragments. Flush at full velocity for at least

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10 minutes. If the meter was replaced with a "jumper," it may be reconnected in the service after utility flushing. Following completion of flushing by the utility, the customer shall flush the interior premise plumbing as described in Sec. 4.4.2.

In situations where flushing by the utility is not performed, the customer should be notified with instructions to flush before using any water.

4.4.2 *Flushing by the customer after lead service replacement.* The customer should flush all interior premise plumbing the same day or before next water use following the replacement. Subsequent flushing by the customer should be done once every two weeks for three months or at other intervals based on monitoring results if available. Utilities may want to encourage best times to flush based on water demand and operations (for example, when neighbors' water usage is low, e.g., midmorning to dinner time or late at night). Customers shall be advised to not use hot water in the premise plumbing until initial flushing is completed to prevent sedimentation of lead particles in premise hot water tanks.

4.4.2.1 Suggested instructions for customers.

1. Find all the faucets that will drain, including the basement and all floors in your house.
2. Remove aerators and screens whenever possible, including the shower heads, from all faucets you plan to flush.
3. Include the laundry tubs, hose-bibs, bathtubs, and showers as flushing points.
4. After all the aerators are off, open the faucets in the basement or lowest floor in the house. Leave all faucets running at highest rate possible, using cold water.
5. After the faucets are all open in lowest floor, open the faucets on next highest floor of the house. Continue until faucets are open on all floors.
6. After all faucets are opened, leave the water running for at least 30 minutes.
7. After 30 minutes, turn off the first faucet you opened and continue to turn off other faucets in the same order you turned them on.
8. Clean aerators/screens at each faucet. You may need to replace screens/aerators if too old or worn.

Utilities and customers may consider an optional approach by coordinating a targeted flush of a few faucets at a time before opening all the faucets for the whole house flush. The targeted flush would start with a pattern of opening all faucets in a single area or single floor and then moving to the next to increase the flow velocities, followed by the whole house flush described above, with all faucets open.

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4.4.2.2 Additional daily miniflush. As a precaution, the customer should do a miniflush of premise plumbing by running tap water each morning or when the water sits in the pipe for at least 6 hours. Flush for 5 minutes to displace water that has been sitting in the pipes inside the house and in the service line. This could include taking a shower, running the dishwasher, flushing a toilet, collecting water for plants/garden, or running the faucet. The customer should do this before using any water for drinking, cooking, infant formula, and so on. Daily miniflushes should continue for six months or until lead sample results show the lead level is below the regulatory guideline. The customer should clean debris from aerators and screens once a month for six months. After six months, clean debris twice a year.

4.4.2.3 Sampling. Water sampling and testing, following replacement and flushing, shall be conducted per Sec. 5.2.

SECTION 5: VERIFICATION

Sec. 5.1 Documentation of Construction Activities

Documentation of construction activities for each service line work activity may support verification that the lead service line has been fully or partially replaced. The following information shall be documented and recorded:

- Picture of home with house number
- Picture of test pits and meter pit showing new pipe or pipe ends and old lead pipe if in same location
- Length and material type of new pipe installed
- Type of pipe material the new pipe is connected to inside home
- Method of installation (trenchless, hand-excavation, etc.)
- Length and location of any abandoned lead service line pipe left in the ground

Flushing time and location(s) (for example, an outside hose-bib) shall be recorded. Some homes may not have an outside hose-bib turned on or other situations may arise that do not allow for postflushing by the utility. These situations shall be documented in field reports along with any communication attempted with the customer.

Sec. 5.2 Water Testing Following Replacement

Testing the water following the replacement shall be done to determine if appreciable lead is still present in the drinking water. Lead may still exist inside

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home plumbing (lead solder, redeposited lead in scale of plumbing, and brass components) and could be disturbed during service line work. Therefore, lead present in the water following a full replacement does not mean the lead service has not been replaced. This condition should be explained to the customer. Flushing recommendations described in Sec. 4.4 can help remove released particles.

5.2.1 *Testing initiation.* Testing the water shall commence at least one month after the replacement to allow for sufficient in-house flushing and a period of normal use of water to occur. Utilities may consider initiating testing within the one-month period if supported by performance data. When only a partial replacement is completed and the lead service line replacement was mandatory as part of compliance with the Lead and Copper Rule (LCR), testing shall be conducted within 72 hours after the completion of the partial replacement of the service line per the requirements of the LCR.

5.2.2 *Test samples.* Testing shall include first-draw and second-draw samples. First-draw sample shall be the initial draw from the tap when it is turned on. Second-draw sample shall be collected with the objective of collecting water that stagnated in the service line, generally the fourth to seventh liter depending on site-specific conditions. Utilities may be able to omit the second draw sample if supported by documentation that the construction activities completely removed the lead service line and by acceptable first-draw lead data. Samples shall be collected from a frequently used tap inside the home, preferably the kitchen tap as the residents' consumption would likely be from the kitchen tap. Samples shall also be collected with the aerator on. Samples should be collected at the maximum flow rate of the tap and should be collected in wide-mouth bottles.

5.2.3 *Profile sampling.* Lead levels higher than expected from full lead replacements may occur and the utility or homeowner could investigate further with profile sampling. A profile is a series of bottles filled continuously following the stagnation period. The trend of lead concentrations coupled with measurements of the inside plumbing and service line will show which portion of plumbing or service contributes the highest lead by the liter number.

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County: Genesee County in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

CARP0706-017 08/01/2017

	Rates	Fringes
CARPENTER, Includes Form Work	$ 25.76	20.39

ELEC0948-009 05/28/2017

	Rates	Fringes
ELECTRICIAN	$ 35.40	22.18

ENGI0325-019 09/01/2017

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 32.03	23.35
GROUP 2	$ 27.30	23.35
GROUP 3	$ 26.57	23.35
GROUP 4	$ 26.00	23.35

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backhoe/ Excavator, Boring Machine, Bulldozer, Crane, Grader/ Blade, Loader, Roller, Scraper, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor, Bobcat/ Skid Steer /Skid Loader

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ENGI0326-011 06/01/2014

EXCLUDES UNDERGROUND CONSTRUCTION

	Rates	Fringes
OPERATOR: Power Equipment		
Group 1	$ 29.09	21.70
Group 2	$ 28.84	21.70
Group 3	$ 27.74	21.70
Group 4	$ 22.94	21.70
Group 5	$ 22.34	21.70
Group 6	$ 19.89	21.70

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: $1.50 per hour above the group 1 rate.
Crane operator with main boom and jib 400' or longer: $3.00 per hour above the group 1 rate.

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane operator with main boom and jib 400', 300', or 220' or longer.

GROUP 2: Crane operator with main boom and jib 140' or longer, tower crane, gantry crane, whirley derrick

GROUP 3: Backhoe/Excavator; Boring Machine; Bulldozer; Crane; Grader/Blade; Loader; Roller; Scraper; Tractor; Trencher

GROUP 4: Bobcat/Skid Loader; Broom/Sweeper; Fork Truck (over 20' lift)

GROUP 5: Boom truck (non-swinging)

GROUP 6: Fork Truck (20' lift and under for masonry work)

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* IRON0025-006 06/17/2017

	Rates	Fringes
IRONWORKER		
Reinforcing	$ 26.57	26.90
Structural	$ 29.99	33.43

LABO0334-009 06/01/2017

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
Landscape Laborer		
GROUP 1	$ 20.32	6.80
GROUP 2	$ 18.32	6.80

LANDSCAPE LABORER CLASSIFICATIONS

GROUP 1: Landscape specialist, including air, gas and diesel equipment operator, lawn sprinkler installer and skidsteer (or equivalent)

GROUP 2: Landscape laborer: small power tool operator, material mover, truck driver and lawn sprinkler installer tender

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LABO0334-015 09/01/2014

SCOPE OF WORK:
OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground piping/conduit (including inspection, cleaning, restoration, and relining)

	Rates	Fringes
LABORER		
(1) Common or General	$ 20.64	12.75
(2) Mason Tender-Cement/Concrete	$ 20.78	12.75
(4) Grade Checker	$ 20.95	12.75
(5) Pipelayer	$ 21.09	12.75
(7) Landscape	$ 15.54	12.75

LABO1075-010 06/01/2017

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
LABORER		
Common or General; Grade Checker; Mason Tender - Cement/Concrete; Pipelayer	$ 22.61	13.41

PAIN1052-003 06/01/2017

	Rates	Fringes
PAINTER		
Brush & Roler	$ 23.75	12.65
Spray	$ 25.10	12.65

PLAS0016-016 04/01/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 25.58	12.88

PLUM0370-006 06/01/2017

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 36.56	20.60

TEAM0007-006 06/01/2017

	Rates	Fringes
TRUCK DRIVER		
Dump Truck under 8 cu. yds.; Tractor Haul Truck	$ 24.90	.50 + a+b
Dump Truck, 8 cu. yds. and over	$ 25.00	.50 + a+b
Lowboy/Semi-Trailer Truck	$ 25.15	.50 + a+b

FOOTNOTE:
a. $455.00 per week.
b. $64.40 daily.

SUMI2010-055 11/09/2010

	Rates	Fringes
TRUCK DRIVER: Off the Road Truck	$ 20.82	3.69

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular

rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

CITY OF FLINT
FINANCE DEPARTMENT - DIVISION OF PURCHASES AND SUPPLIES

City Hall
1101 S. Saginaw Street, M203 – Flint, Michigan 48502
(810) 766-7340 FAX (810) 766-7240 www.cityofflint.com TDD 766-7120

Dr. Karen W. Weaver
Mayor

April 18, 2018

TO: All Proposers

FROM: Bryan D. Bond, Interim Purchasing Manager
Department of Purchases & Supplies

SUBJECT: **Addendum #1 – Proposal #18000574 - "Phase V-Fast Start Service Line Replacements" Due Wednesday, April 25, 2018 @ 12:00 p.m. (EST)**

The previous due date of Monday, April 23, 2018 @ 12:00 p.m. (EST) in the City of Flint Department of Purchases and Supplies has been cancelled. There is a new submittal deadline of:

Wednesday, April 25, 2018 @ 12:00 p.m. (EST)

The due date has been extended to allow additional time for all bidders to source supporting information and to prepare all necessary documents for an RFP response. Addendum #2 will be prepared and posted by Thursday, April 19, 2018 addressing all questions and concerns that have been communicated by the deadline of 5:00 p.m. Wednesday, April 18, 2018. Only those questions and issues of concern that have resulted from the mandatory pre-bid meeting of Monday, April 16, 2018 and those submitted in writing by the deadline will be addressed in Addendum #2.

All other existing documents, terms and conditions in this RFP remain in effect.

Any additional questions regarding the bid/proposal process may be addressed to this office.

Bryan D. Bond
Finance Department - Division of Purchases and Supplies

CITY OF FLINT

FINANCE DEPARTMENT - DIVISION OF PURCHASES AND SUPPLIES

City Hall
1101 S. Saginaw Street, M203 – Flint, Michigan 48502
(810) 766-7340 FAX (810) 766-7240 www.cityofflint.com TDD 766-7120

Dr. Karen W. Weaver
Mayor

April 20, 2018

TO: All Proposers

FROM: Bryan D. Bond, Interim Purchasing Manager
Department of Purchases & Supplies

SUBJECT: **Addendum #2 – Proposal #18000574 - "Phase V-Fast Start Service Line Replacements" NEW DUE DATE: Thursday, April 26, 2018 @ 12:00 p.m. (EST)**

The City of Flint (City), Department of Purchases & Supplies has issued Addendum #2 to the above referenced proposal. Please include this and any additional attached documents as part of the bidding documents.

The purpose of this addendum is to provide information from the pre-bid meeting that was held on Monday, April 16, 2018 along with any clarifications that may have not been addressed during said meeting.

A copy of the pre-bid meeting attendance sheet in included with this addendum

The due date for this proposal will be **Thursday, April 26, 2018 @ 12:00 p.m. (EST)**.

Any additional questions regarding the bid/proposal process may be addressed to this office.

Bryan D. Bond
Finance Department - Division of Purchases and Supplies

SCOPE OF WORK

As the cost of the project Bids allow, the City may award multiple contracts to complete the work. The scope of the SLR work will be divided by zones for executed contract. The City understands that not every bidder may have the labor, equipment or bonding capacity to execute the entire scope of the intended contract. The City will require each Bidder to provide the following information with regard to their ability to complete the work in **Section 00 41 13 – BID FORM**. This information should be provided on Company letterhead and signed by a company representative qualified to sign and execute their Bid and subsequent Contract.

The Contractor's mobilization if value will be reduced to 5% of the total value of their respective contract in the event multiple contracts are awarded for this project.

CONTRACT AWARD/SPLIT AWARDS

The City of Flint reserves the right to award by item, group of items, or total proposal to the lowest responsive, responsible Proposer. The Proposer to whom the award is made will be notified at the earliest possible date. Tentative acceptance of the proposal, intent to recommend award of a contract and actual award of the contract will be provided by written notice sent to the Proposer at the address designated in the proposal if a separate Agreement is required to be executed. After a final award of the Agreement by the City of Flint, the Contractor/Vendor must execute and perform said Agreement. All proposals must be firm for at least 120 days from the due date of the proposal. If, for any reason, a contract is not executed with the selected Proposer within 14 days after notice of recommendation for award, then the City may recommend the next lowest responsive and responsible Proposer. Pursuant to City of Flint Ordinance §18-21.5 "Lowest responsive responsible proposer" means the proposer that possesses financial or pecuniary ability to complete the contract, integrity and trustworthiness, skill, judgment, ability to perform conscientious work, promptness, experience, necessary facilities and equipment for doing the work, efficiency, previous performance of satisfactory work, together with essential factors particular to this project.

BID BOND

The value of the Bid Bond shall be revised from $100,000 to

A bid guaranty or a cashier's check for $75,000 for each work area bid ($750,000 maximum), must be submitted with the Bid. Please note: cashier' check must be payable to Treasurer, City of Flint. Bidders may bid on as many work areas as they choose, however, the bid bond requirement will be based on the number of work areas the Contract has placed in the section that poses the question of, *"...how many of the potential work areas for SLR work do you feel your company could successfully complete by the substantial completion date? This maximum number of work areas #_____*" If the contractor states one (1), then the bid bond requirement is $75,000 (maximum number of work areas the Bidder is willing to accept 1 X $75,000). Likewise if the contractor states ten (10) work areas, the bid bond requirement is $750,000.

PERFORMANCE AND PAYMENT BONDS

A performance and payment bond are required on the part of the contractor for 100% percent of the contract price.

SERVICE LINE REPLACEMENTS

The measurement for additional linear footage of service line replacement (Bid Item SLR.13) shall be made to the face of the house closest to the water main serving the property.

CUT AND CAP, ABANDONED HOUSE SERVICES

The Contractor shall only cut and cap abandoned house services if the corporation stop for that respective property is exposed in an open trench for work at an active service line replacement. Service lines should not be cut and capped if the work requires a new excavation to be made solely for the completion of the cut and cap work.

SECTION 33 10 00 WATER UTILITIES AND SERVICE CONNECTIONS

Add the following text as Paragraph 3.07D.22 of Section 33 10 00.

When dissimilar metals are to be connected, a dielectric fitting shall be used to prevent galvanic corrosion.

SEWER LATERAL INSPECTION

The sewer lateral should be inspected before and after service line replacement work is completed. The unit price bid shall include both pre- and post-construction inspection. Sewer lateral inspection will only be conducted at properties where service line replacement work will occur.

EXPLORATORY EXCAVATIONS

If, during exploratory excavations, a copper – copper service line is confirmed, and thus no service line replacement is required, then the Contractor will be paid for their efforts under the Exploratory Excavation Bid Item M.8. No payment will be made for exploratory excavation if any portion of the service line is identified as a non-copper material and would therefore be required to be replaced. The service line replacement work would then be paid under the respective Bid Item.

METER RELOCATION

The Contractor is not required to move the water meter. A plumbing permit is required if a meter is moved more than 2’ from its existing location. The Contractor shall be responsible for obtaining the permit, paying for all associate fees, and complying with the requirements of the permit. The City reserves the right to waive or refund the permit fee.

EXCAVATION BACKFILL

While the Contractor is not required to perform compaction testing, they are required to meet the compaction densities specified in the Bidding Documents. The Contractor shall be responsible to remedy any differential settling of backfill in excavated areas through the term of their Performance Bond.

PHASED CONSTRUCTION

Delete Paragraph 1.04 Phased Construction from Section 01 11 00 in entirety.

CURB AND CORPORATION STOPS

See attached Approved Parts List provided by the City.

INSTRUCTIONS TO BIDDERS

Paragraph 32.06 American Iron and Steel (AIS) Requirements of Section 00 21 13 Instructions to Bidders shall be revised to read as follows.

The Contractor acknowledges to and for the benefit of the City of Flint ("Purchaser"), that all iron and steel products used in the project be produced in the United States ("AIS Requirements") including iron and steel provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser that (a) the Contractor has reviewed and understands the AIS Requirements, (b) all iron and steel used in the project will be and/or have been produced in the United States in a manner that complies with the AIS Requirements, unless a waiver of the requirements is approved by the Purchaser, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the AIS requirements, as may be requested by the Purchaser. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Purchaser resulting from any such failure.

INTERIOR RESTORATION

The scope of restoration in the basement of the home shall be as follows.

- Concrete / Masonry Wall: Restore disturbed areas as specified.
- Drywall: Cut area to be disturbed to provide a clean, uniform penetration through the drywall that will also permit the exterior wall penetration to be completely sealed and made watertight. Patch disturbed areas of drywall in a professional, finished manner with new drywall, joint compound and other required materials. No painting or surface texturing of the disturbed area is required.
- Wall Paper or Paneling: Cut area to be disturbed to provide a clean, uniform penetration through the wall that will also permit the exterior wall penetration to be completely sealed and made watertight. Limit disturbance to the minimum area possible. No new wall papering or paneling will be required.

A residential authorization form to complete SLR work on the private side of the home will be required before the SLR work is completed. The homeowner will be apprised of these restoration limits.

DAVIS-BACON PREVAILING WAGE RATES

Davis-Bacon prevailing wage rates provided in the Bid Documents were confirmed to be current. Rates were obtained from https://www.wdol.gov.

SAMPLING PORT

The sampling port depicted in the Water Meter Sampling Detail of Appendix B, Standard Details shall be deleted from the scope of work.

BIDDER QUESTIONS

The following questions were posed by bidders after the pre-bid meeting.

1. Item H. on the bid form states that "The maximum cost for any service line replacement is capped at $5,000 each per the Concerned Pastor's Agreement. Bids with unit prices for Bid items SLR.1 through SLR.12 in excess of this value will be rejected." The actual language in the concerned pastor's agreement states the following: "Reimbursements or payments under Paragraph 23 will not exceed $5,000 per address at which a service line is replaced, without prior authorization by the MDEQ. MDEQ shall not unreasonably withhold reimbursements or payments under this paragraph. For a given period for which reimbursement or payment is sought, the cost per address shall be the average cost of the service line replacements in the payment request submitted by the City for that period. For the purposes of this Paragraph, service line replacements shall be included in the

calculation of the average cost per address regardless of whether all or part of the service line from the main line to the household water meter is replaced." The Concerned Pastor's Settlement Agreement is stating that the average cost per address cannot exceed $5,000 on the City's payment request. The agreement is not stating that individual addresses cannot exceed $5,000 in cost. Previous phases of this work allowed unit prices to be in excess of $5,000. Will the language on the bid form be changed to allow individual pay units to be greater than $5,000? ***The intent of the Bid is to maintain the $4,500 cap.***

2. In previous phases of this work, installing contractors were required to turn over to the City all lead piping that was removed from the ground. Will this still be a requirement? ***The Contractor is responsible for the disposal of all construction debris, including lead service lines.***

3. Is it the intent to have the Final Restoration contractor saw cut and cleanup the edges of the road cuts if necessary when they are performing their work? It is typical that the edges of road cuts will chip apart after installing contractors work is complete due to "spider web cracks" in the road surface. ***Yes, however, the SLR contractor will be required to saw cut all road excavations and maintain the edges of the cuts until the restoration contract is executed.***

4. Section 330512 Horizontal Directional Drilling states that there are 10 and First Aid/CPR requirements. This only shows up in this section. Please clarify who is required to have these certifications. ***The Contractor executing the contract with the City will be required to submit a Safety Plan and adhere to the protocols and procedures established in the plan. This will apply to all work identified in the Project.***

5. In previous phases of this work, Traffic Control plans were submitted to COF Traffic Engineering Division in situations where specific traffic devices are needed outside of normal sign requirements. Will this continue to be the procedure? The traffic control plan is only in specification section 330512 (HOD), please clarify if this applies to all work. ***The Contractor is responsible to obtain, as necessary, and comply with the requirements of required traffic control permits for all work conducted for this Project.***

6. In addition to the questions submitted in the below email, can you please also clarify your comment from the pre-bid meeting in regard to flushing interior piping? You stated that AECOM will flush the interior piping and will be responsible for resident's issues with their interior piping downstream of the meter. ***AECOM will provide field representatives to distribute information, and assistance as necessary, to the local residents regarding the flushing of water from the residential plumbing after the completion of SLR work. AECOM will also address residential concerns regarding the water supply and will redirect issues to the Contractor as applicable if AECOM cannot resolve the issue.***

7. Sometimes issues arise days or weeks after the work is complete due to corrosion on the inside wall of the piping breaking loose and restricting flow to fixtures when the water is turned back on. Will your team handle those issues? ***See response to 6. above.***

8. Can we get a count on the 60' Copper Coils in stock for this project to figure out what balance will be needed to complete this project and at the Pre bid meeting it was said if a service goes past the front of the house (60') than just add footage to the 60' coil with a coupling but in section 33 10 00-16 it says (NO.8) that the service line will be a continuous piece of pipe in the past contractors used a 100' coil. ***The total footage of 60' copper coils is approximately 200,000 LF. Copper coils may be distributed to multiple contactors depending on how many SLR contracts are awarded. Distribution will also be based on the final scope of work for each contract awarded. An exact count of coils / contactor cannot be made at this time. The Contractor may use their own 100' copper coils if the anticipated SLR work is in excess of 60'. The***

intent of the work is to reduce or eliminate the number of fittings on a line. However, the intent of the work is to also utilize a supply of copper that was provided to the City.

9. "FINAL saw cut and clean up edges" of holes before Final Restoration is performed typically falls on the restoration contractor within the industry. The existing conditions of roads (i.e. spidering, flaking, etc.) makes the excavation cuts being intact at time of replacement nearly impossible. ***See response to 3. above.***

10. Plating overnight increases productivity of installations; will we be allowed to prep, excavate & plate holes the night before in order to stay efficient and on schedule. ***Plating of the road in areas where preparatory work has started will be permitted in order to expedite the work. Plating shall not be permitted to secure an open excavation of incomplete work. The City reserves the right to disallow overnight plating in the event the sites are not secured or if the Contractor abuses the privilege. All plating shall be fully secured so that it cannot be moved. The Contractor will be responsible to maintain plating at all times and restore any damage to the road surface as a result of the plating.***

11. Section 01 29 01 (1.05 F.) – Requiring contractor to install new corporation at each service connection. In past the COF mandated that contractor was not to do any work on corps, main taps or any work on their main. PLEASE CLARIFY CONTRACTOR's RESPONSIBILITIES / EXPECTATIONS. ***As noted during the pre-bid, the intent is to utilize the existing corporation stop. New corporation stops will be installed at locations where multiple connections manifold into a single connection to the existing municipal main or if the existing corporation stop is leaking. The City will complete all new taps to the existing water main. The Contractor is responsible for the provision of the corporation stop and should budget their prices accordingly.***

12. Section 33 05 12 (1.05 B. 3. a. & b.) – OSHA 10 HR Construction Industry & First Aid & CPR. What are the minimum requirements for these certifications and how many of employees on each crew may or may not be required? ***See response to 4. above.***

13. Section 33 05 12 (1.06 A. 2. b.) – Traffic Control Plan – In the past this was submitted to COF Traffic Engineering (Rod McGaha), in situations where specific traffic devices are needed and then would be approved or modified. Will this remain the practice? ***See response to 5. above.***

14. Material Disposal Plan (MDP) – What is the intent of this requirement? (i.e. – are we to assume this is for Hydrovac material only, since Hydrovac on SLR (Service Line Replacements) was specifically noted on the exhibit?) ***A revised MDP is attached to this Addendum.***

15. page 172, Section No. 01 29 01-3 #f is the contractor required to supply the city with a new corporation even though the city will make the tap. ***See response to 11. above.***

16. If we come across a main which has an existing corporation which is leaking and at no fault to the contractor. The city last year wanted a hydrovac completely around the main and a significantly larger hole at most times 10'x10' area. Will there be reimbursement for the extra sand, stone, trucking, hydrovac due to the faulty existing corporation connection replacement. ***The Contractor will be required to complete the work to the 10' x 10' limits shown on the Service Line Replacement Detail of Appendix B, Standard Details. Work outside of these limits would require a change order be made in accordance with the Contract Documents. The Contractor will be required to provide acceptable access and working conditions, at no additional cost to the City, to the water main for repairs required to be made as a result of damage caused by the Contractor.***

17. Is the preferred method to utilize the existing corporation at the main. When we be expected to change it out as it is mentioned in many instances (such as Section No. 01 11 00-1 A) that the contractor changes out and supplies? ***See response to 11. above.***

FAST START PARTS LIST

LIN#	ITEM ID	DESCRIPTION	UOM
1	new part	Angle Ball Meter Valves w/handle BA23-23XW-NL	EA
2	6700146000 COF	Corporation Stop, Cop 3/4" Ford #F-600-3	EA
3	new part	Ball Valve Curb Stop 3/4" Ford# B22-333-NL	EA
4	new part	Ball Valve Curb Stop 1" Ford #B22-444-NL	EA
5	new part	Angle Ball Meter Valves w/handle Ford #BA23-444W-NL	EA
6		Ball Valve Curb Stop 1-1/2" Ford#B232-666NL	
7	6700145000 COF	Corporation stop, cop 2" Ford #F-600-7	EA
8	new part	Ball Valve Curb stop, cop 2" Ford #B22-777NL	EA
9	6700158020	Curb stop, iron 2" Ford #B22-777	EA
10	6700161010	Curb boxes, regular 95E screw, no enlarged base MUST COME ASSEMBLED COMPLETE MUST INCLUDE COVER (cover has pentagon bolt) ***DOMESTIC ONLY***	EA
11	6700161000	Top half, 2-1/2", must include the cover (cover has pentagon bolt)	EA
12	6700162000	Extension, short, 2-1/2" x 9"	EA
13	6700163000	Extension, long, 2-1/2" x 16"	EA
14	6700164000	Lid, repair, OLD STYLE.	EA

THE CITY OF FLINT, MI

MATERIAL DISPOSALPLAN (MDP)

This form is to be submitted when removal and off-site disposal of excavation spoils, demolished material or other debris is required from a City of Flint project.

All excavated and demolished material from a construction site that is not to be reused must be properly removed and disposed at an approved facility. If the material is to be disposed of in the City of Flint, a permit or written authorization must be obtained from the City and / or disposal facility. If it is to be disposed of outside the City limits, documentation must be provided that the Contractor has complied with all the rules and regulations of the local community and that the disposal facility or property owner has given their approval to accept the material. One copy of this form must be completed for each disposal / stockpile site if the Contractor plans to use more than one site. A copy of this plan must be on file with the City and Engineer before initiating construction.

General Project Information and Certification

Date Submitted: _____ City of Flint Project No: 18-574

Contractor: _____ Project Name: Phase V SLR

In submitting this Material Disposal Plan (MDP), the above named contractor expressly certifies that all material to be removed from the construction site will be hauled in accordance with all applicable federal, state, and local highway and traffic rules, regulations and laws, and that the Material Disposal Plan meets all federal, state, and local rules and regulations with regard to the removal and disposal of this material.

Contractor Contact: _____ Title: _____

Signature: _____ Date _____

Disposal of Material within the City of Flint

Is the material to be disposed of within the City of Flint? Yes[1] _____ No _____

[1] Attach a copy of the disposal permit if the above answer is "Yes".

Disposal of Material outside of the City of Flint

Is the material to be disposed of outside of the City of Flint? Yes[2] _____ No _____

[2] Provide the following information if material is to be removed from the site and disposed outside the City of Flint.

Disposal Site: _____ Site Address: _____

Municipality: _____ _____

Is a permit for the above municipality required? Yes[3] _____ No _____

[3] Attach a copy of the municipal permit

Directions to Site _____

_____

Disposal Facility / Property Owner Acknowledgement

I hereby acknowledge that i have agreed to accept material from _____, to be disposed of at our facility / property as described above and that it is my understanding that the above named contractor will meet all federal, state, and local rules and regulations with regard to the removal and transport of this material.

Facility Owner:: _____ Title: _____

Signature: _____ Date _____

G-3287 Beecher Road, Flint, MI 48532
T: 810.732.6712 F: 810.732.6768

CITY OF FLINT
Flint Water Quality Improvement Program

CONTRACT 18-574 PHASE V SERVICE LINE REPLACEMENTS
PRE-BID MEETING MINUTESAGENDA

April 16, 2018 @ 10:00 AM

1.0 INTRODUCTIONS

City of Flint (Bryan Bond, Purchasing Director and Rob Bincsik, Director of Public Works)

Construction Manager, AECOM (Darby Neidig, Construction Manager; Tietricha Thomas, Administrative Program Support; Kyle Baisden, Construction Administrator; Veo Luster, Field Representative Supervisor; and Sam Cox, Program Management)

Refer to attached sign-in sheet for a list of attendees.

2.0 BIDDING INFORMATION

Bid documents are available for viewing on the City's website, www.cityofflint.com/purchasing under "Open Bids".

The pre-bid meeting is mandatory. Bidders not in attendance will be disqualified from bidding on this contract. Provide contact information on the sign-in sheet.

Bidding Dates (estimated) are as follows.

- Final Date for Questions: Wednesday, April 18, 2018 @ 5:00 PM EST. (Darby noted that this date is incorrectly identified as Tuesday April 17, 2018 in Section 00 21 13, Instructions to Bidders, Paragraph 7.01)
- Final Addendum: Friday, April 20, 2018 @ 5:00 PM EST
- Bid Due Date: Thursday, April 26, 2018 @ 12:00 PM EST, Purchasing Dept., Room 203
- Bid Review: Thursday, April 26 - Friday, April 27, 2018
- Introduce to Finance Committee: Wednesday, May 2, 2018
- Anticipated City Council Approval: Monday, May 7, 2018
- Contract Preparation: Tuesday, May 8 - Friday, May 11, 2018
- Anticipated Contract Execution: Monday, May 14, 2018

Bids will be time stamped. Late bids will be retained, but unopened and disqualified from consideration for award. Bidders responsible to ensure bids are submitted on time.

Bids to open at approximately 12:05 PM EST in McKenzie Conference Room.

Bid results will be posted to the City's website, likely by close of business on April 26.

A bid security of $100,000 required in the form of a bid bond or cashier's check payable to Treasurer, City of Flint. The City is considering a 5% bid bond. Further information will be provided via Addendum.

All questions are to be submitted in writing to Bryan Bond. Copy Darby Neidig on correspondence. Questions not submitted in writing will not be addressed or considered.

Contractors should register on City's website if they are not already a registered vendor. Include vendor application with bid. Information provided will be used for direct deposit of payments.

Bidders must acknowledge all addenda received.

Bid submittal shall be as follows. 1 original (unbound) and 1 copy. Copy may be submitted as an electronic file on a portable flash drive. The drive should be provided inside the sealed envelope containing the Bid.

Bidders should fill out Bid Form in entirety and complete all Exhibits in Bid Form. Bidders are only required to submit the bid form, Exhibits and required supplemental information. The entire project manual does not need to be submitted. Incomplete bid forms or bids will be rejected.

The project is subject to Davis-Bacon prevailing wage rates. Certification of the rates will be made by the City prior to payment approval. Rates will be reviewed by Dan Argentati. Dan's contact information will be provided.

The cost for service line replacement is capped at $4,500 each, regardless of size. Bidders must consider the cost / LF for replacement over 60' into their pricing. Refer to Article 5, Paragraph 5.01H of the Bid Form.

3.0 SCOPE OF WORK - CONTRACTOR

The scope of the work generally consists of or includes full and partial (public or private side of curb box) replacement of ¾" – 2" residential water service lines at up to 6,000 properties, identified during HVI project. Partial replacement refers to replacing the entire service line from the municipal main to the curb stop or from the curb stop to the residential meter. The entire portion of the service line shall be replaced. The Contractor should not replace a portion of the service line and connect new copper to existing lead or galvanized pipe.

Most service lines are expected to be less than 60'. Service lines greater than 60' will have a pay item to account for additional LF service line installed over 60'. Payment for the additional footage will be the same, regardless of service line diameter. The measurement for this pay item will end at the front face of the house. The CM will make a determination regarding the replacement of segments over 60' if the total cost will exceed the $4,500 cap.

Piping work inside the home, including relocation of the meter, will be considered incidental to the service line replacement work. Relocation of the residential meter is at the Contractor's discretion and made for their convenience. A plumbing permit, and corresponding inspection by the City, will be required for any meter moved more than 2' in any direction.

Some work will occur in the SHPO zone. This work will require an archeologist to inspect the excavation before backfilling can occur. The CM is working to secure the services of an archeologist and if necessary, support staff to help expedite the work.

Cut and cap of abandoned house services. It was discussed that this work should only occur at abandoned house service connections that are exposed in an open trench for work at an active service line replacement. Service lines should not be cut and capped if the work requires a new excavation to be made solely for the completion of the cut and cap work. This will be clarified in the forthcoming Addenda.

Sewer lateral inspections are required at each house where work will occur. The Contractor may inspect from the house to the municipal sewer main or from the municipal sewer main to the house. The City will clean the municipal sewer main in the event the Contractor wishes to inspect from the main line toward the house but cannot access the sewer due to debris accumulation. There were concerns that this could violate union policies regarding sewer maintenance if the Contractor completed this work. The sewer lateral should be inspected before and after service line replacement work is completed. The per unit price bid shall include both pre- and post-construction inspection. The Contractor will be required to repair, at no additional cost, any sewer lateral damaged by the Contractor during the execution of the work.

The bid has provisions for police and flagger assisted work in the event any traffic control permit requires the use of flaggers or police to help direct traffic through the construction area. The Contractor should contact the CM in the event the permit does not require these types of controls but the Contractor believes the work area is too dangerous to work without their assistance.

In the event the hydrovac investigation contractor cannot locate a curb stop or the service line, the SLR Contractor may be directed to complete an exploratory investigation to identify the service line material. If copper is confirmed, and thus no service line replacement is required, then the Contractor will be paid for their efforts under the Exploratory Excavation Bid Item M.8. No payment will be made for exploratory excavation if any portion of the service line is identified as a non-copper material and would therefore be required to be replaced.

The City has secured 3,000 to 4,000, 60-ft coils of ¾" copper tubing. Contractors will be provided with this material for ¾" service line replacements. A credit will be provided back to the City for each coil of copper provided. No copper will be returned to the City. The credit will be for the complete coil. The Contractor will not be refunded monies in the event only a portion of the coil is used. The credit for the copper was established through direct pricing provided to the City by Etna Supply and Ferguson Waterworks.

The Contractor will be required to use this copper until the supply is exhausted. The City does not have copper tubing available for piping larger than ¾". The Contractor will be required to furnish copper tubing when the City's supply runs out and for service lines larger than ¾". The Contractor can utilize their own ¾" copper for those service line replacements longer than 60' as the intent is to not have segments of copper piping coupled together.

Site assignments for work locations will be distributed before the work starts and as the work is occurring as the hydrovac work will still be ongoing.

AECOM will have field inspectors to document the work using hand-held tablets that upload data in real-time to a remote data depository. The Contractor should still track their work for record-keeping purposes. Pre- and post-construction photo documentation should also be completed by the Contractor as specified. AECOM can provide the Contractor with "read-only" access to the data. GIS mapping shapefiles can be provided to the Contractor to assist with SLR work locations. The shapefiles will have information related to each property such as address, homeowner, etc.

AECOM will be responsible for residential notifications and obtaining authorization forms from residents for completing the work. The Contractor will be provide with blank authorization forms that residents can execute in the event a resident did not authorize the work, but wants to do so and an AECOM representative is not on site.

Final site restoration (seeding, final paving, final concreting, etc.) will be completed under another contract. The SLR Contractor will be expected to complete restoration as specified. Compaction testing is not required but the SLR Contractor will be responsible for settling that occurs after the work is finished. The SLR Contractor will be required to maintain the site until the Restoration contract is awarded. It is estimated that the Restoration contract will be awarded 4 – 6 weeks after the SLR Contact is awarded.

The Contractor should utilize existing corporation stop to make the new service line connection to the existing main. A single corporation per property will be provided. Multiple service lines that manifold into a single connection will be separated. Each new service line shall be individually tapped into the existing main and a new corporation stop provided. The City will complete all new taps to the existing main.

The Contractor is responsible to repair, at no additional cost to the City, any damage caused by the Contractor during the execution of the work.

The work site should be restored to a clean and orderly condition at the end of each day.

The contractor is responsible for site safety and traffic controls. All excavations shall be completed according to OSHA guidelines. Trench boxes will be utilized to ensure the safety of workers. The contractor's operations will be stopped if the proper safety protocols are not followed. No additional payment will be made for the employment of safety protocols, including excavation shoring.

The Contractor is responsible for the approved disposal of excavation spoils and debris. A Material Disposal Form (MDF) is included with the bid documents. This form must be executed and provided before the work starts. The Contractor is not permitted to dump, dispose or store excavation spoils or debris at any site without prior written approval of the property owner.

The Contractor is responsible for providing or obtaining material and equipment storage locations. Empty lots in the City are not to be used for material and equipment storage. The Contractor must obtain written permission from the property owner before using a location for material or equipment storage.

A plumbing permit is required if a meter moved more than 2' from its existing location. There was discussion regarding the need for a licensed master plumber to complete any work involving water piping inside the home. The City will provide confirmation regarding this work. The Contractor should assume that they will be responsible to pay any plumbing permit fees. This fee may ultimately be refunded to the Contractor but is not guaranteed.

The Contractor should coordinate road closures and detours with the City Streets Department and EMS.

Michigan Miss-Dig notification and mark-outs are required to be completed prior to the start of work.

4.0 SCOPE OF WORK – CITY

The City will complete new water main installation and corresponding water main disinfection.

City inspectors will provide final inspection and approval of correct installation of the new service line.

5.0 SCOPE OF WORK – AECOM

AECOM will provide on-site representatives to document and coordinate the work and answer questions as they arise. The field reps fill not direct the Contractor regarding their means and methods for completing the work.

AECOM representatives will also assist homeowners with flushing the residential plumbing after the SLR work is completed and also to install new water filters.

AECOM will address homeowner issues such a clogged faucet scenes. The Contractor will be responsible to address construction related issues on the service line or sanitary lateral.

6.0 OTHER

100% Performance and Payment bonds are required to be provided for the final contract value awarded. Bidders are concerned about their ability to secure 100% bonding for such a large project.

Notice to mobilize issued upon approval of pre-construction submittals, including bonds and insurance.

Typical working hours will be Monday through Friday, 7 AM to 5 PM. The City will consider and extension of working hours during the work week. Weekend, overnight and holiday work to be coordinated with the City and AECOM.

The date for Substantial Completion is November 30, 2018. The project will be considered Substantially Complete when all assigned service line replacement work is completed satisfactorily. The only remaining work would be final cleanup and outstanding punchlist items.

The date for Final Completion date: December 31, 2018.

7.0 OPEN DISCUSSION AND QUESTIONS

The City reserves the right to award multiple contracts for the work. The quantity of SLR work will be divided equally between all executed contracts. Some Contractors may not have the capacity to fully execute the work. The City is willing to modify the scope of work to reduce the quantity of SLR according to the Contractor's ability to complete the assigned work. The Bidders have some concern in that their respective bid bond could be revoked if the City does not modify the scope of work and the specific Contractor is unable to either Bond the work or actually execute the work despite informing the City that they could only complete a specific scope of work.

Contractors should bid the project under the assumption that the City will only award one Contract for the work.

The Bidders asked if they could perform preparatory work at the end of the work day so that the site would be ready for work at the start of the following day. This would typically involve saw-cutting the road, removal of asphalt and possibly road subgrade. They noted that the work was completed in this manner last year and it greatly expedited the work. Steel plating would be placed over open excavations when the Contractor is not on-site. They City is against plating open road excavations. Clarification regarding the use of plating with regard to preparatory work will be provided by Addendum. Darby noted that if plating is authorized, it is only to be used for preparatory work and not as a means of securing unfinished work, unless extenuating circumstances dictate. The Contractor should not start work that they cannot finish.

AECOM will utilize SharePoint to complete the invoicing process. AECOM will have their SharePoint lead come to Flint to train the Contractor on the use of SharePoint. Invoices will be uploaded to SharePoint by the Contractor. Reviewers will receive an email notice and will return comments to the Contractor via SharePoint. A parallel review of prevailing wage rates can be completed by Dan Argentati. The Contractor can upload required attachments to SharePoint also. Upon approval, the pay application will be sent directly to Flint's Accounts Payable department.

A standard AIA invoice template will be used on this project by all Contractors in an effort to standardize invoice format and review.

Questions regarding any work that would be construed as additional work or requires approval will be directed to Darby. He will confirm authorization with the City and provide guidance to the Contractor.

Darby should also be contacted when the existing conditions are observed to require repair by the City or if the existing meter needs to be replaced.

It was noted that the sampling port should be paced on the house side of the meter. This will require the work to be completed by a licensed master plumber. It was also questioned if the port is required to be installed if the private side of the service line is not replaced. This will be clarified by addendum.

The Mobilization bid item will not exceed 5% of the total cost of all other bid items.

Text regarding 60% of work being completed before more work is assigned will be removed from Section 01 11 00, Paragraph 1.04A by addendum.

The City will provide specific part numbers for Ford Meter Company curb and corporation stops.

Work will only occur at single family residential properties. Service lines to apartment buildings and businesses will not be replaced under this Contract.

Most service lines and corresponding curb boxes should be located via the Michigan Miss Dig mark-out and during the hydrovac exploration work.

The depth of the service line at the main and curb box should be measured by the Contractor and provided to the field inspector. The field tracking tablet allows for this information to be documented. Tracking log for depth as specified in the HDD specification, Section 33 05 12 is not required.

Section 33 10 00 states that the new service line has to come through the wall of the house. The Contractor may install the new service line through the basement floor. All penetrations should be completely sealed as specified.

Ground jumpers should be reinstalled after completion of the work. The jumper should be connected to the new riser.

The City will provide direction via addendum regarding restoration work in a finished basement.

The Contractor is responsible for the proper disposal of all spoils and debris material. This includes all service line materials as well as any asbestos curb boxes. The City believes that all of their curb boxes are cast iron. The City will not accept these materials.

Phase IV SLR contractors, as well as representatives from other utilities, may be working in the same area as this project. The Contractor is responsible to coordinate the work accordingly with the other contractors and the field representative.

Contractors will be paid for work as it is completed. No payment will be made for stored materials.

Darby will check to see if any updates to the prevailing wage rates were made since the bid was issued. Updated wage rates, if required, will be provided by addendum.

SECTION 00 41 13

BID FORM

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

The City of Flint
Department of Purchases and Supplies
1101 S. Saginaw Street, Room 203
Flint, MI 48502

Attn: Bryan D. Bond
Purchasing Manager

(Hereinafter called Owner)

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 120 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner. Bidder shall sign and deliver the required number of counterparts of the Agreement with the bonds and other documents required by the Bidding Documents within twenty (20) days after the issuance date of the Notice of Award.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or

subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

J. Bidder agrees to comply with the Disadvantaged Business Enterprise participation as specified in the Bidding Documents.

K. In connection with the performance of Work under this Contract, Bidder agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition or developmental disability, or national origin.

L. The submission of this Bid constitutes and incontrovertible representation by the Bidder that the Bidder has complied with every requirement of the Bidding Documents, and that without exception, the Bid prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the unit prices identified in the table below.

A. Unit Prices shall be computed in accordance with Paragraph 11.03.B of the General Conditions.

B. The intent of this Bid is to establish unit prices to complete service line replacements (SLR) and associated work. The complete scope of SLR work is dependent on the results of the hydrovac exploration contracts. The hydrovac explorations will occur at a minimum of 6,000 houses. SLR and related work will be conducted at properties where hydrovac explorations locate non-copper water service connections or where hydrovac explorations cannot be conducted.

C. SLR quantities may be increased or decreased as schedule and available funding dictate.

D. The Owner reserves the right to award additional assignments once a Contract's original scope of work is completed and accepted by the Owner.

E. The Contractor shall not be entitled to renegotiate any unit pricing based upon the quantity of any work.

F. Bidder acknowledges that quantities of work are not guaranteed. Final payment for all unit price Bid items will be based on actual quantities of work completed as described in the Contract Documents.

G. The City of Flint reserves the right to reject any or all Bids, or to accept or reject any Bid in part, and to waive any minor informality or irregularity in the Bid received if it is determined by the City of Flint, or their designee, that the best interest of the City will be served by doing so. No Bid will be considered from any person, firm or corporation in arrears or in default to the City on any contract, debt, taxes or other obligation, or if the Bidder is debarred by the City of Flint from consideration for a Contract award.

H. This Contract will be awarded to the lowest responsive, responsible Bidder for up to ten (10) work areas. A Bidder may be awarded zero, one, multiple, or all work areas. Therefore, award will be made to between zero and ten different Bidders. The Bidder to whom the award is made will be notified at the earliest possible date. Tentative acceptance of the Bid, intent to recommend award of a contract, and actual award of the Contract will be provided by written notice sent to the Bidder at the address designated in the bid if a separate Agreement is required to be executed. After a final award of the Agreement by the City of Flint, the Bidder must execute and perform said Agreement. If, for by reasons of refusal by the Bidder, a contract is not executed with the selected Bidder after notice of recommendation for award, then the City may recommend the next lowest responsive and responsible Bidder for that zone.

ITEM	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE
Mobilization				
MOB.1	Mobilization / Demobilization	1 LS	$	$
Service Line Replacement (SLR)				
SLR.1	¾" Partial Replacement, Public Side	200 EA	$	$
SLR.2	¾" Partial Replacement, Private Side	80 EA	$	$
SLR.3	¾" Full Replacement	280 EA	$	$
SLR.4	1" Partial Replacement, Public Side	10 EA	$	$
SLR.5	1" Partial Replacement, Private Side	6 EA	$	$
SLR.6	1" Full Replacement	12 EA	$	$
SLR.7	1-½ " Partial Replacement, Public Side	2 EA	$	$
SLR.8	1-½ " Partial Replacement, Private Side	2 EA	$	$
SLR.9	1-½ " Full Replacement	2 EA	$	$
SLR.10	2" Partial Replacement, Public Side	2 EA	$	$
SLR.11	2" Partial Replacement, Private Side	2 EA	$	$
SLR.12	2" Full Replacement	2 EA	$	$
SLR.13	Additional Copper Service Line, >60 LF	250 LF	$	$
SLR.14	SLR, SHPO Zone w/ Archeologist	30 EA		
Miscellaneous Work				
M.1	Cut & Cap, Abandoned House Service	200 EA	$	$
M.2	Sanitary Lateral Inspection	600 EA	$	$
M.3	Sanitary Lateral Repair	20 EA	$	$
M.4	LSM, Unstable Trench Bottom	40 CY	$	$
M.5	Traffic Control, Flagmen/Police Assisted	50 HR	$	$
M.6	Tree Removal, ≤24" Diameter	5 EA	$	$
M.7	Tree Removal, >24" Diameter	3 EA	$	$
M.8	Exploratory Excavation	30 EA	$	$
TOTAL PRICE (IN FIGURES)			**$**	

_____ Dollars and

_____ Cents (TOTAL PRICE IN WORDS)

1. Given that there may be up to 6,000 service line replacements for this project, broke into ten equal work areas of 600 SLR each, is your firm willing and capable of substantially completing work at all potential 6,000 properties (10 work areas) by Nov. 30, 2018? ____YES ____NO

2. If the answer to question 1. is NO, how many of the potential work areas for SLR work do you feel your company could successfully complete by the substantial completion date? This maximum number of work areas #_____

5.02 SCHEDULE OF SUPPLEMENTAL UNIT PRICES

A. A corresponding credit shall be applied to the Contractor's payment application when the materials shown in the Unit Price Schedule listed below are provided by the Owner.

ITEM	DESCRIPTION	UNIT PRICE
Credit for Owner-Provided Materials		
OPM.1	¾" Copper Service Line (60' Coil)	$ $230 / EA

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete on or before November 30, 2018, and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before December 31, 2018.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security in the form of a Bid Bond. Refer to Section 00 43 13;

B. Non-collusion Affidavit of Prime Bidder included as Exhibit B.

C. Bid Certification Form included as Exhibit C.

D. List of Proposed Subcontractors. Use the form included as Exhibit D.

E. List of Proposed Suppliers. Use the form included as Exhibit E.

F. List of Project References. Use the form included as Exhibit F.

G. Evidence of authority to do business in the state of Michigan; or a written covenant to obtain such license within the time for acceptance of Bids;

H. Contractor's License No.: [_____] Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

I. Required Bidder Qualification Statement with Supporting Data; and

J. Ownership statement. Use the form included as Exhibit G.

K. Certification of Disadvantaged Business Participation Requirements.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability):_____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in Michigan is ____/____/____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____(SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

_____

Phone No. _____ Fax No. _____

E-mail _____ _____

SUBMITTED on _____, 20____.

State Contractor License No. _____.

Sworn and subscribed to before me this

_____ day of _____, 20 ___ .

_____
Notary or other officer authorized to administer oaths

My commission expires: _____, 20 ___ .

(Bidders shall not add any conditions or qualifying statements to this Bid as otherwise the Bid may be declared irregular as being not responsive to the advertisement. BIDDERS SHALL USE THIS BID FORM IN SUBMITTING THEIR BIDS.)

Bidder acknowledges that the above representations are material and important, and will be relied on by the Owner in awarding the Contract(s) for which this Bid is submitted. The Bidder understands that misstatement in this Bid is and shall be treated as fraudulent concealment from the Owner of the true facts relating to the submission of the Bid for this Contract.

Bidder, being duly sworn, deposes and states that he is the person making the above Bid or is authorized to make this Bid on behalf of said partnership, joint venture or corporation; and that said Bid is genuine and not sham or collusive, and is not made in the interest of or on behalf of any person, partnership, joint venture, or corporation not therein named, and that he has not directly or indirectly induced or solicited any bidder to put in a sham bid; that he has not directly or indirectly induced or solicited any other person, partnership, joint venture, or corporation to refrain from bidding, and that he has not in any manner sought by collusion to secure himself or to said partnership, joint venture, or corporation an advantage over other bidders.

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EXHIBIT A

CHECKLIST OF ITEMS REQUIRED FOR SUBMISSION OF BID

BIDDERS MUST COMPLETE THIS SHEET AND SUBMIT WITH THEIR BID, ALONG WITH THE FOLLOWING ITEMS

____ Checklist form – Exhibit A
____ Non-Collusion Affidavit – Exhibit B
____ Bid Certification - Exhibit C
____ Capacity information
- Bidder has to provide information on their capacity, including horizontal directional drilling, to perform the work outlined in the bid documents.
- Provide a historical summary of work that demonstrates the required experience, both in time an quantity of work completed.

____ Experience and qualifications
- Identify all subcontractors (if applicable) and provide same information as proposed bidder. – Exhibit D
- Identify all equipment and suppliers (if applicable) intended to be utilized for this contract. – Exhibit E

____ References
- Supply at least five (5) references from municipalities (city, county, township, etc.) or communities (or developments) demonstrating experience working on water distribution projects that are similar in size and scope to this project. Please include customer's name, dates of contracts, summary of services provided, reference contact name, phone number, and address. – Exhibit F

____ Other
- Ownership Statement – Exhibit G
- Identify the name of the landfill or approved disposal site in which excavation spoils, waste, including lead or other contaminated material, and compost material will be disposed for the period of this contract. The City may request financial information of said landfill or disposal site at a later date.
- Describe how your company meets or exceeds the minimum experience qualification of the services requested.
- Any information that the vendor would like to submit with their proposal.

____ Bid Bond – Section 00 43 13

PLEASE NOTE: FAILURE TO SUBMIT THE ABOVE ITEMS WILL RESULT IN A REJECTION OF YOUR BID.

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EXHIBIT B

NON-COLLUSION AFFIDAVIT

State of _____:

s.s.

County of _____:

I state that I am _____ of _____
(Title) (Name of Firm)

and that I am authorized to make this affidavit on behalf of my Firm, its Owner, Directors and Officers. I am the person responsible in my firm for the price(s) and the amount of the bid.

I STATE THAT:

1. The price(s) and the amounts of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.
2. Neither the price(s) nor the amount of the bid, and neither the approximate price(s) nor the approximate amount of the bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before the bid opening.
3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive or other form of complementary bid.
4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a discussion with, or inducement from, any firm or person to submit a complementary or noncompetitive bid.
5. _____, its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

_____

_____

_____

_____

_____

I state that _____ understands and
(Name of Firm)

Acknowledges that the above representations are material and important, and will be relied on by the City of Flint, Department of Purchase and Supplies in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that misstatement in this affidavit is and shall be treated as fraudulent concealment from the City of Flint, Department of Purchase and Supplies of the true facts relating to the submission of bids for this contract.

_____
(Signature)

_____
(Printed Name)

_____
(Position / Job Title)

EXHIBIT C

BID CERTIFICATION FORM

THIS PAGE MUST BE COMPLETED AND INCLUDED WITH THE BID

The undersigned hereby certifies, on behalf of the respondent named in this Certification (the "Respondent"), that the information provided in this offer submitted to the City of Flint, Department of Purchase and Supplies is accurate and complete, and that I am duly authorized to submit same. I hereby certify that the Respondent has reviewed all documents and requirements included in this offer and accept its terms and conditions.

Company (Respondent):_____
Address: _____

_____

City, State & Zip Code: _____

Phone / Fax Number: _____

Email: _____

Authorized Representative: _____
(Printed)

_____
(Signature)

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EXHIBIT D

LIST OF SUBCONTRACTORS

Herewith is the list of Subcontractors referenced in the Bid submitted by:

_____

(Bidder)

City of Flint, Department of Purchase and Supplies
(Owner)

dated _____

The following work will be performed (or provided) by the following Subcontractors, and coordinated by us:

SECTION OF WORK	SUBCONTRACTOR'S NAME

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EXHIBIT E

LIST OF SUPPLIERS

Herewith is the list of Suppliers referenced in the Bid submitted by:

_____

(Bidder)

City of Flint, Department of Purchase and Supplies
(Owner)

dated _____

The following work will be performed (or provided) by the following Suppliers, and coordinated by us:

SECTION OF WORK	EQUIPMENT NAME	SUPPLIER'S NAME

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EXHIBIT F

PROJECT REFERENCES

Herewith is the list of Project References referenced in the Bid submitted by:

_____

(Bidder)

City of Flint, Department of Purchase and Supplies
(Owner)

dated _____

The following work will be performed (or provided) by the following Project References, and coordinated by us:

PROJECT	
Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	
Owner's Name	
Owner's Contact Person	
Owner's Contact Phone Number	
Owner's Contact Address	
Owner's Contact Email Address	
Description of Work (include value of contract and date of work):	

Owner's Name	
Owner's Contact Person	

Owner’s Contact Phone Number	
Owner’s Contact Address	
Owner’s Contact Email Address	
Description of Work (include value of contract and date of work):	
Owner’s Name	
Owner’s Contact Person	
Owner’s Contact Phone Number	
Owner’s Contact Address	
Owner’s Contact Email Address	
Description of Work (include value of contract and date of work):	
Owner’s Name	
Owner’s Contact Person	
Owner’s Contact Phone Number	
Owner’s Contact Address	
Owner’s Contact Email Address	
Description of Work (include value of contract and date of work):	

EXHIBIT G

OWNERSHIP STATEMENT

OWNER	-	City of Flint, Department of Purchase and Supplies
ENGINEER	-	AECOM
PROJECT	-	Phase V Service Line Replacement (SLR)

ARTICLE 1

1.1 If the Bidder is a corporation, partnership, limited partnership, limited liability corporation, limited liability partnership or a subchapter S corporation, the Bidder, in compliance with P.L. 1977, Chapter 33, shall submit, with the Bid, the following statement setting forth the names and addresses of all stockholders or individual partners who own ten percent (10%) or more of its stock or interest. If one or more such stockholder or partner is itself a corporation, partnership, limited partnership, limited liability corporation, limited liability partnership or a subchapter S corporation, the stockholders holding ten percent (10%) or more of that corporation's stock, or the individual partners owning ten percent (10%) or greater interest in that partnership, as the case may be, shall also be listed.

IF NONE, SO STATE

INDIVIDUAL	ADDRESS

NOTE: ADDITIONAL SHEETS CONSISTING OF __ PAGES ARE ATTACHED.

END OF SECTION

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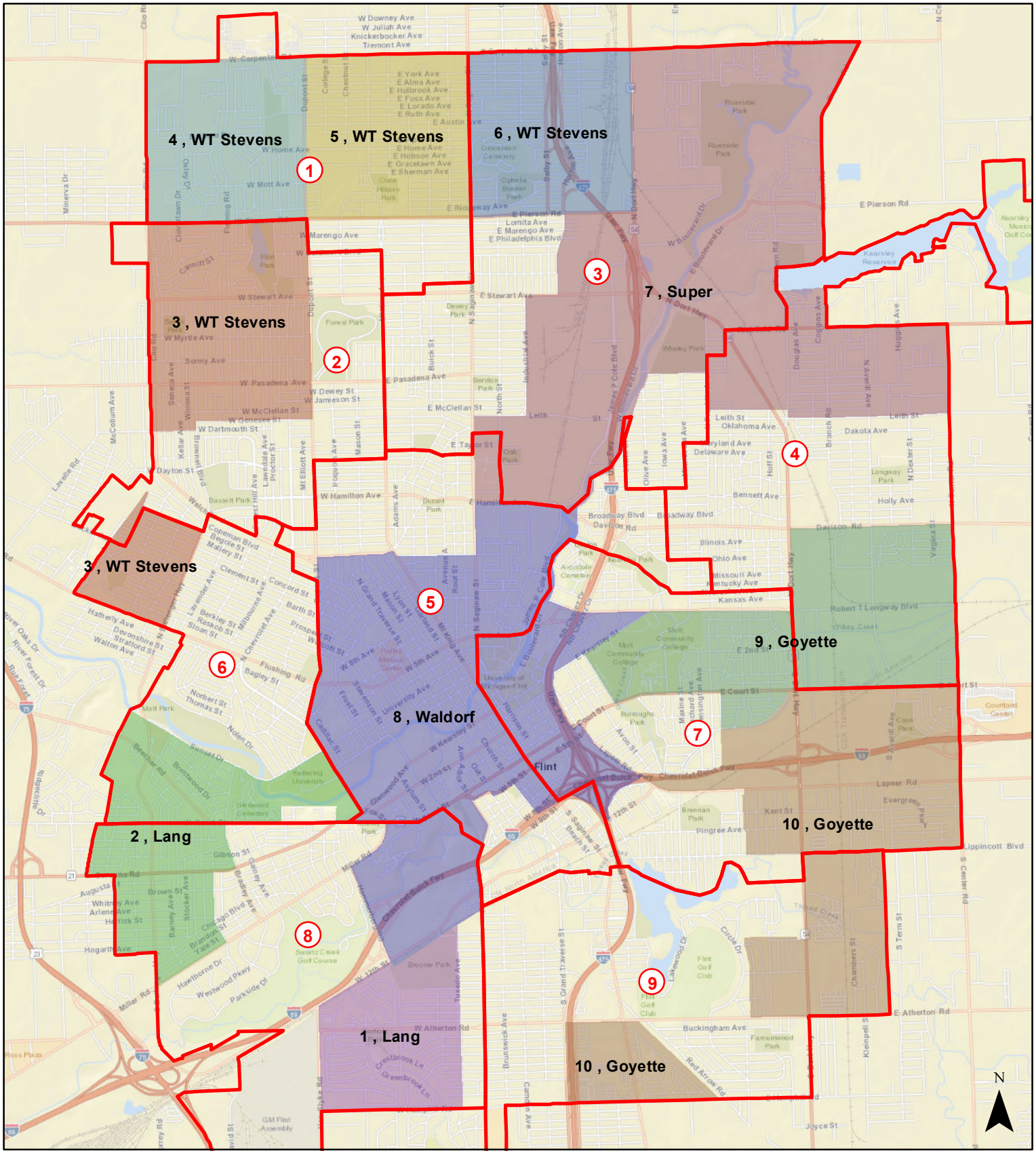
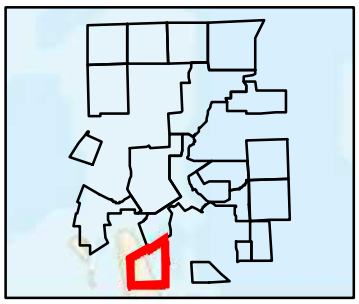


Phase Zone 1 2 3 4 5 6 7 8 9 10

CITY OF FLINT FAST START

AECOM





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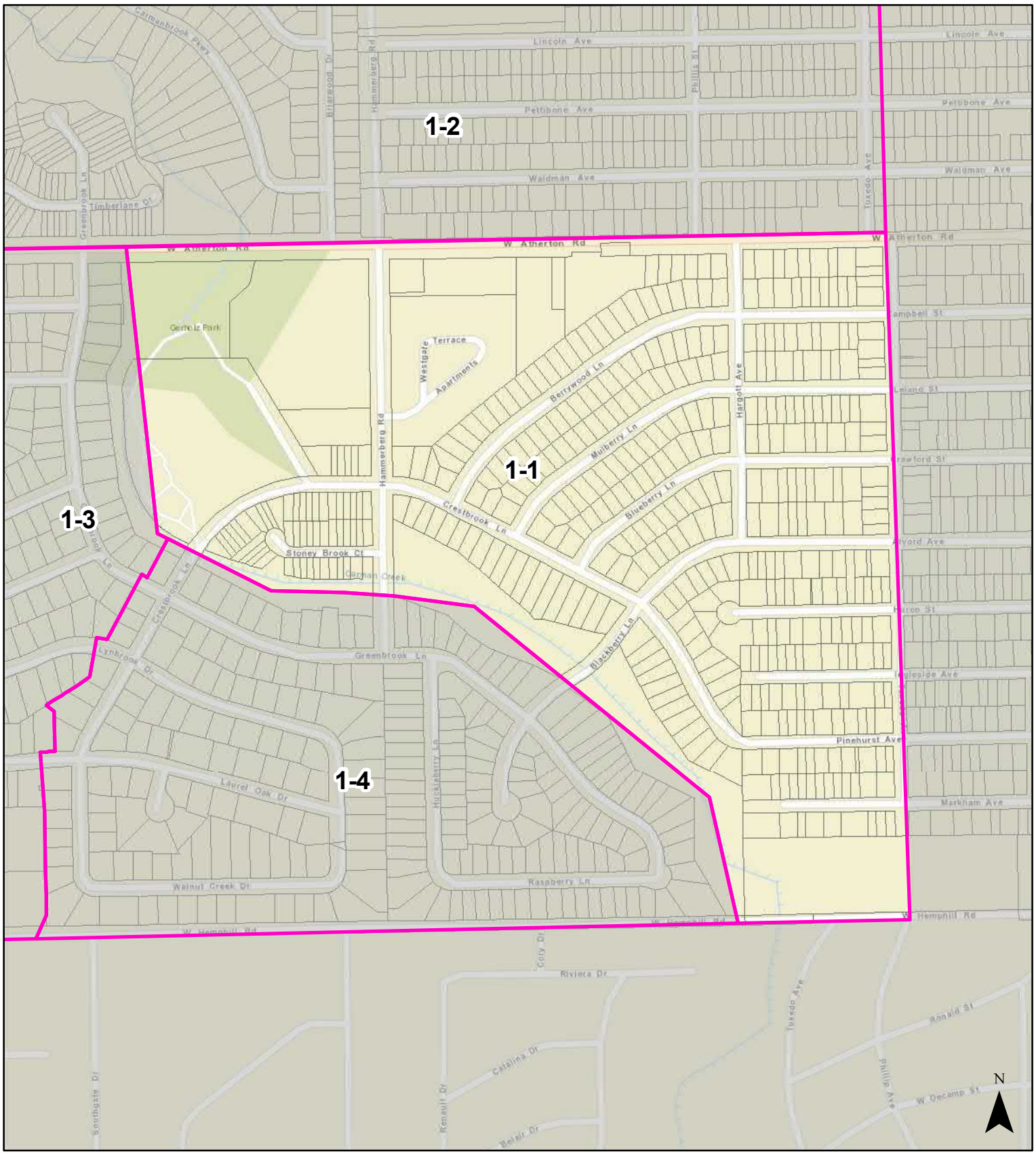
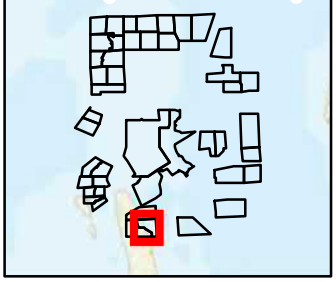
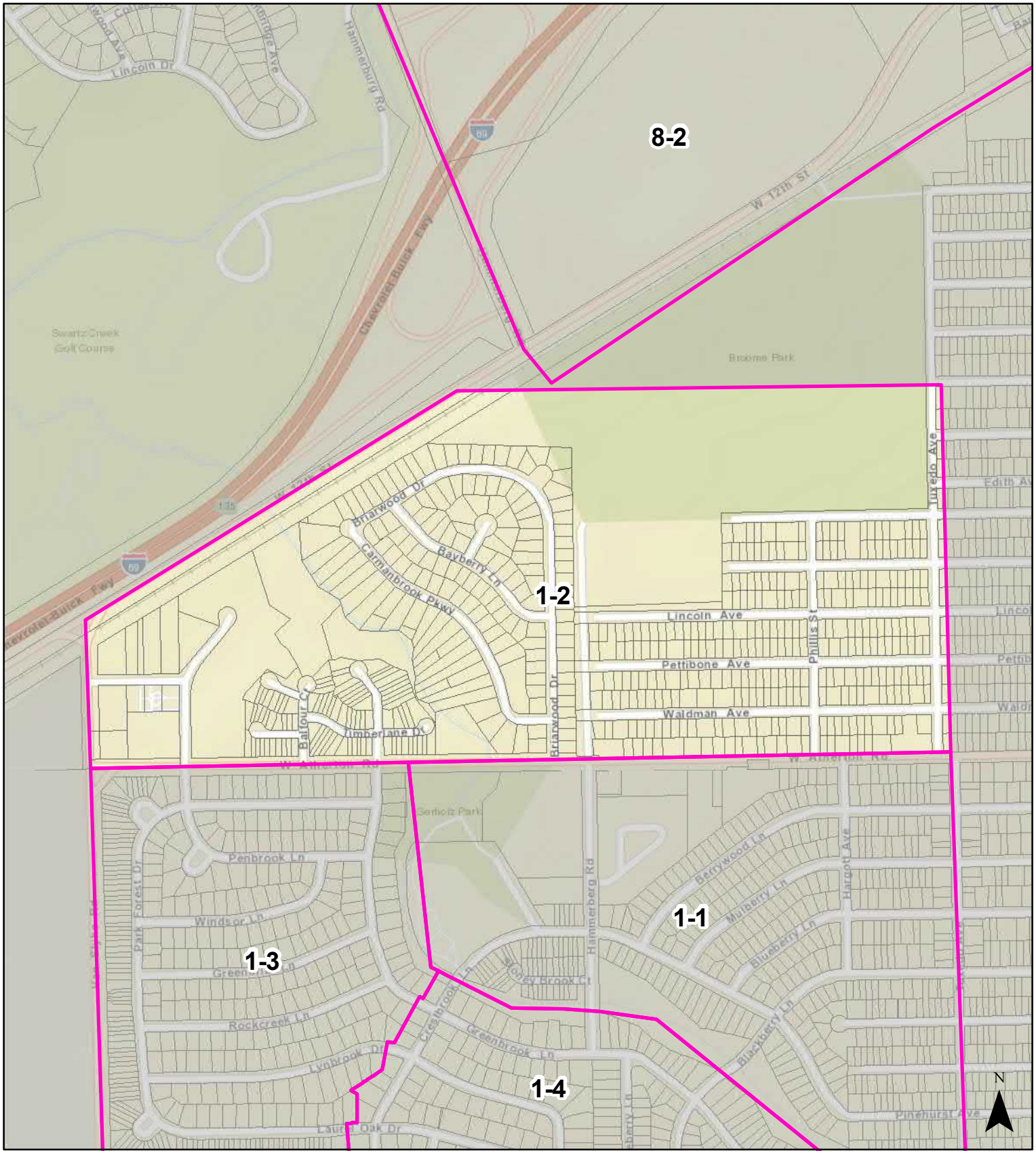


Zone Sequence Locator Map

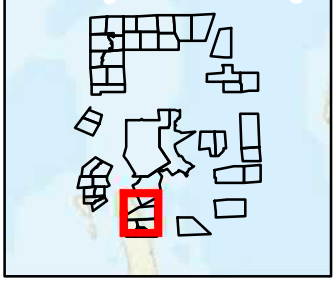


Fast Start Exploration Zones
Zone Sequence Area 1-1

AECOM

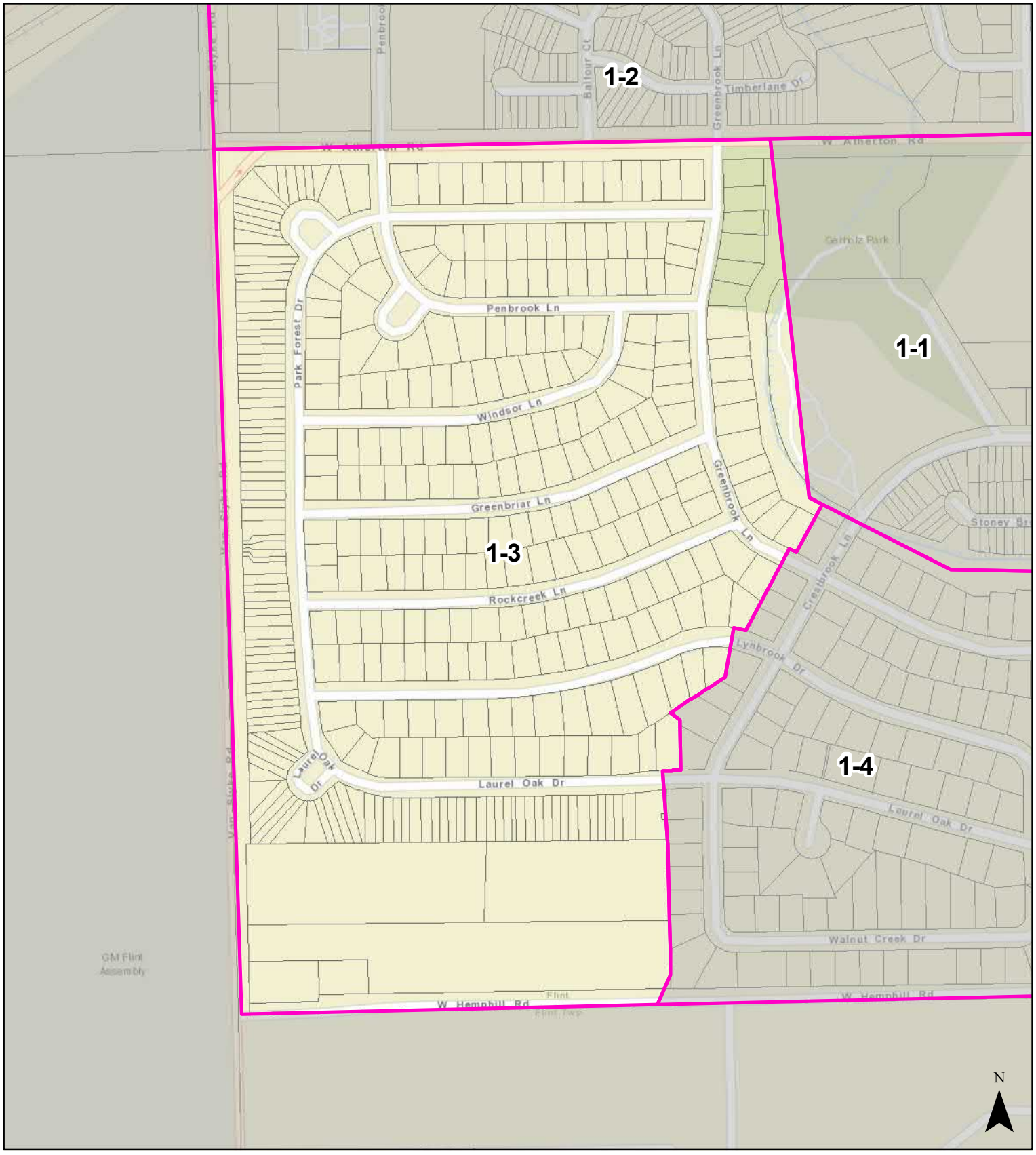


Zone Sequence Locator Map

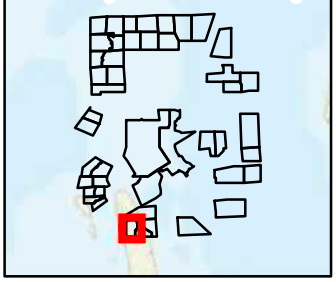


Fast Start Exploration Zones
Zone Sequence Area 1-2

AECOM

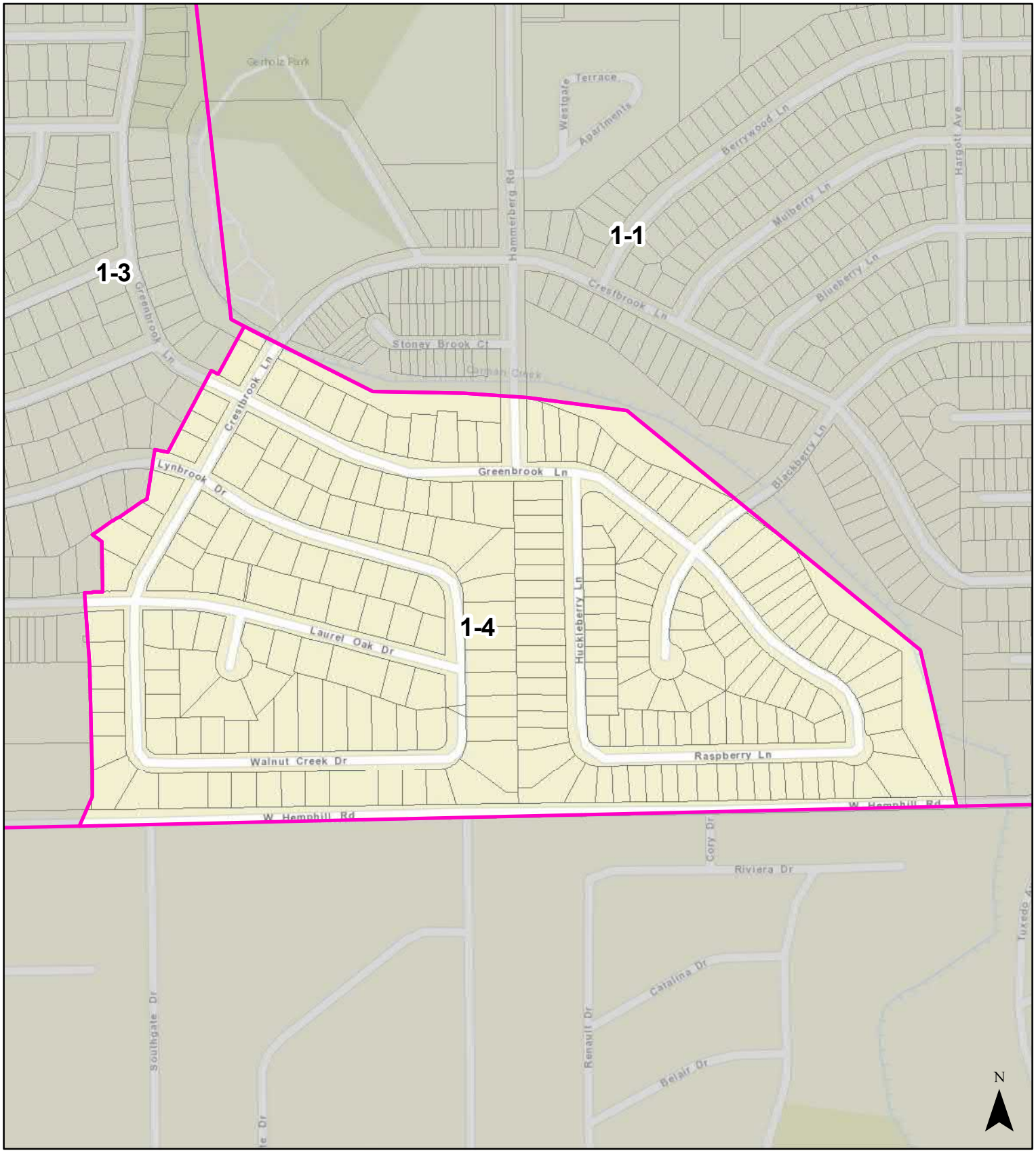


Zone Sequence Locator Map

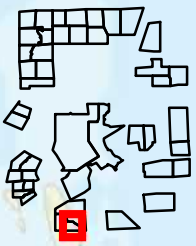


Fast Start Exploration Zones
Zone Sequence Area 1-3

AECOM

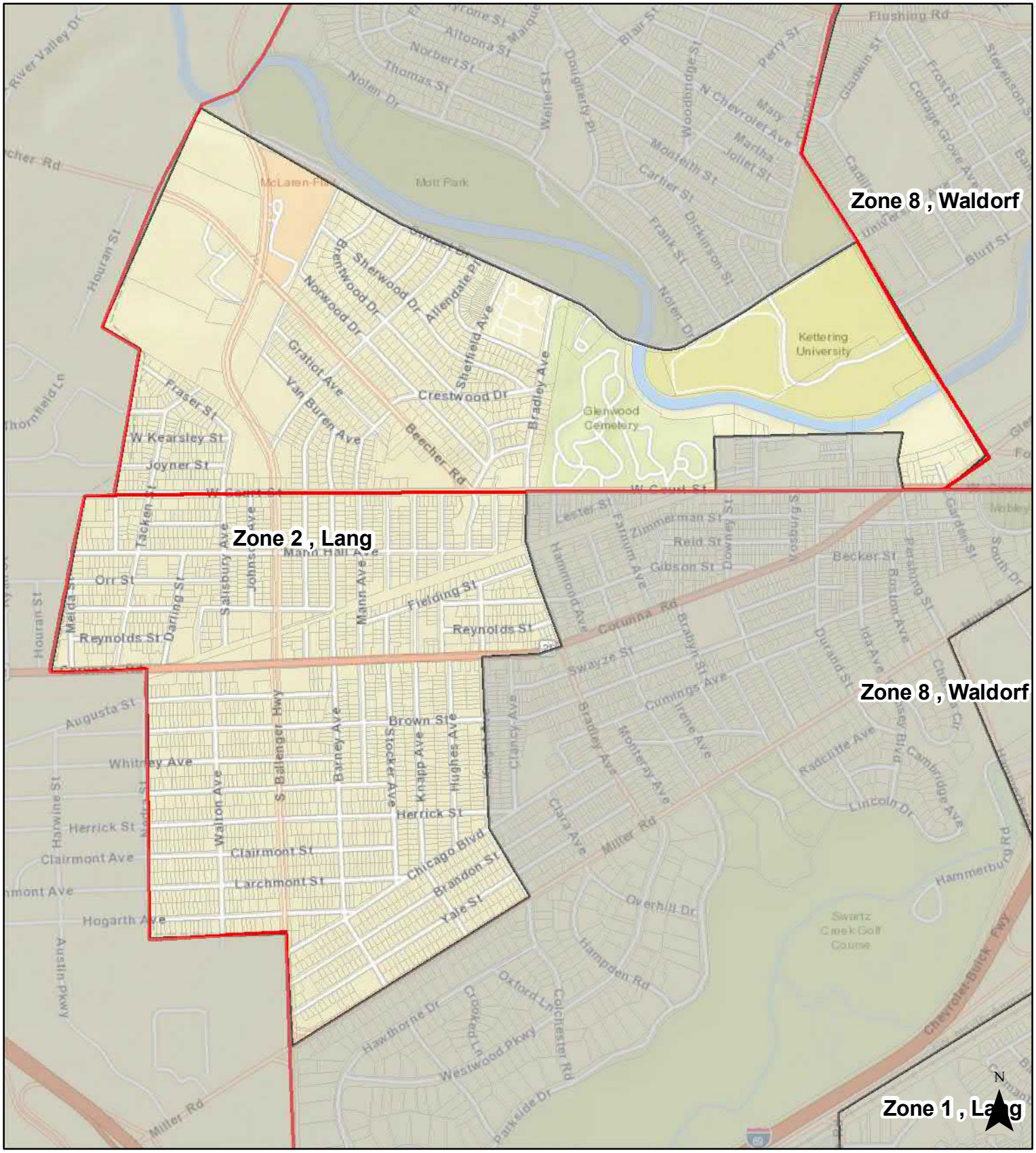


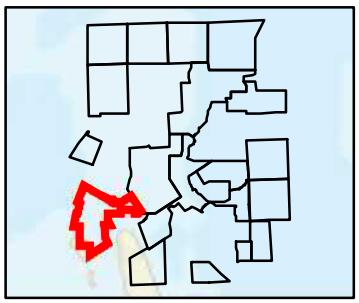
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 1-4

AECOM





Fast Start Exploration Zone 2

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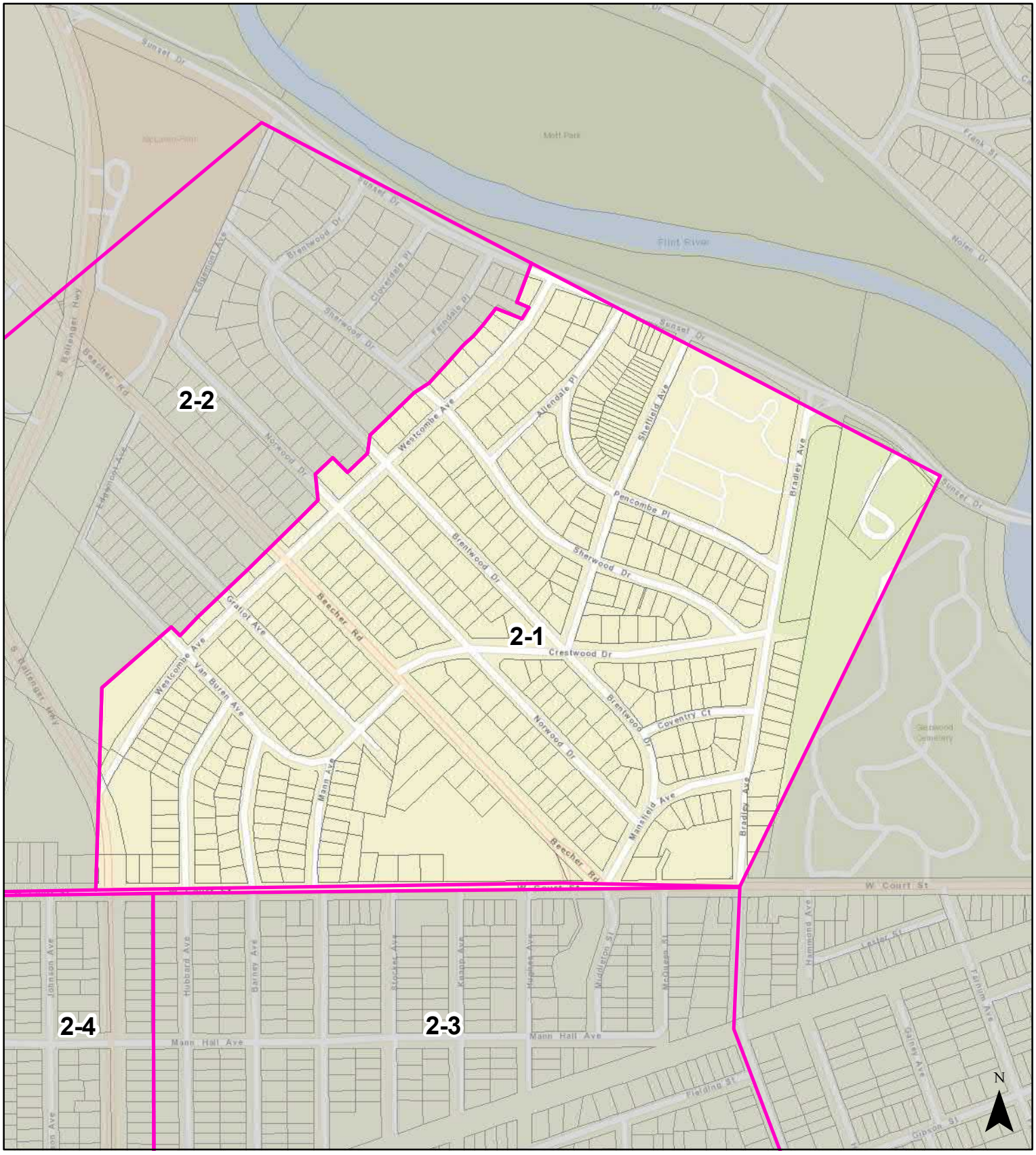
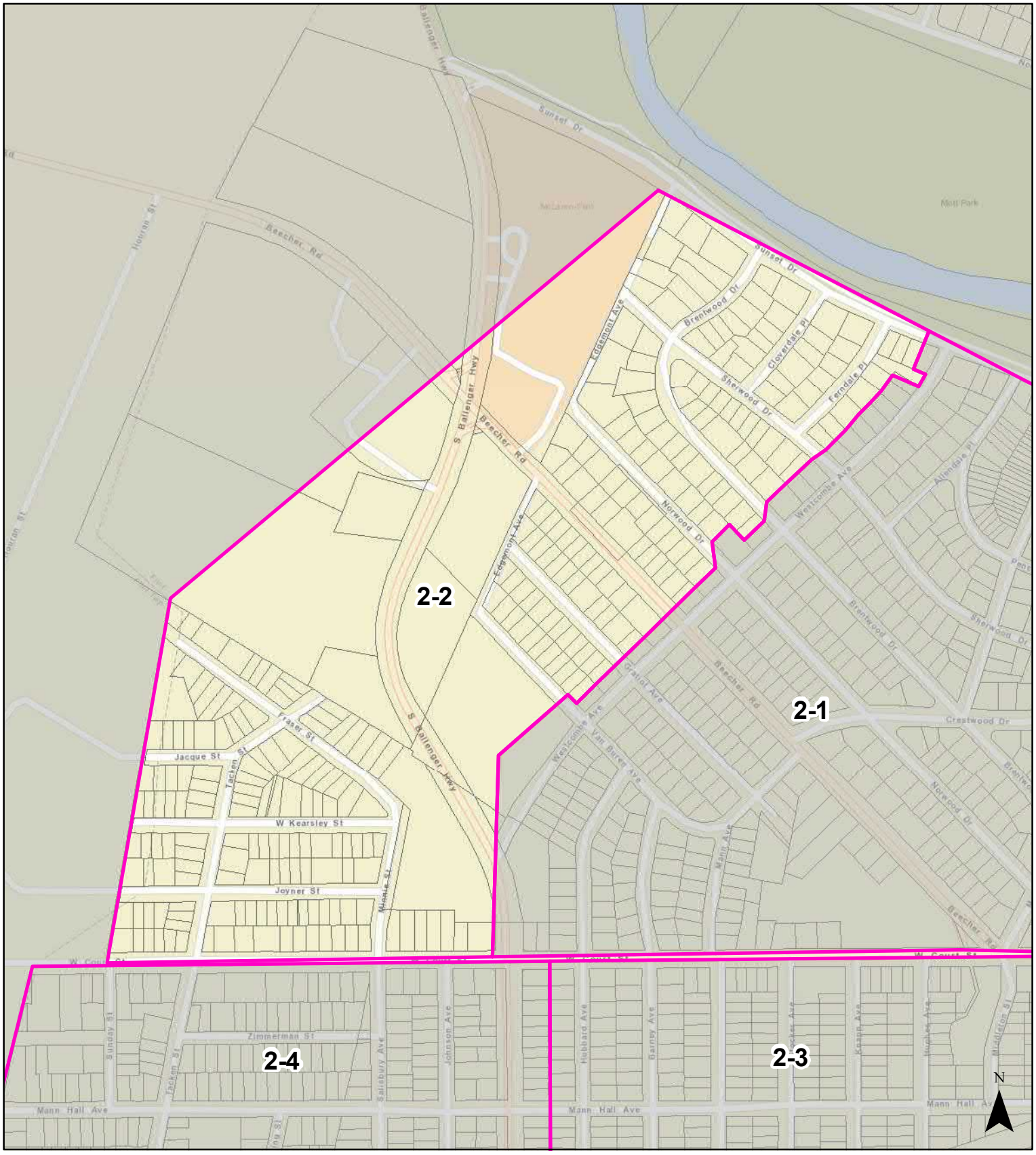


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 2-1

AECOM

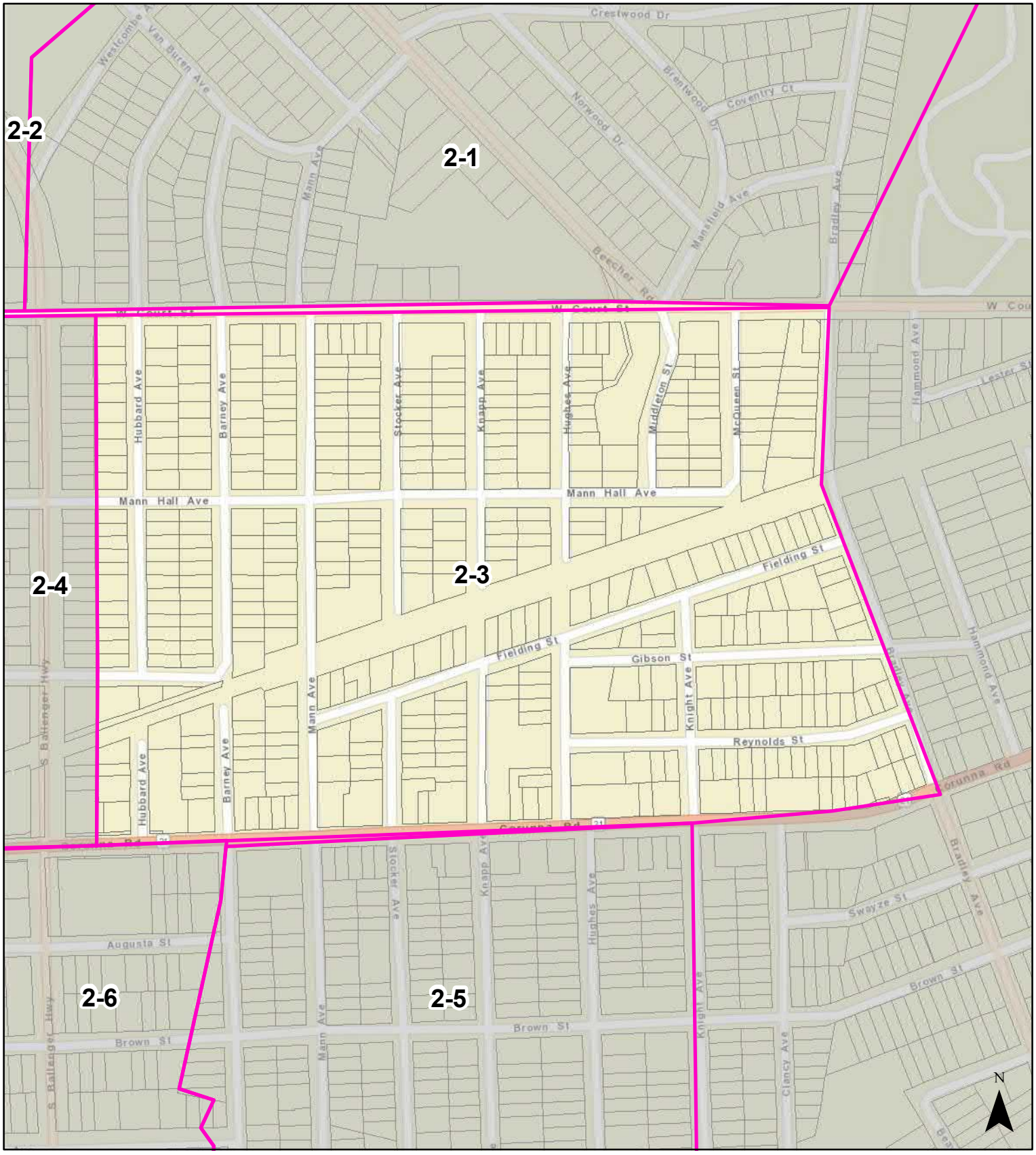


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 2-2

AECOM

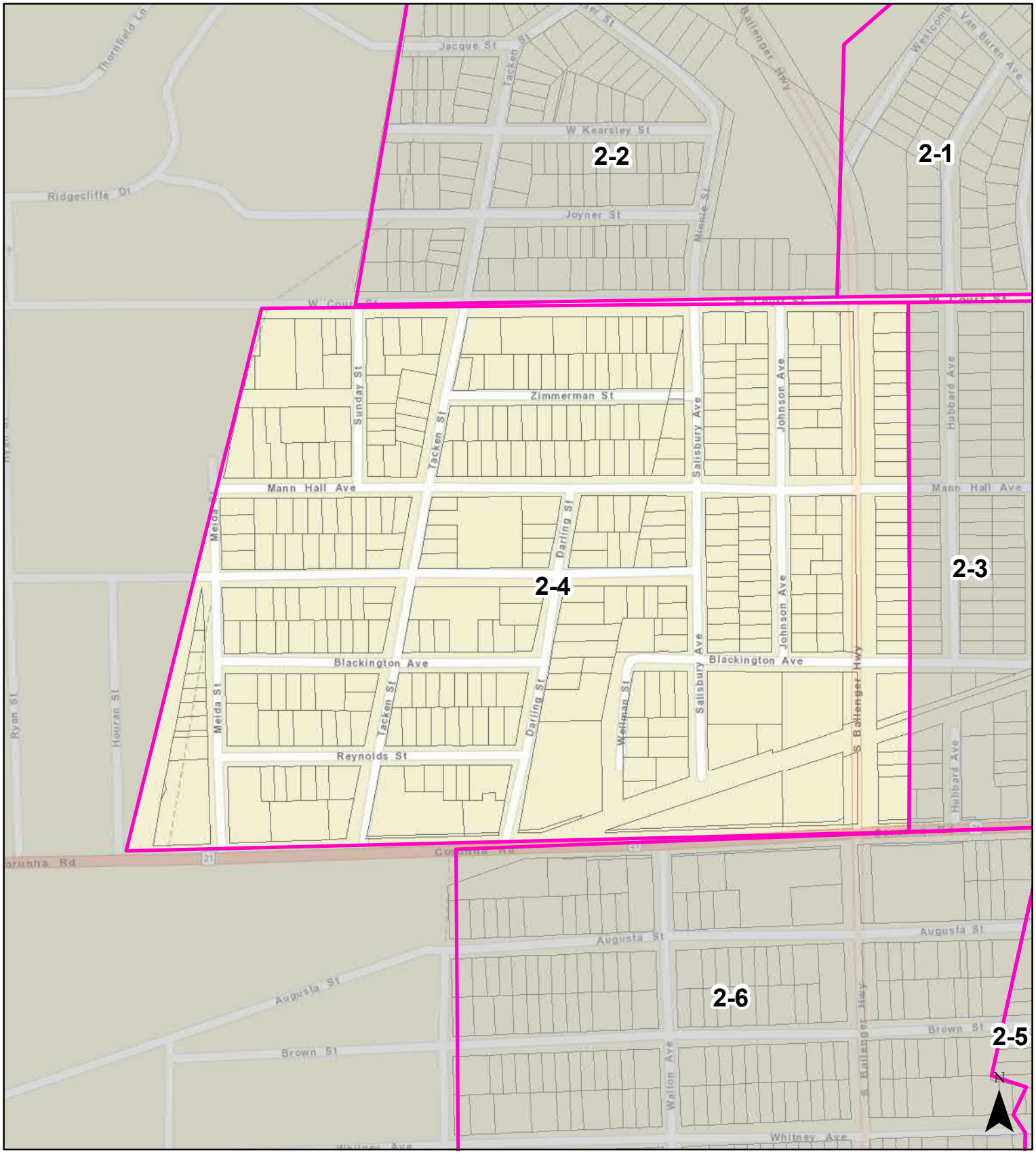


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 2-3

AECOM

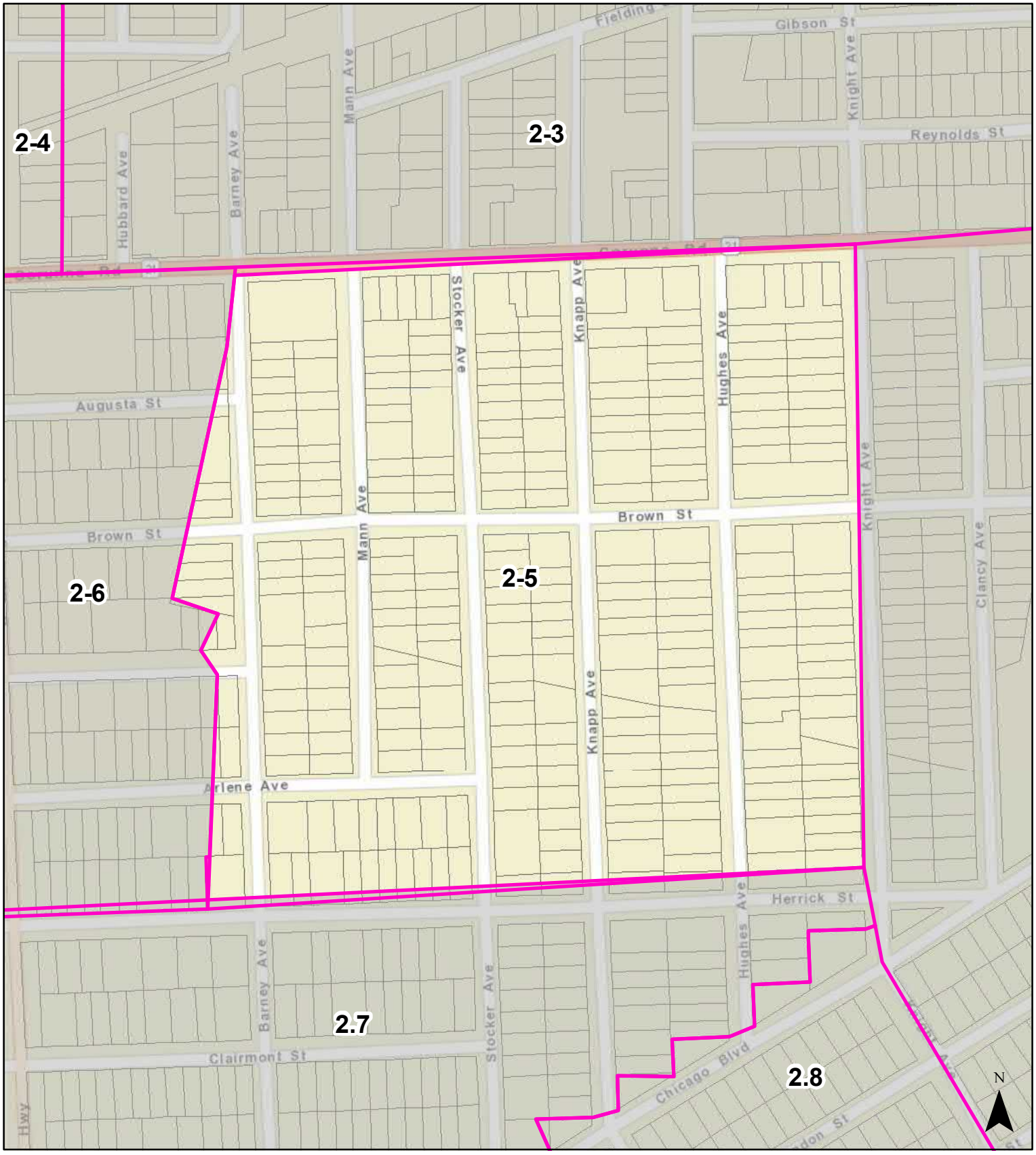


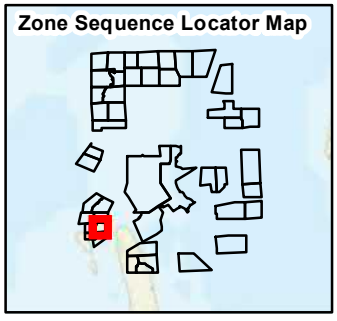
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 2-4

AECOM





Fast Start Exploration Zones
Zone Sequence Area 2-5

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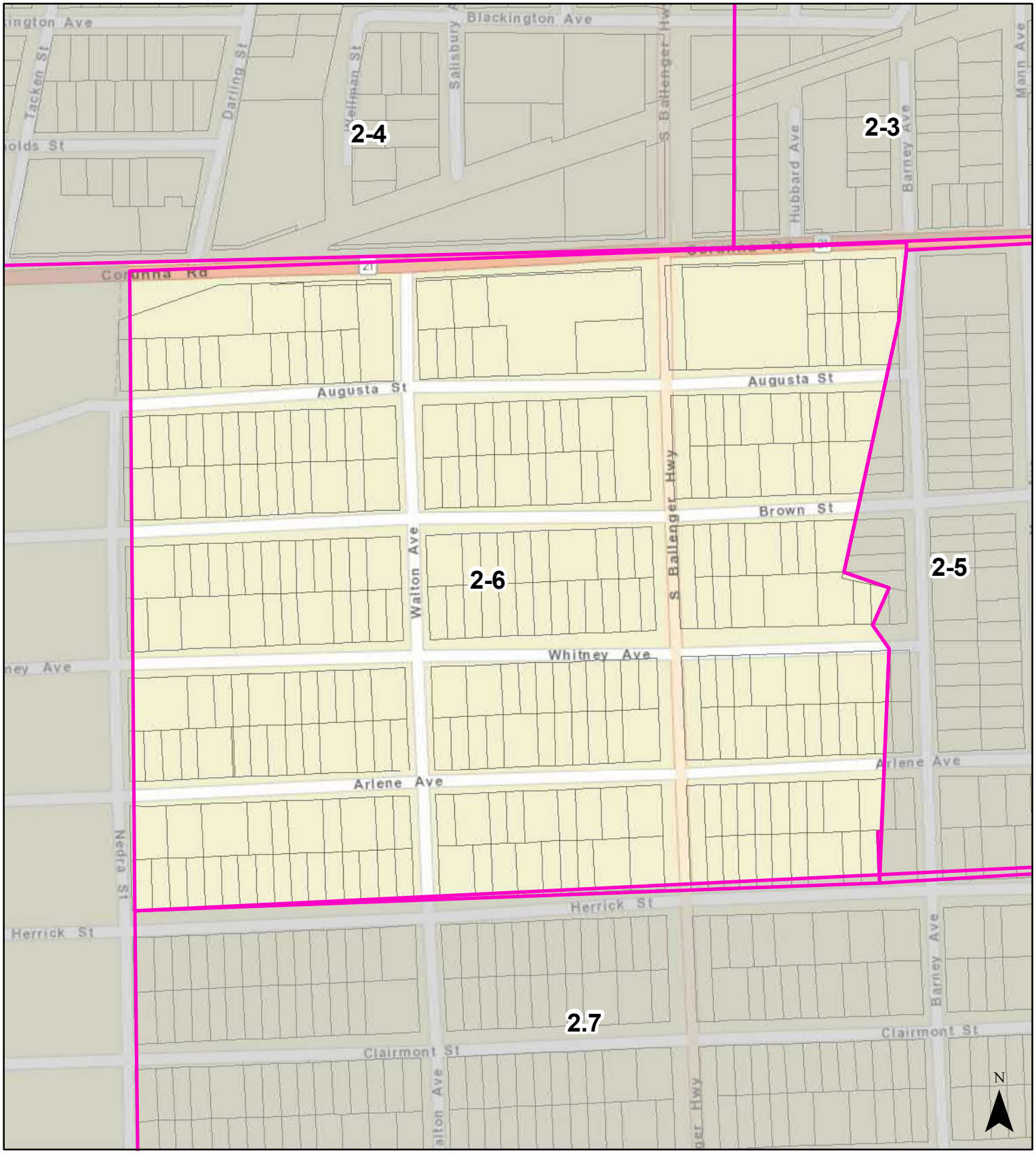

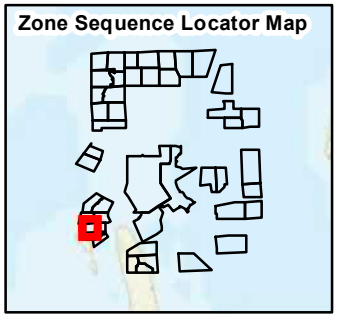

Fast Start Exploration Zones
Zone Sequence Area 2-6

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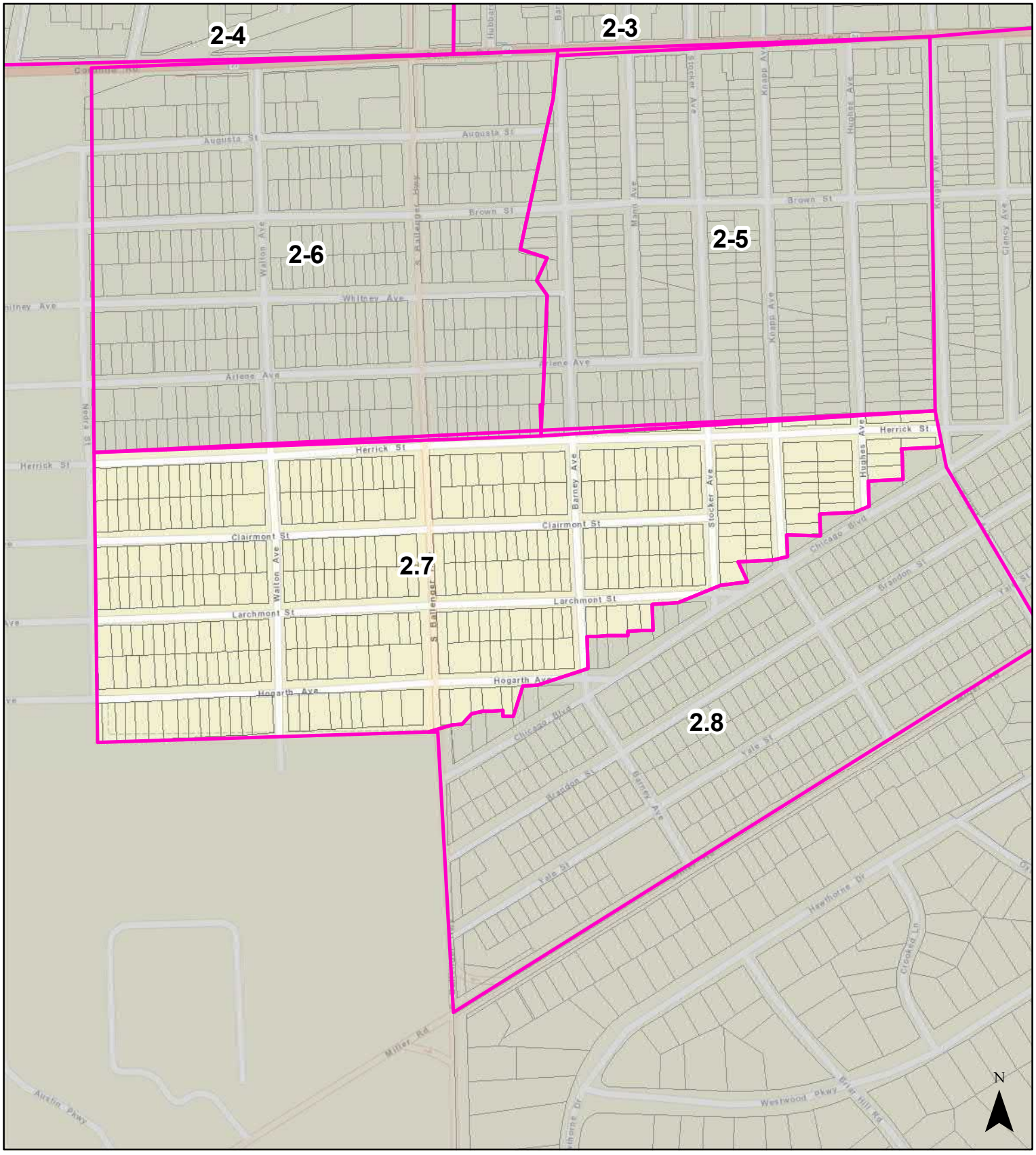
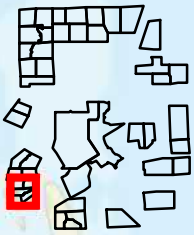


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 2-7

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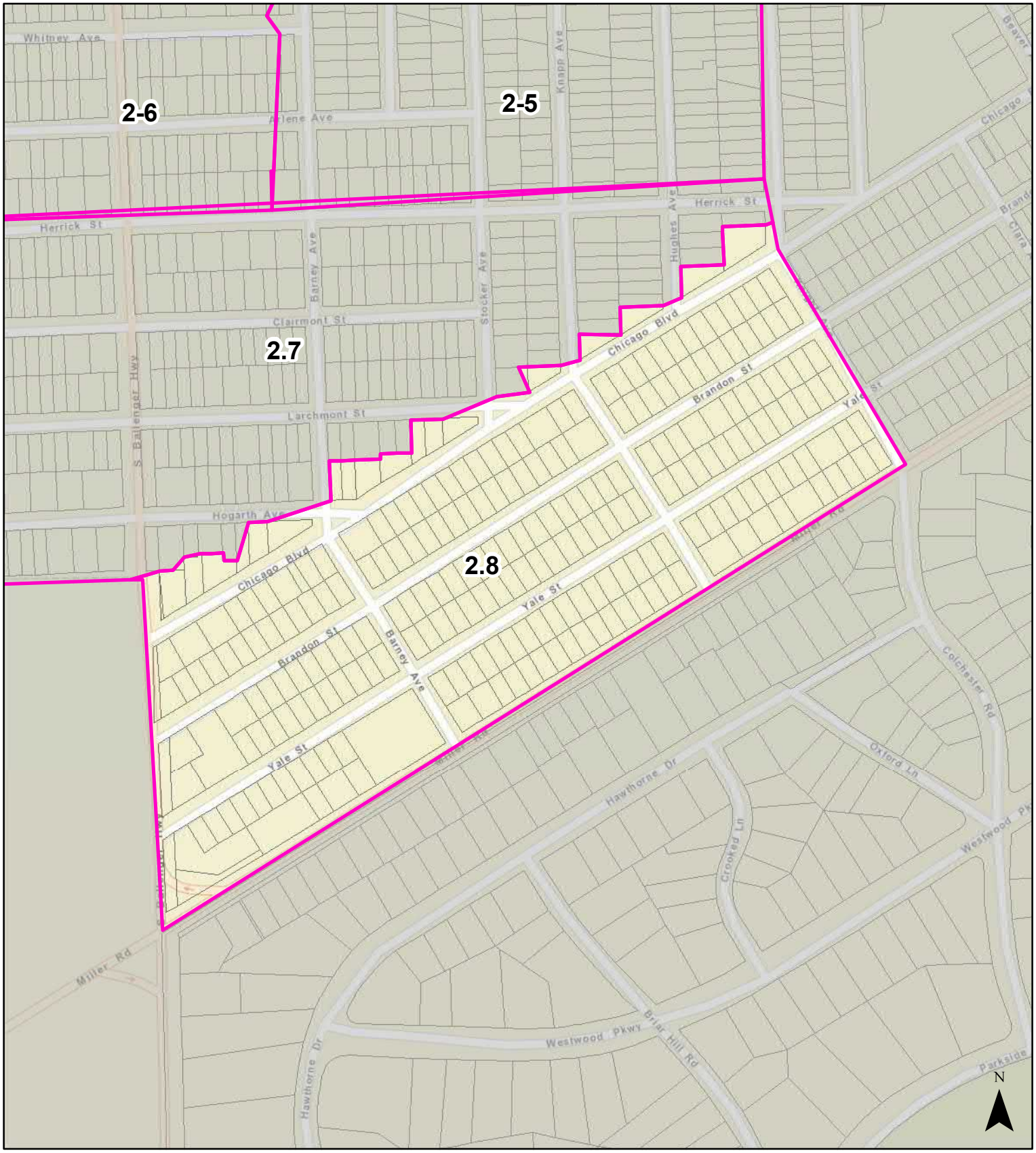
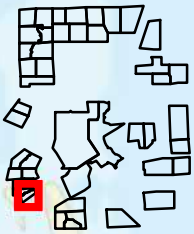


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 2-8

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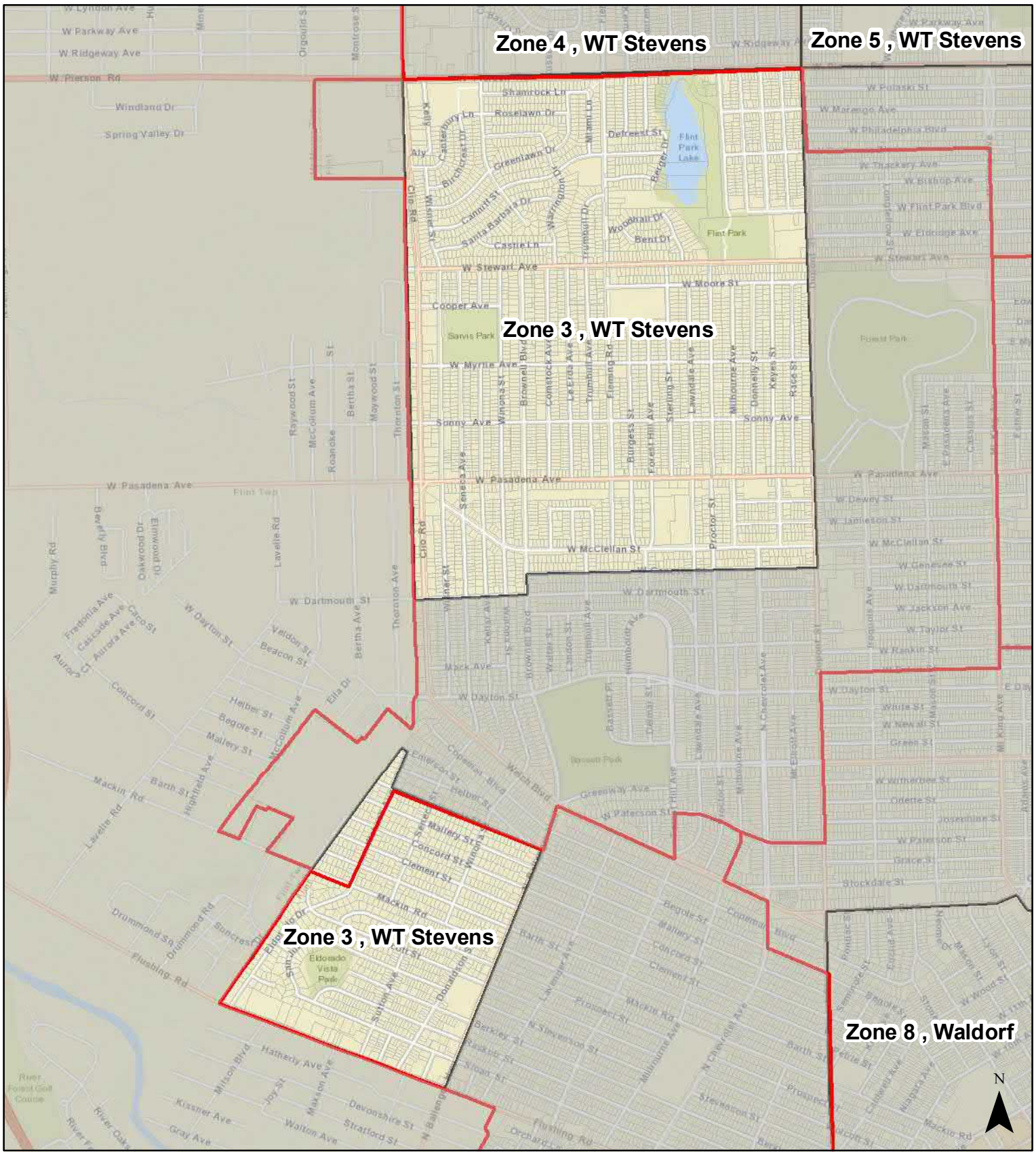

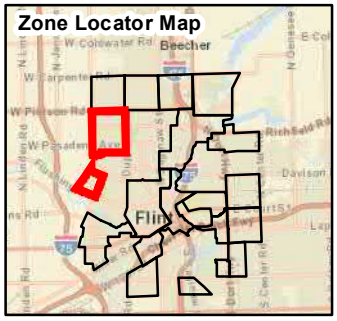

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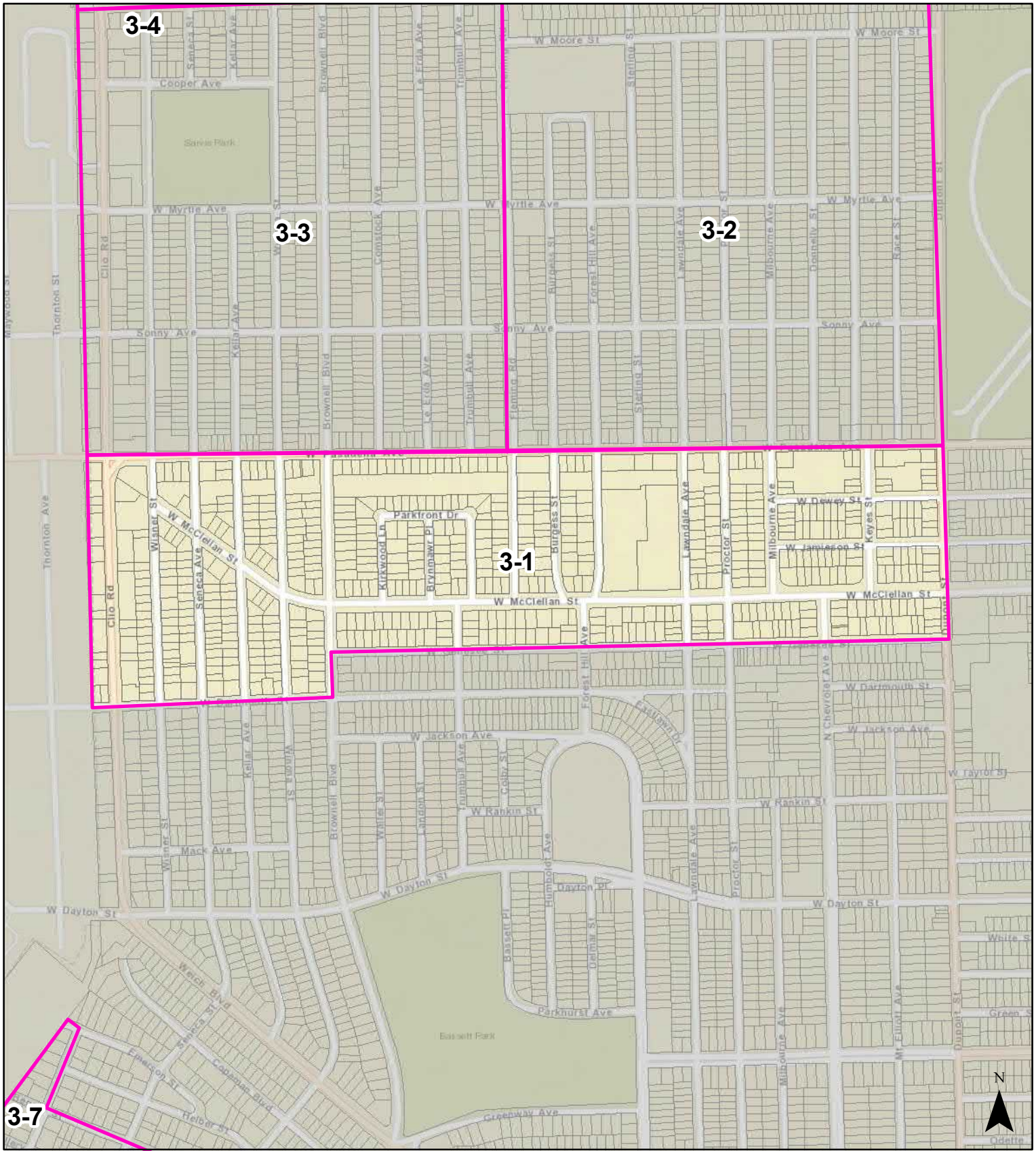
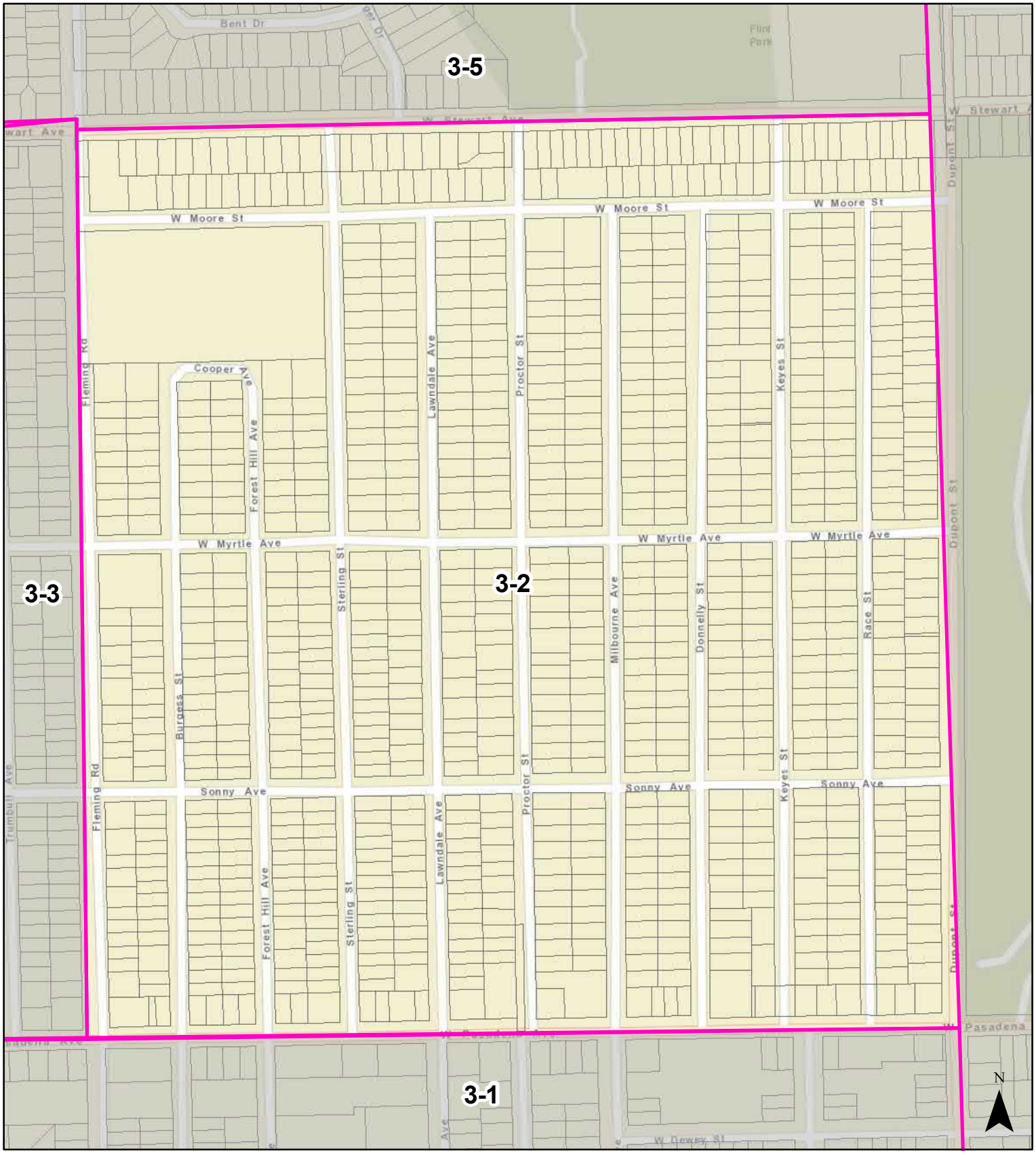


Zone Sequence Locator Map

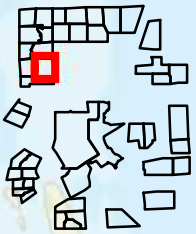


Fast Start Exploration Zones
Zone Sequence Area 3-1

AECOM

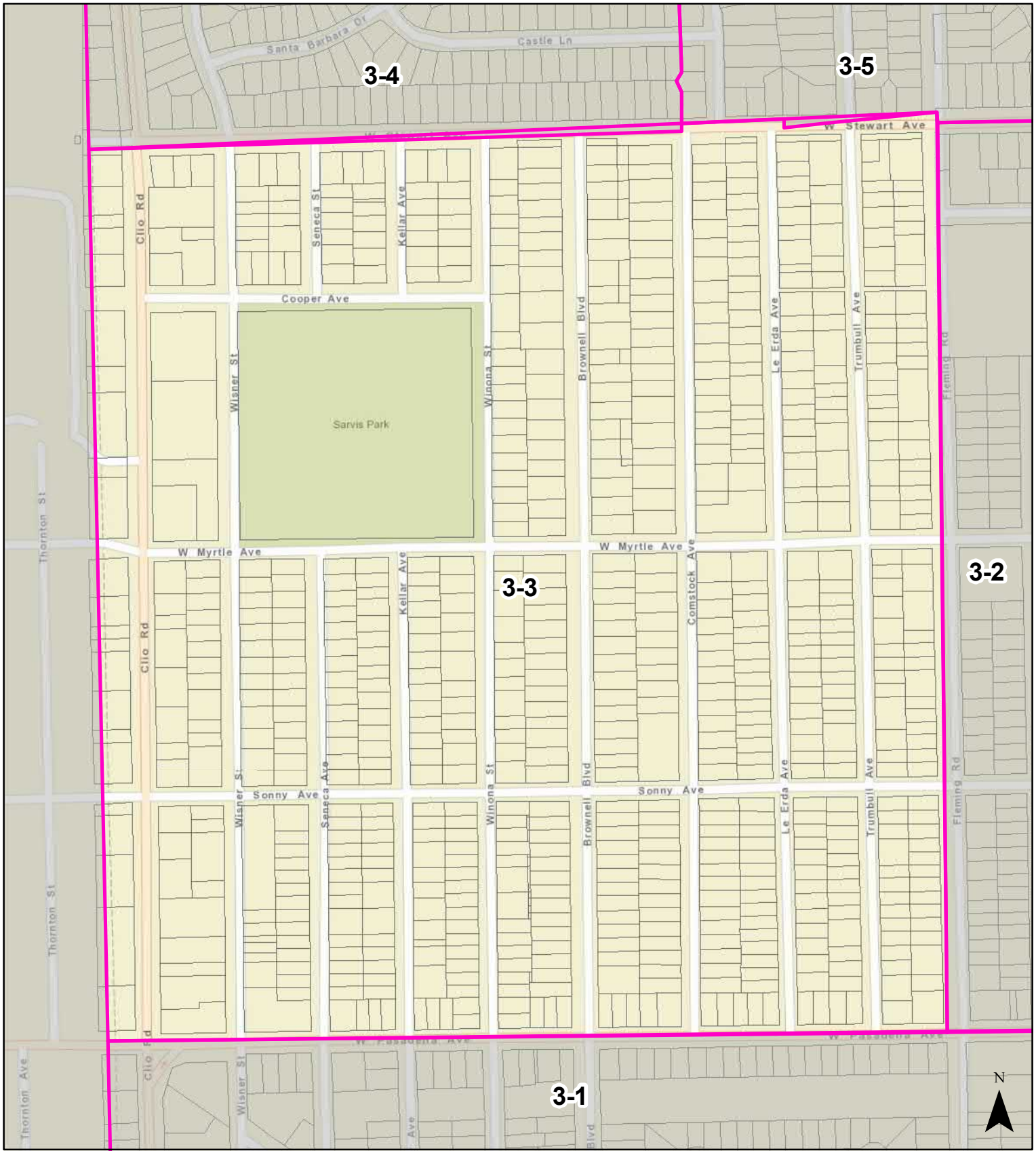


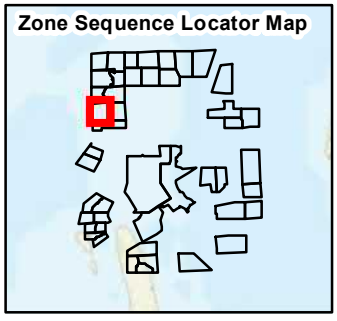
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 3-2

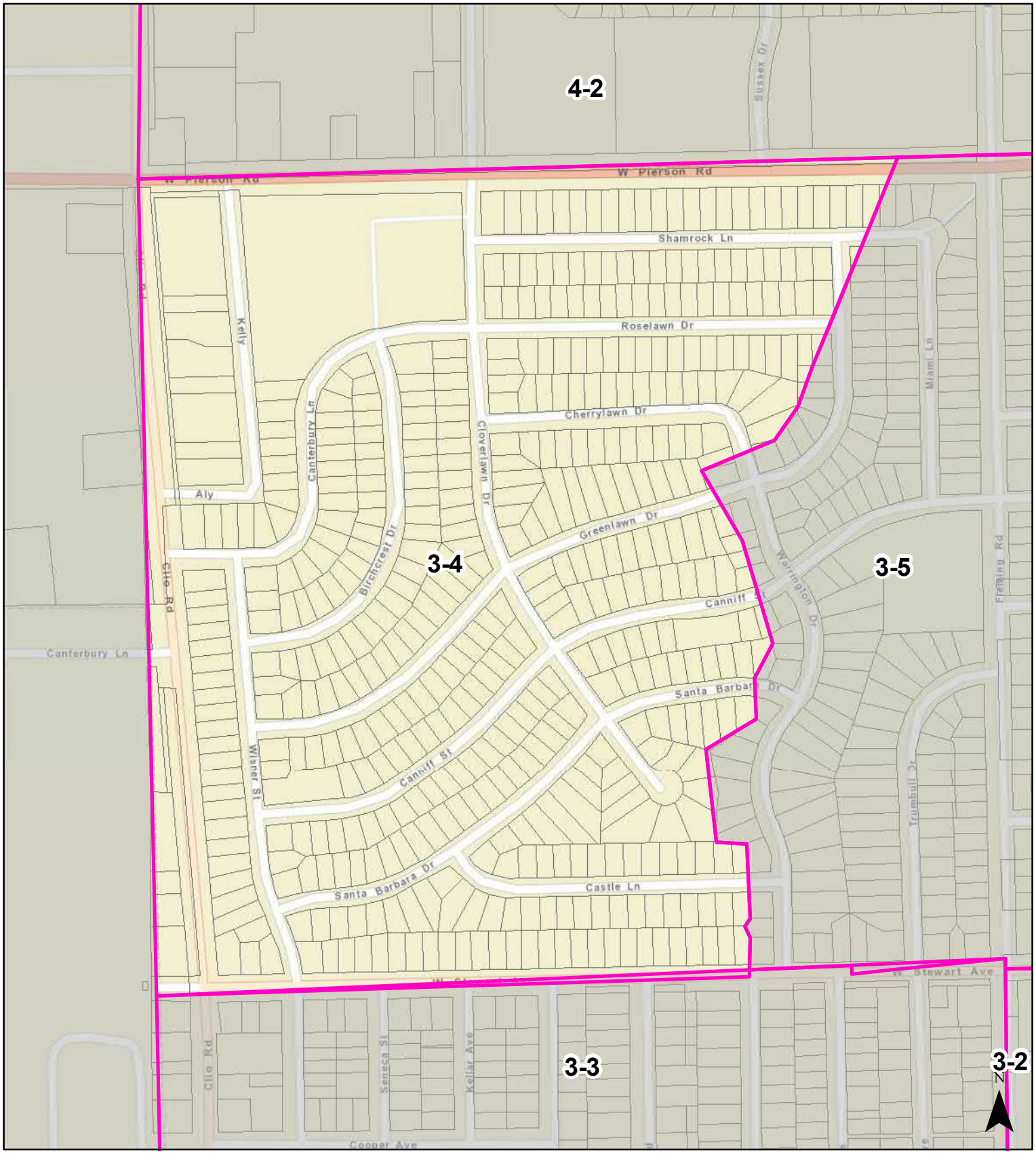
AECOM





Fast Start Exploration Zones
Zone Sequence Area 3-3

AECOM

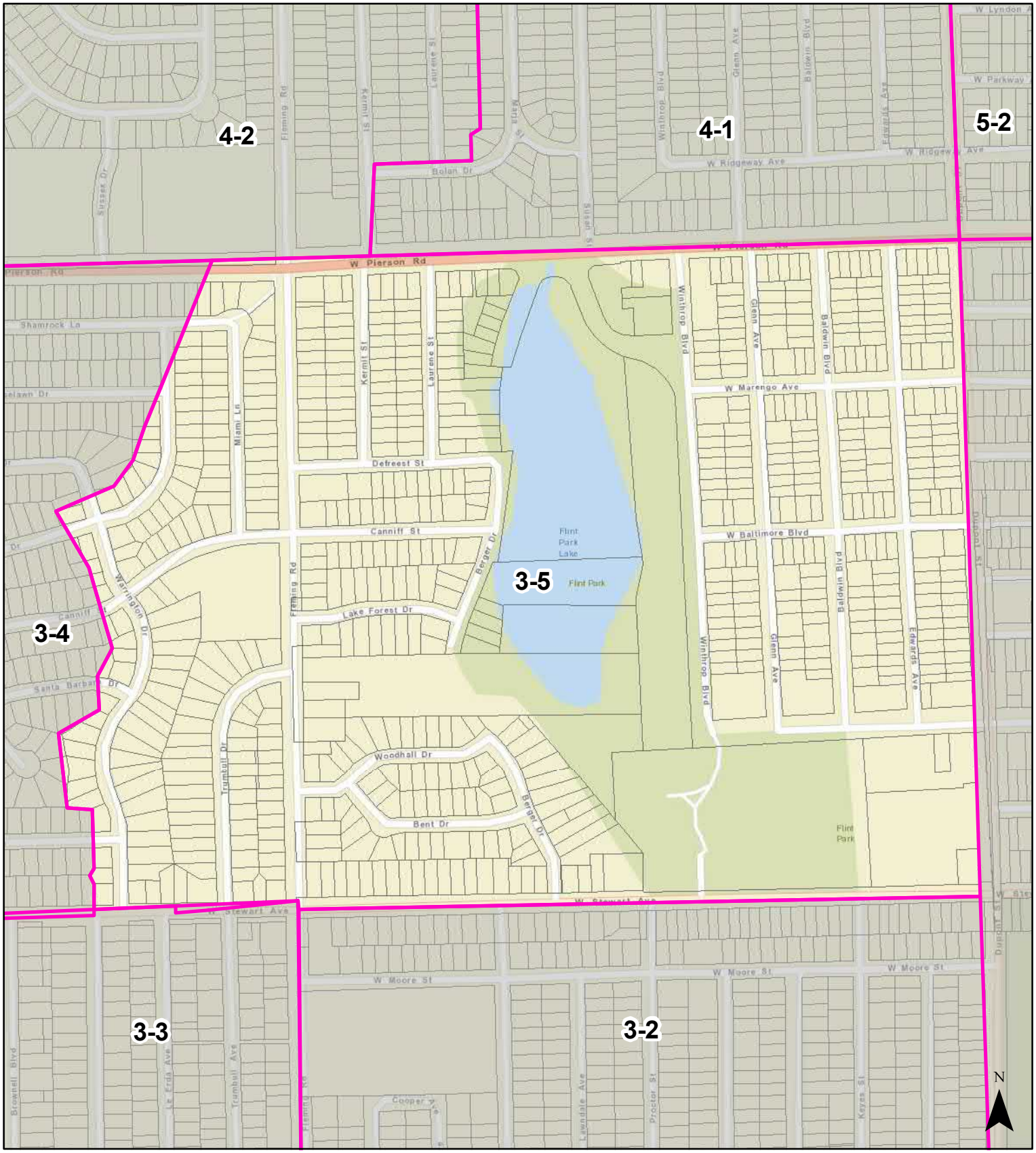


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 3-4

AECOM

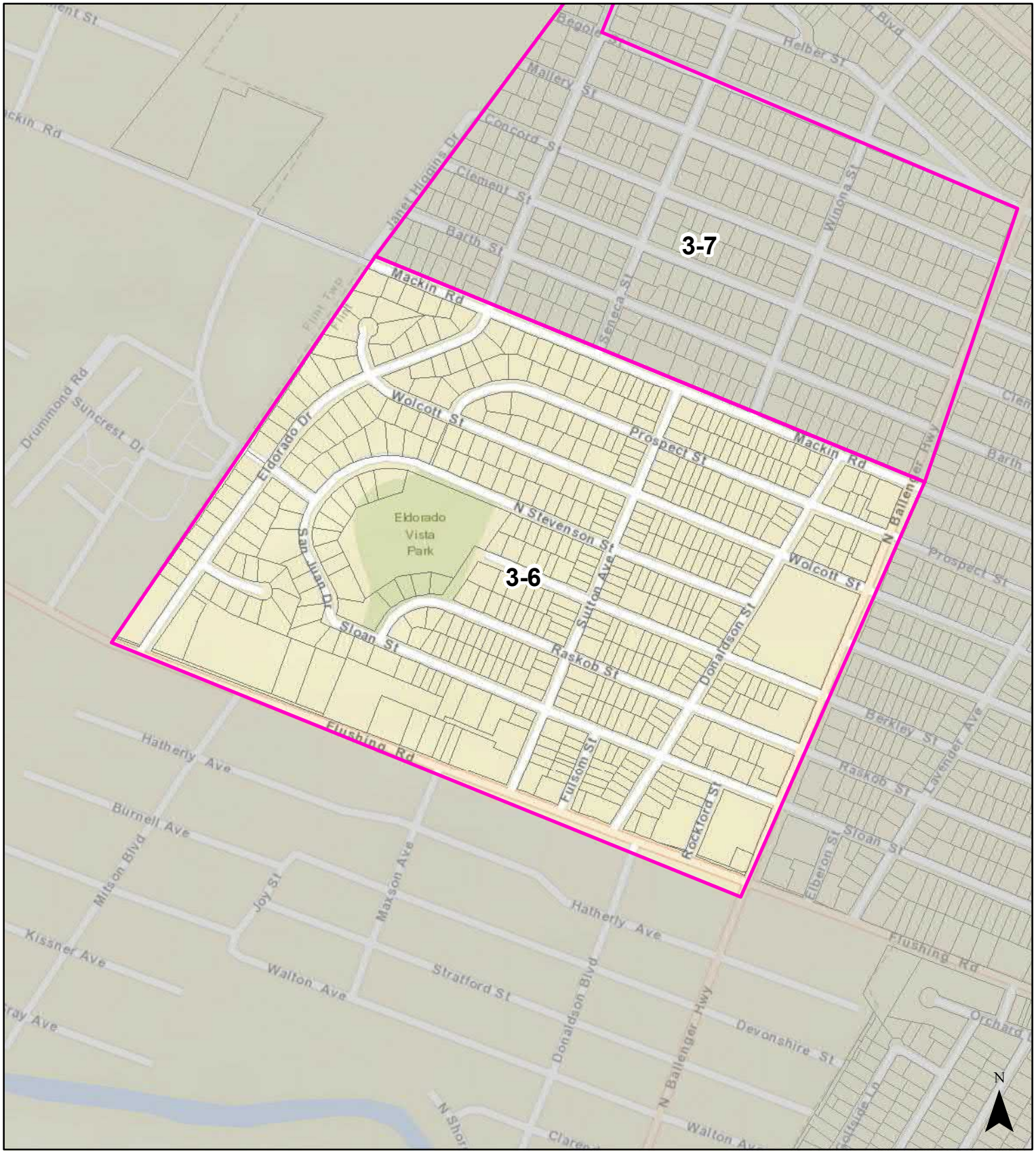


Zone Sequence Locator Map



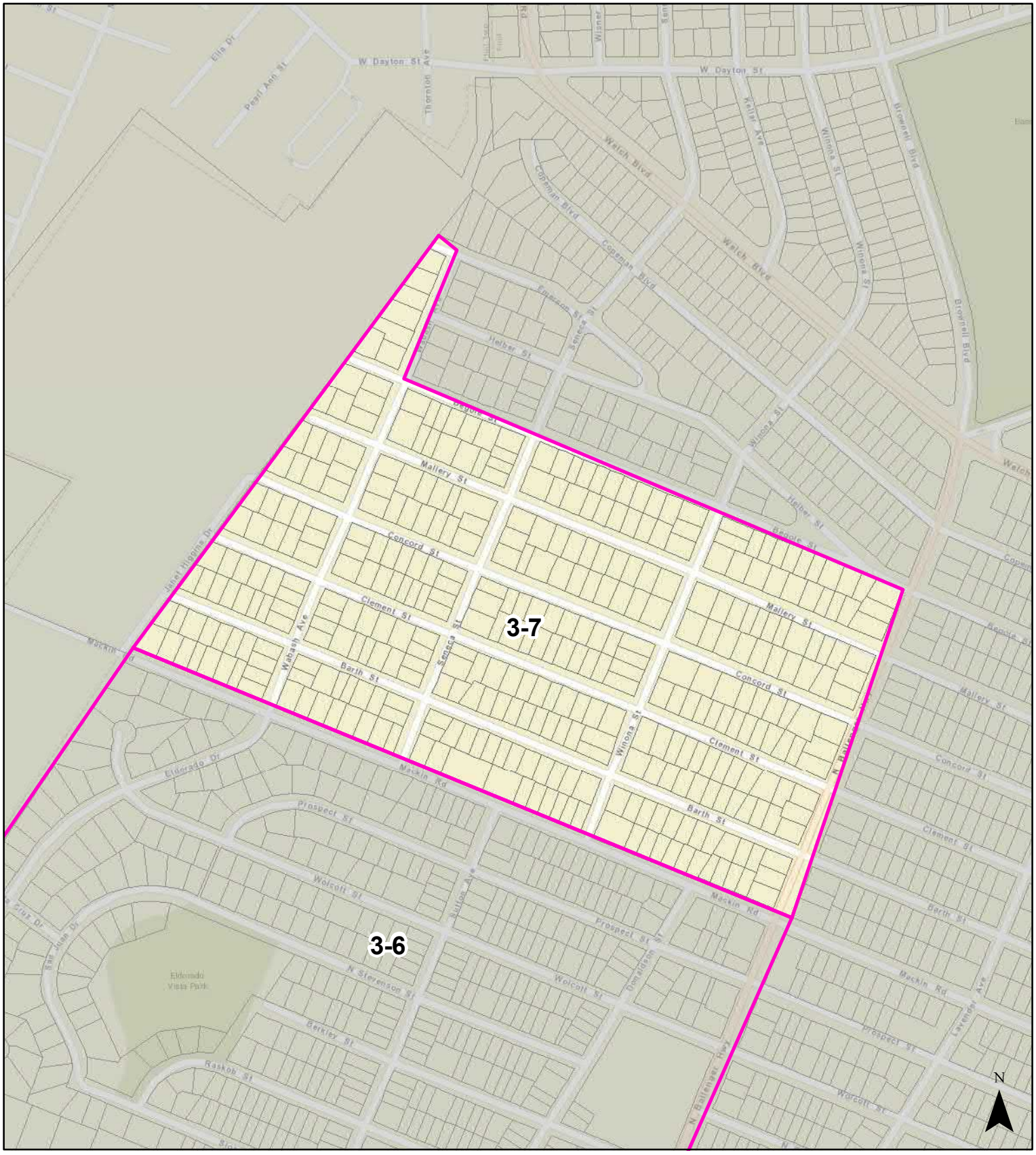
Fast Start Exploration Zones
Zone Sequence Area 3-5

AECOM

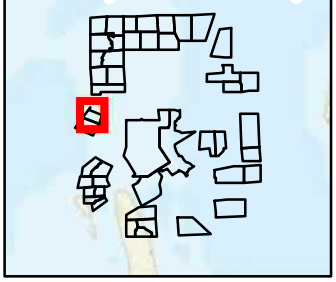


Fast Start Exploration Zones
Zone Sequence Area 3-6

AECOM



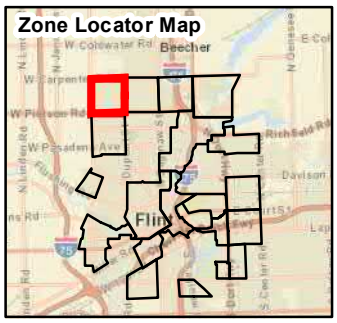
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 3-7

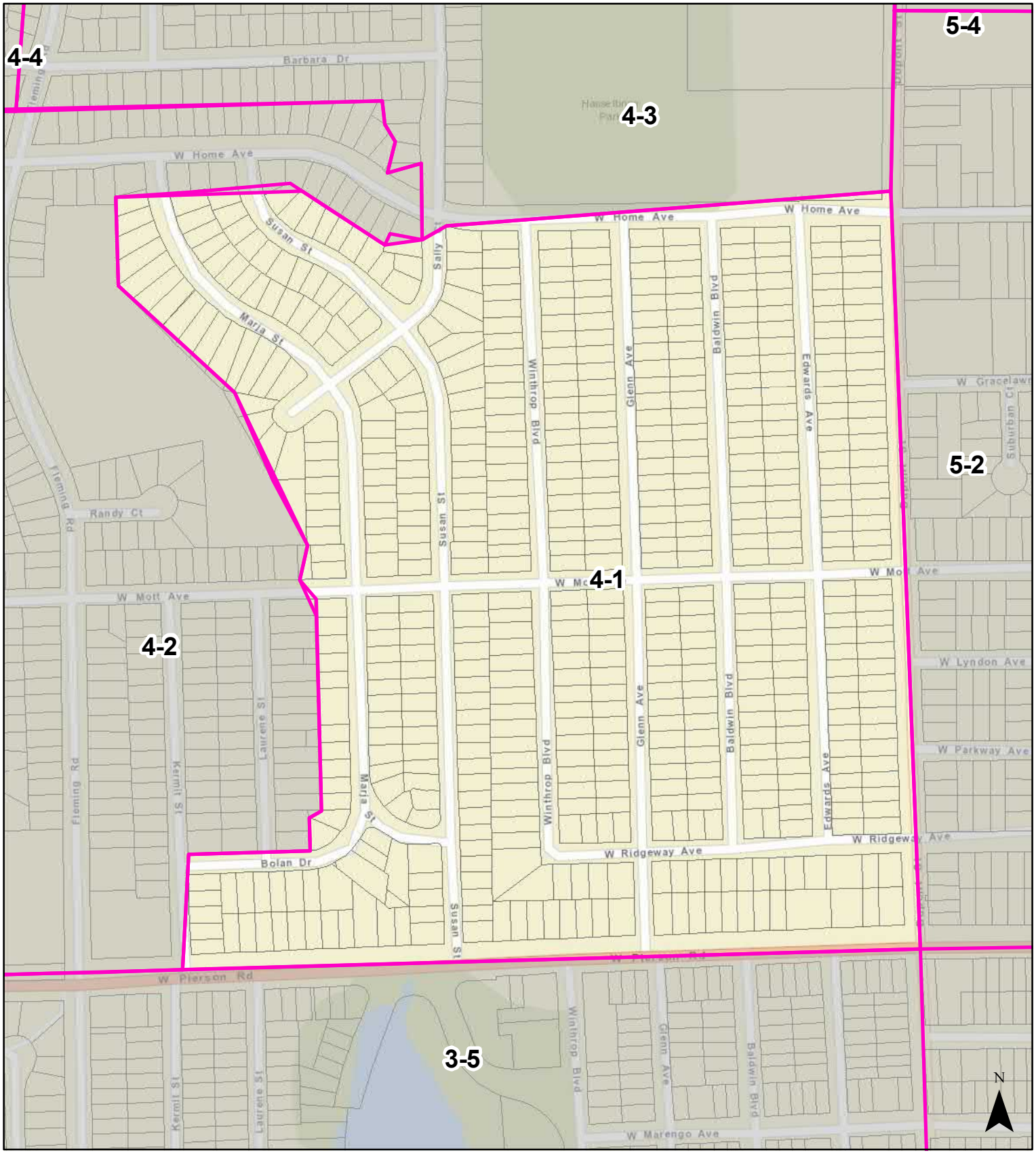
AECOM





Fast Start Exploration Zone 4

AECOM

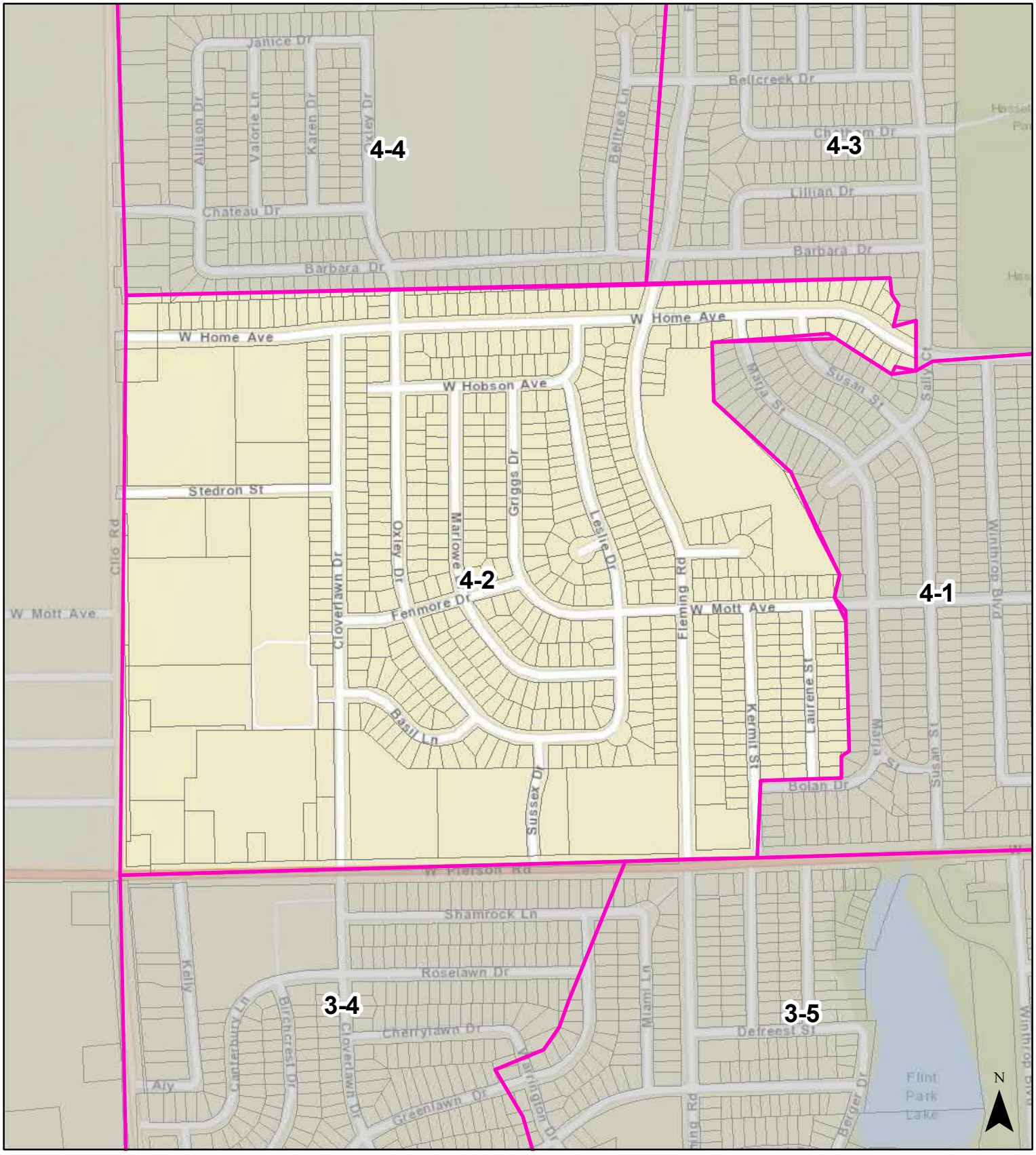


Zone Sequence Locator Map

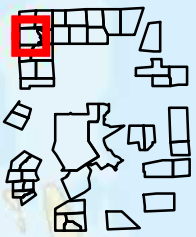


Fast Start Exploration Zones
Zone Sequence Area 4-1

AECOM

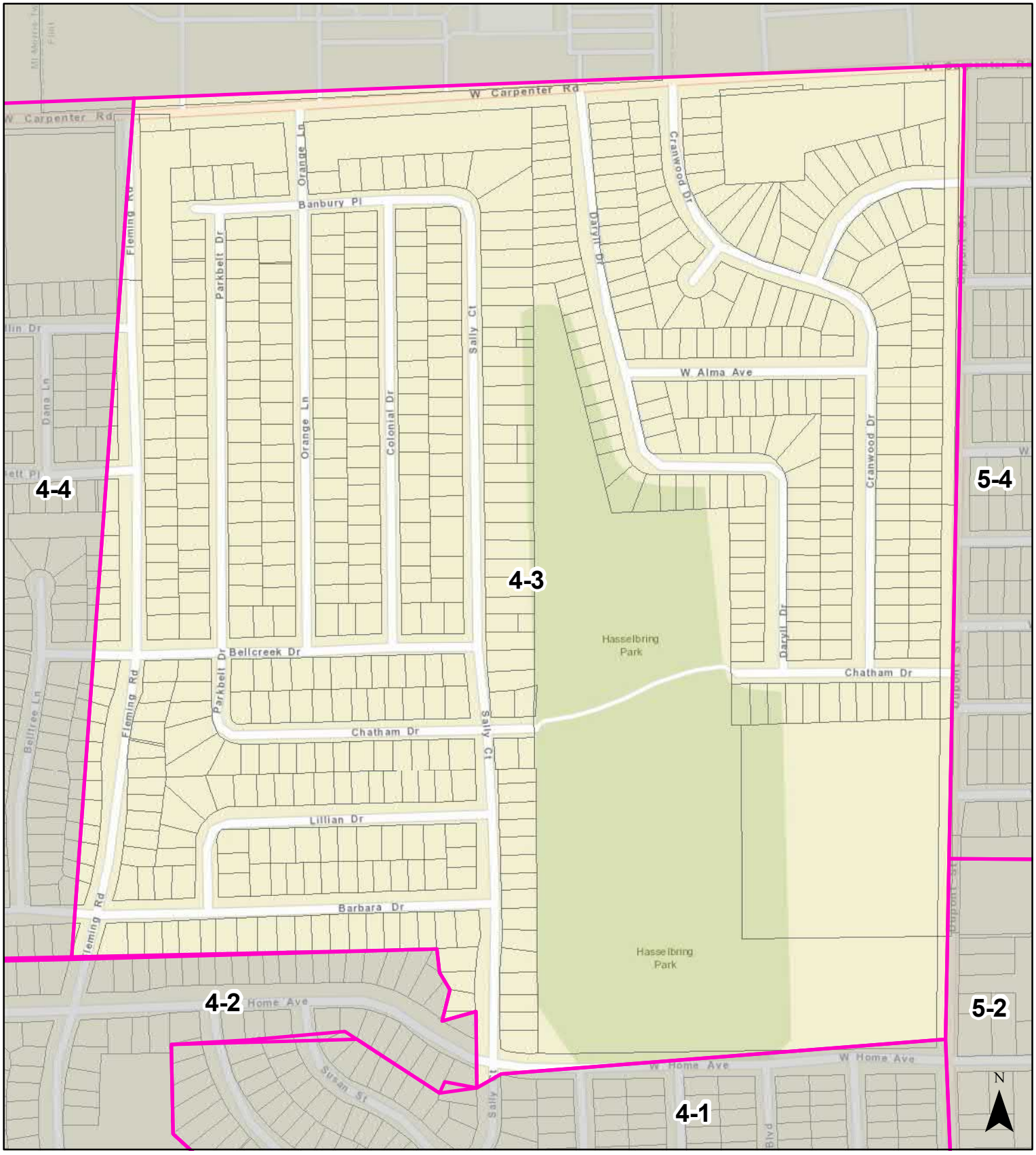


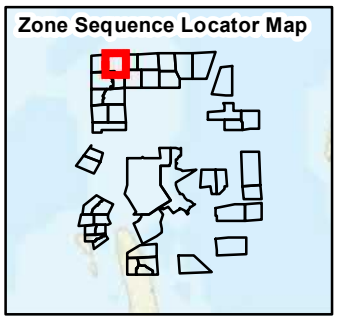
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 4-2

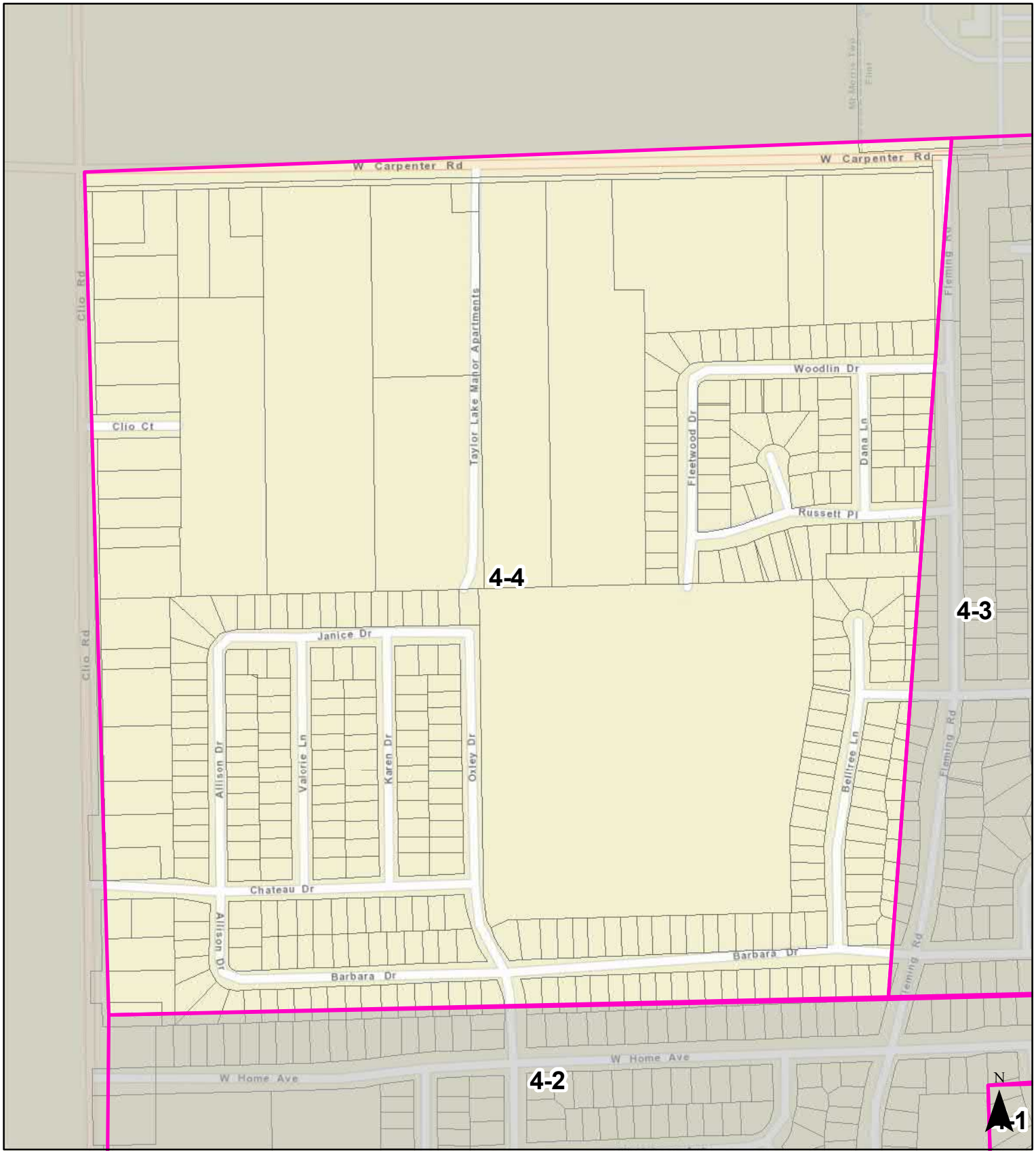
AECOM



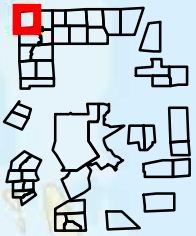


Fast Start Exploration Zones
Zone Sequence Area 4-3

AECOM



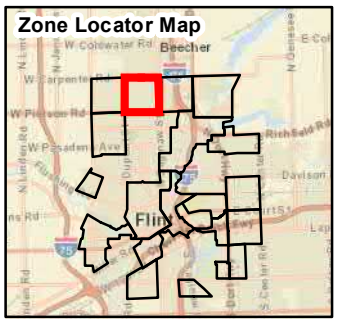
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 4-4

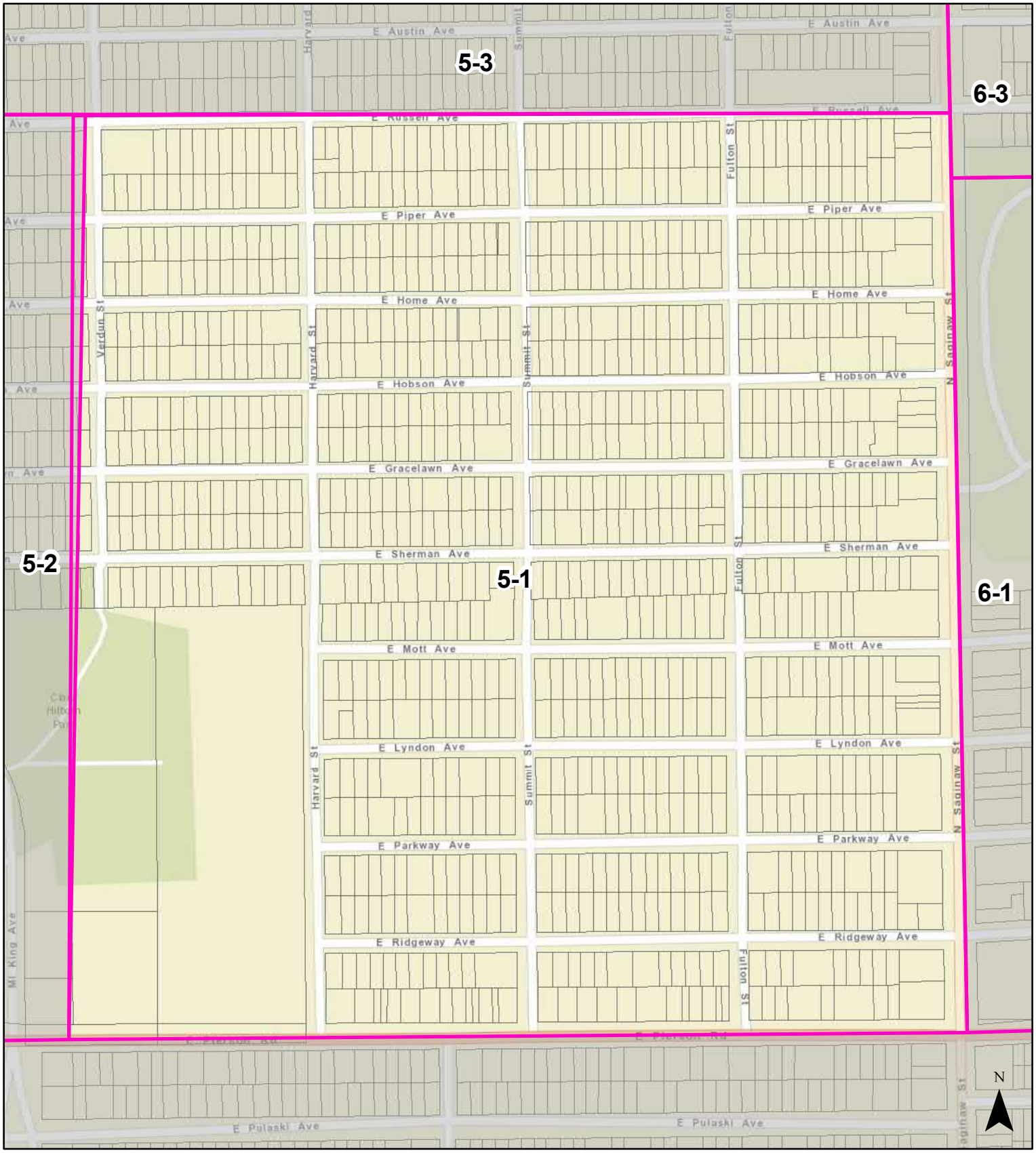
AECOM

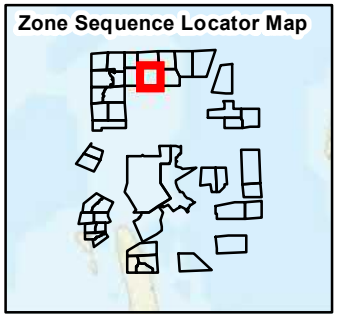




Fast Start Exploration Zone 5

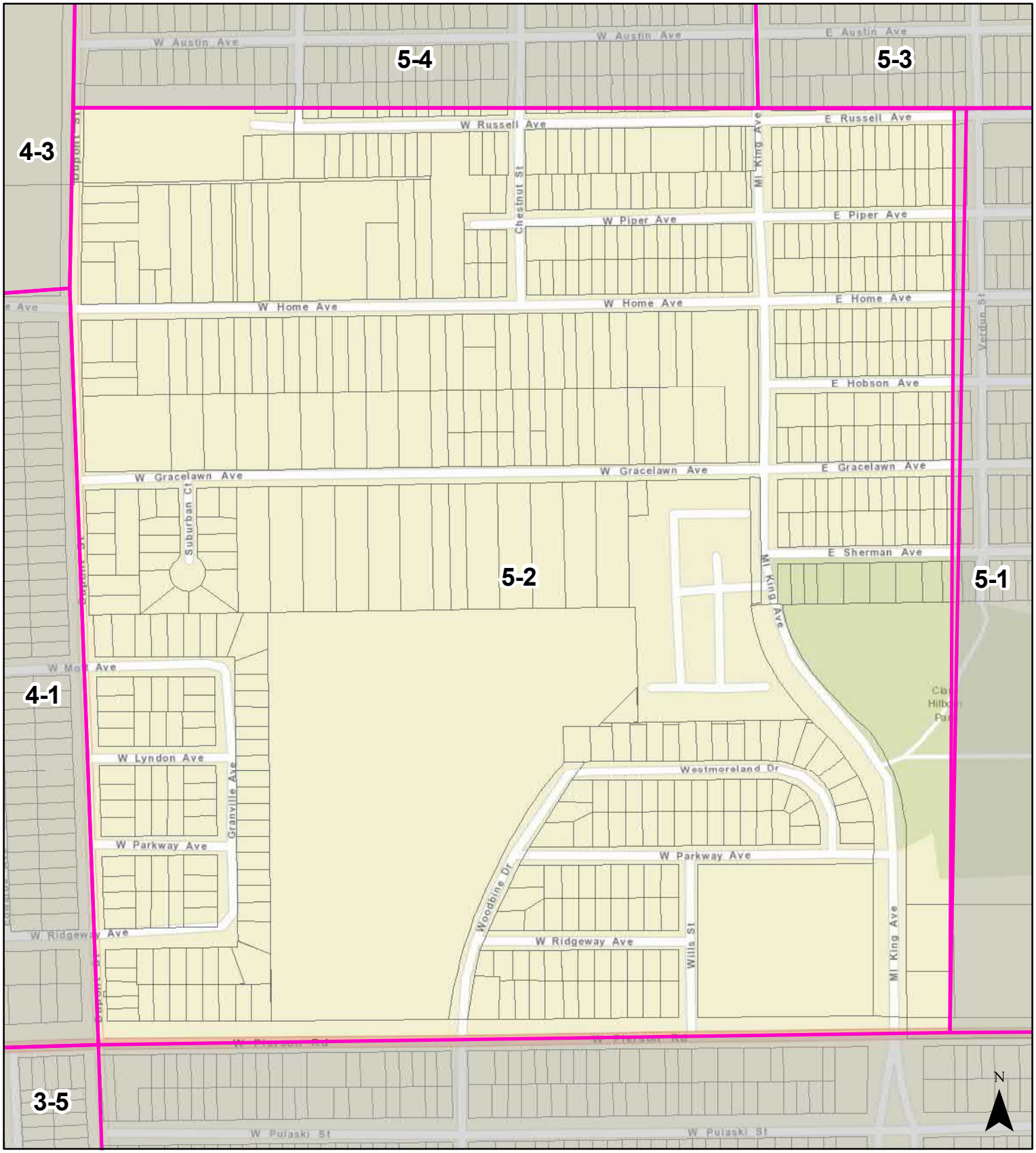
AECOM



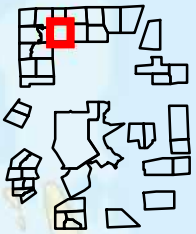


Fast Start Exploration Zones
Zone Sequence Area 5-1

AECOM

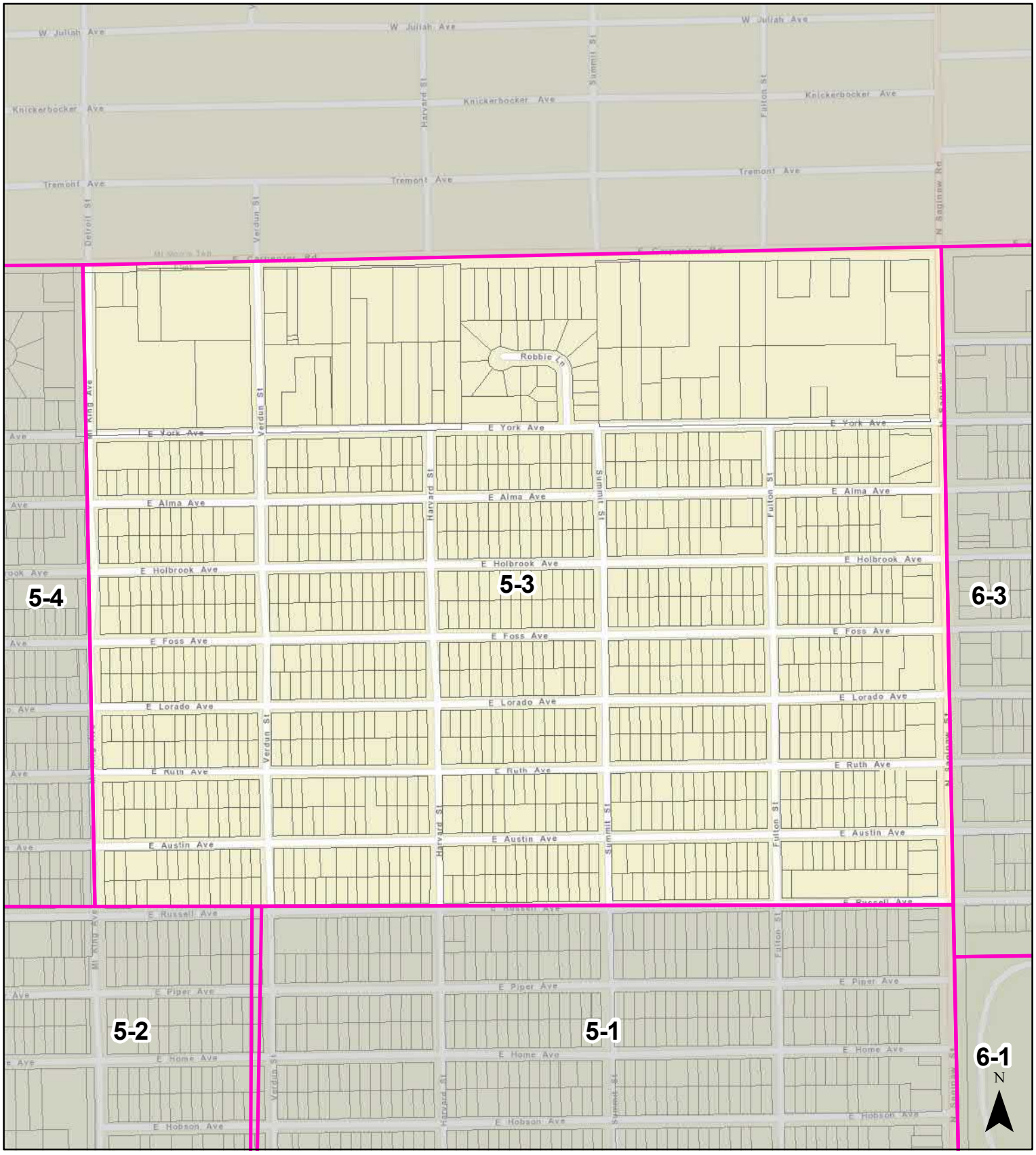


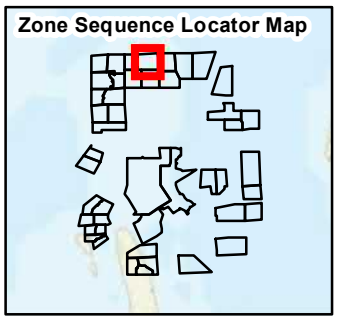
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 5-2

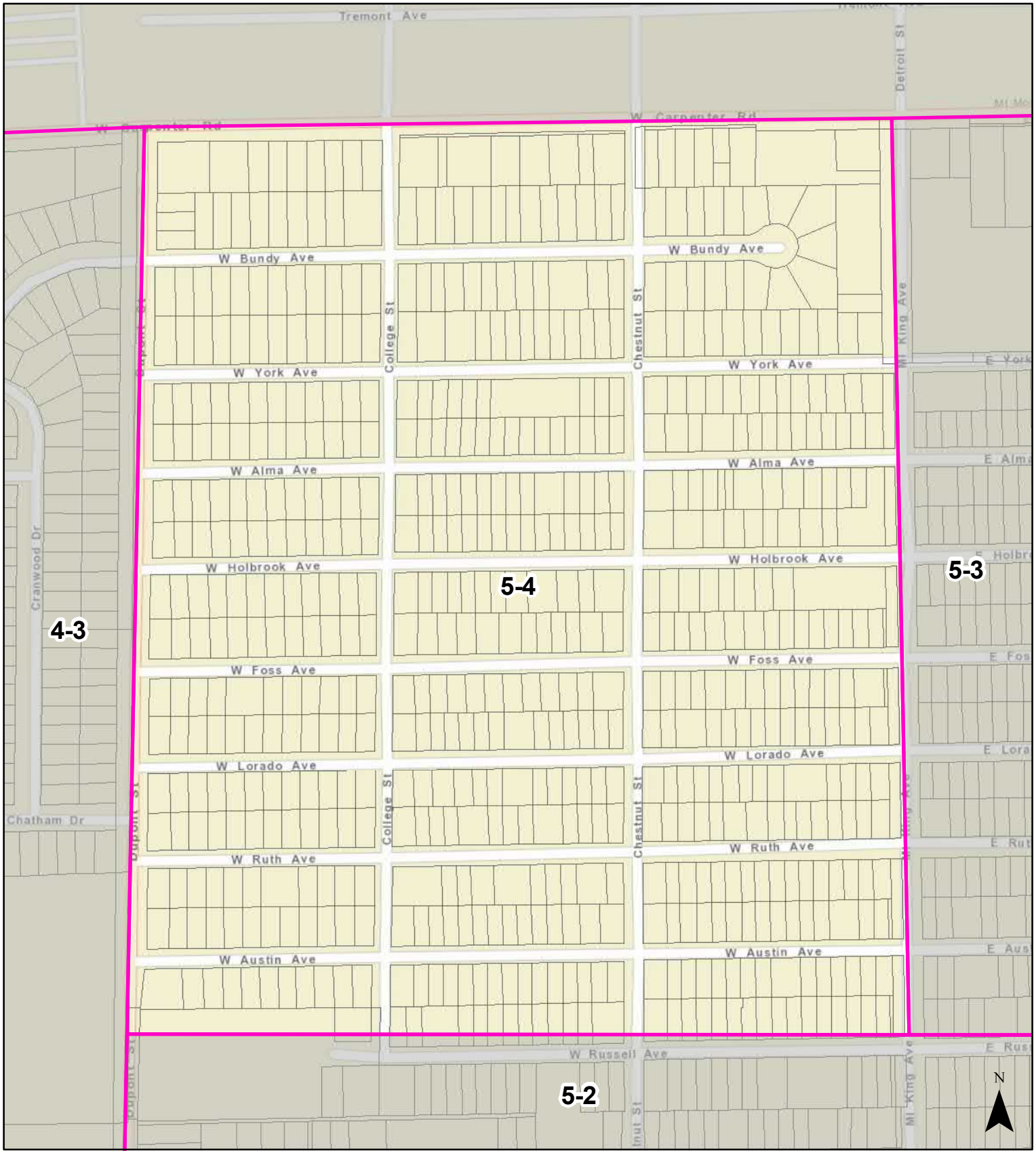
AECOM

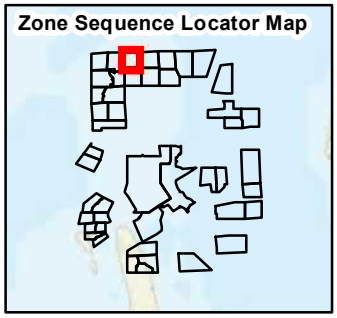




Fast Start Exploration Zones
Zone Sequence Area 5-3

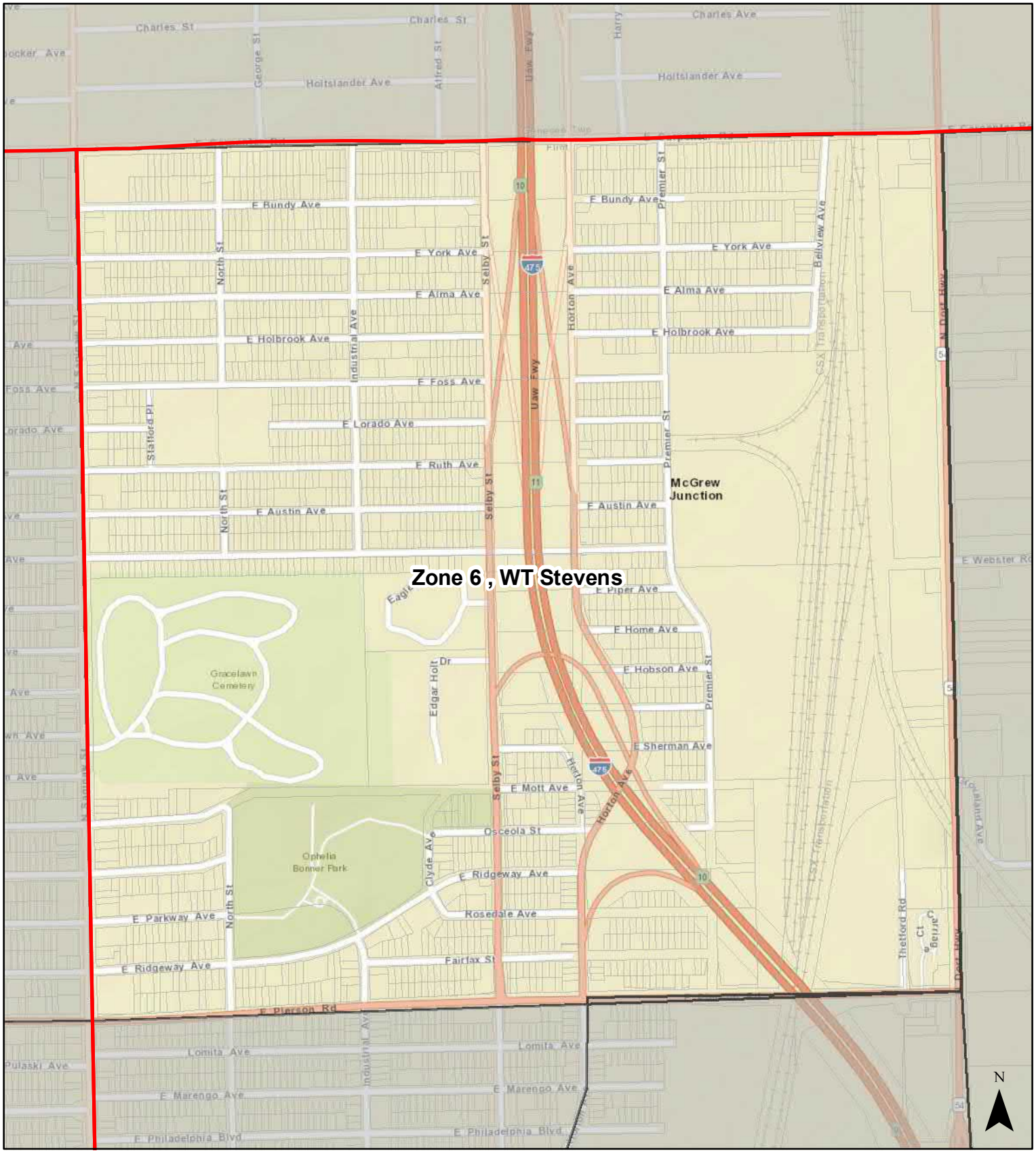
AECOM

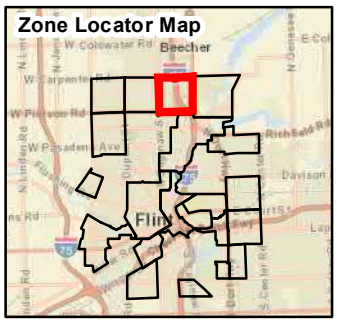




Fast Start Exploration Zones
Zone Sequence Area 5-4

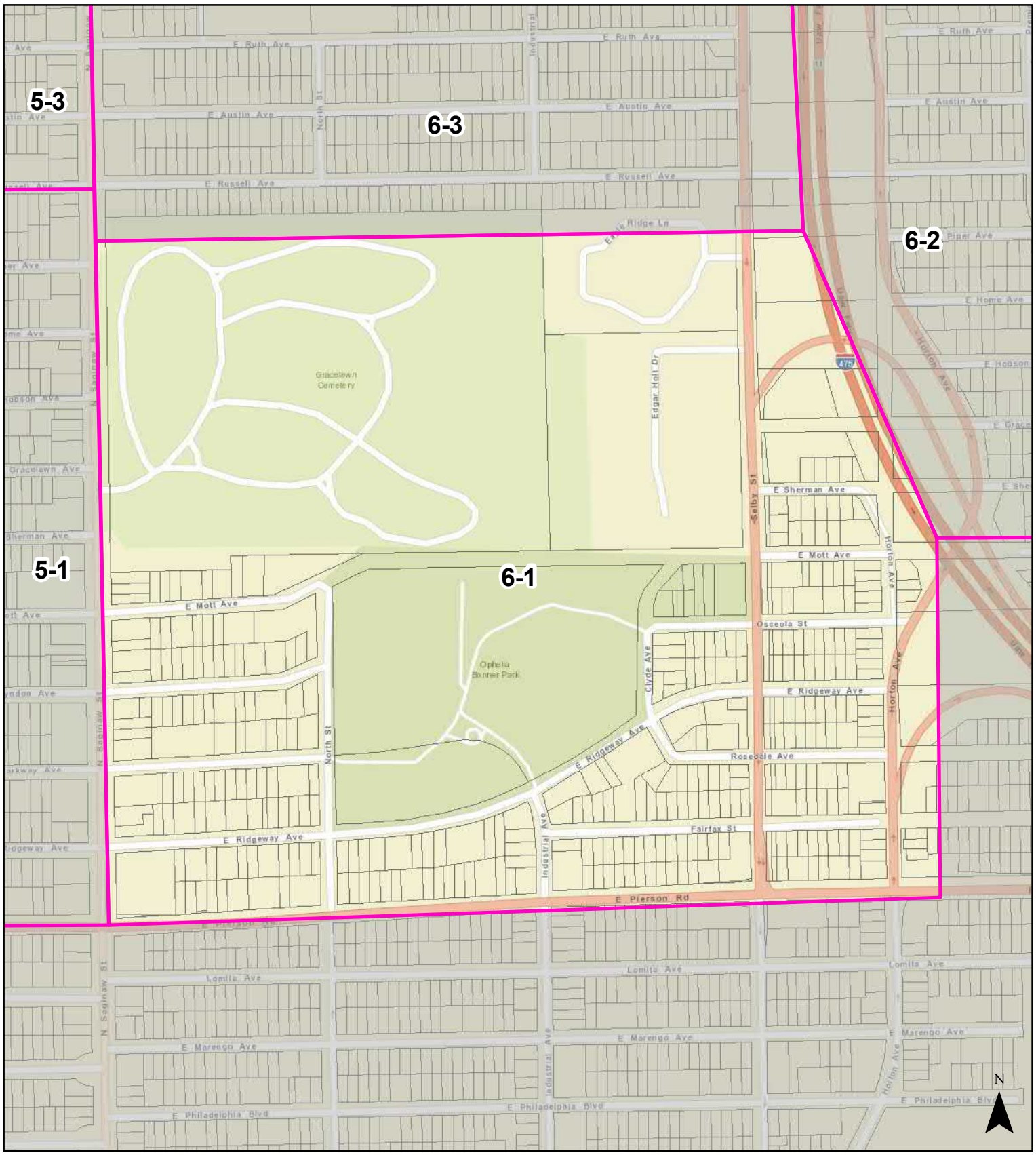
AECOM



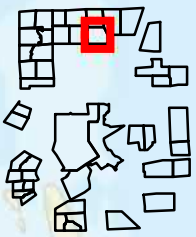


Fast Start Exploration Zone 6

AECOM

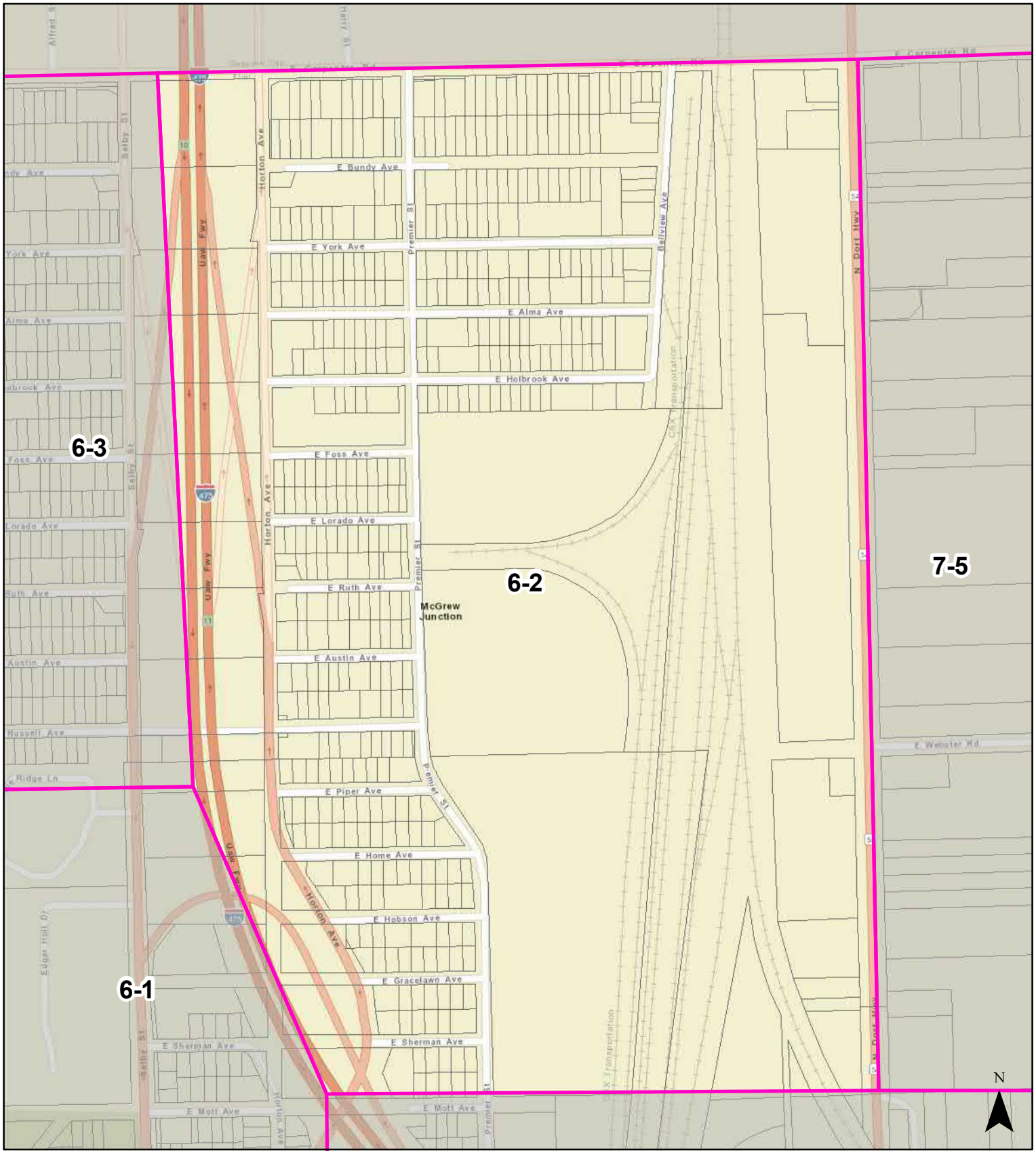


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 6-1

AECOM

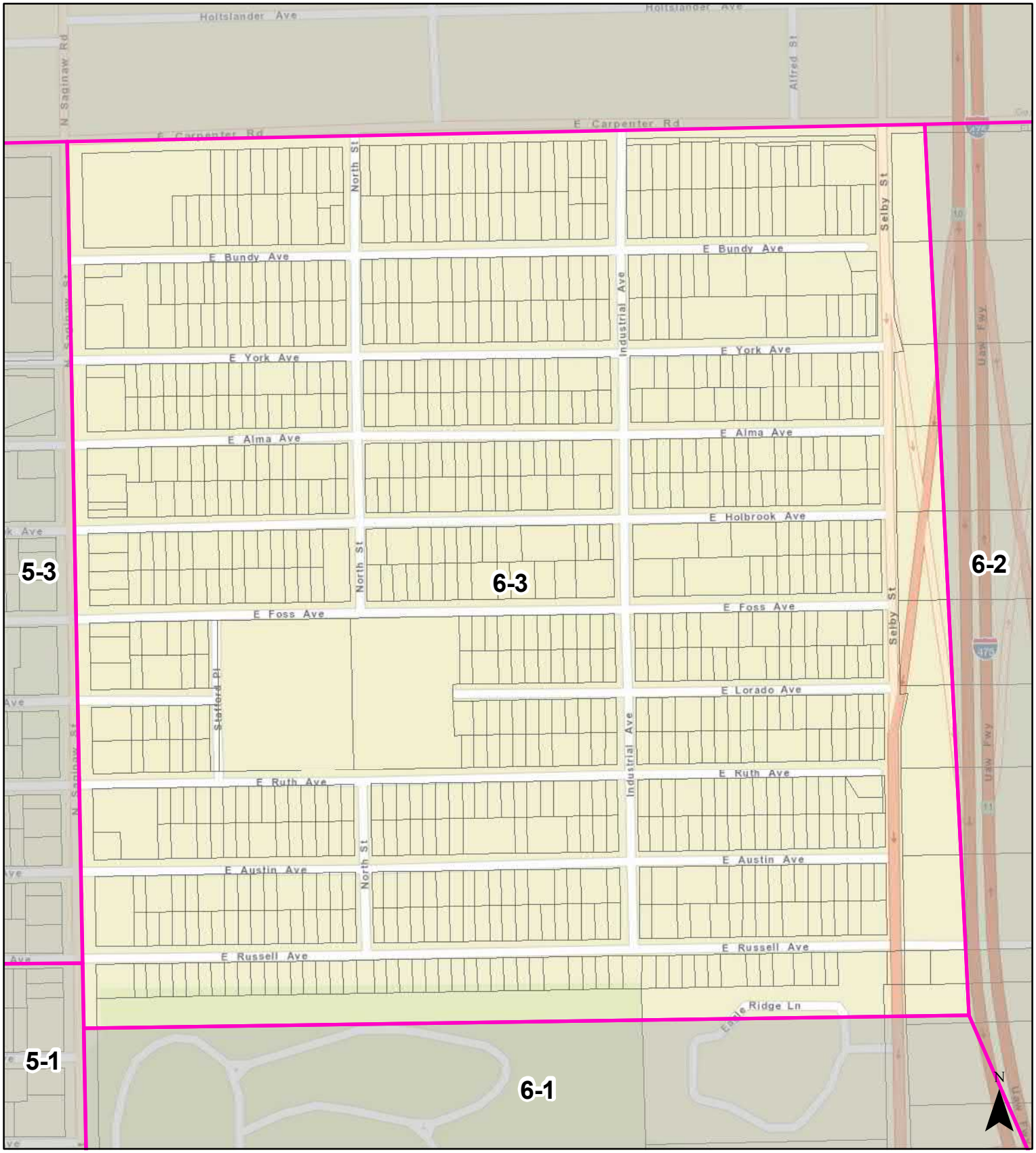


Zone Sequence Locator Map



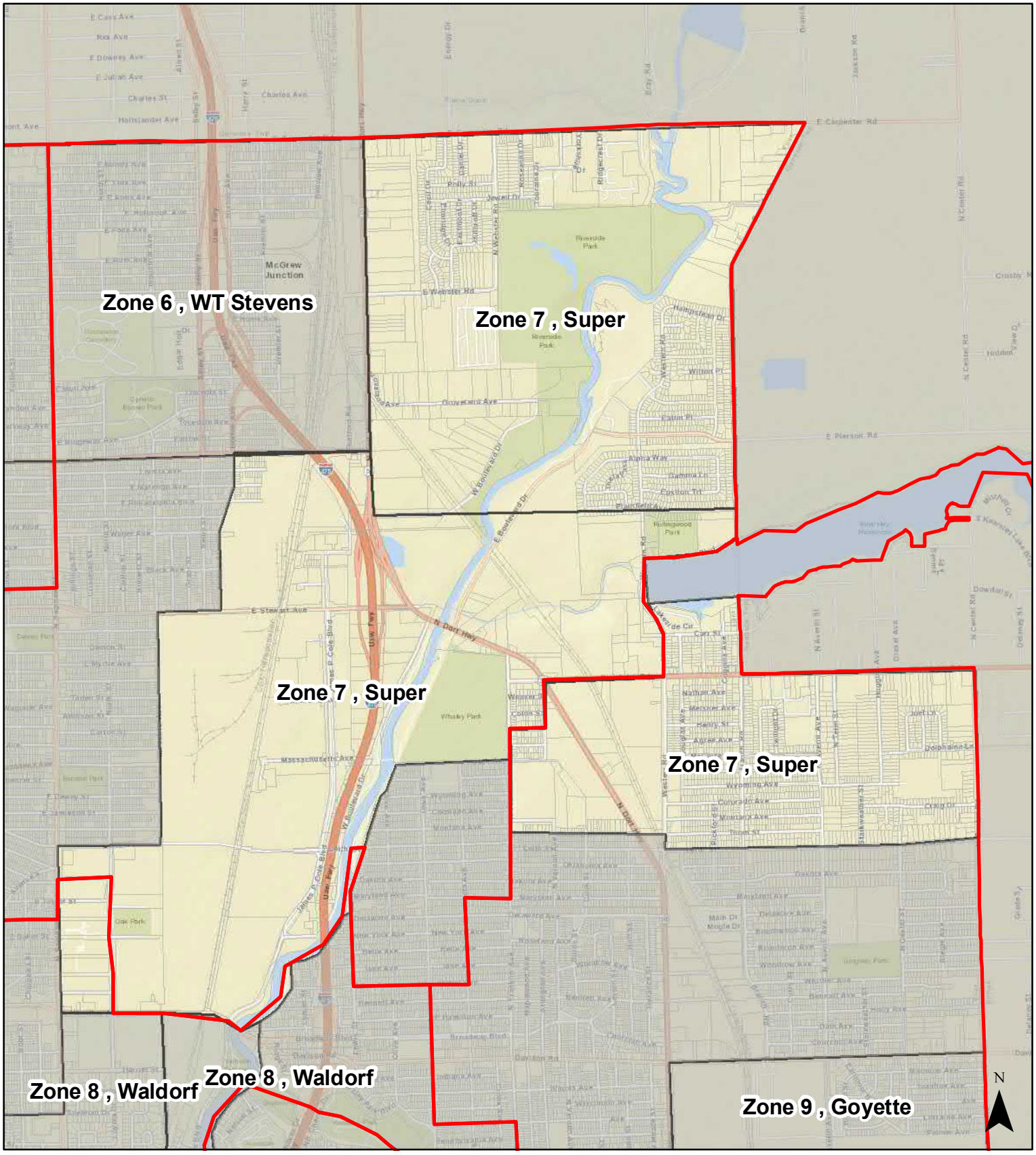
Fast Start Exploration Zones
Zone Sequence Area 6-2

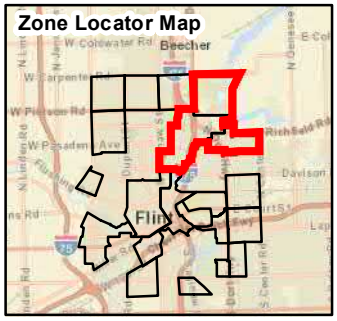
AECOM



Fast Start Exploration Zones
Zone Sequence Area 6-3

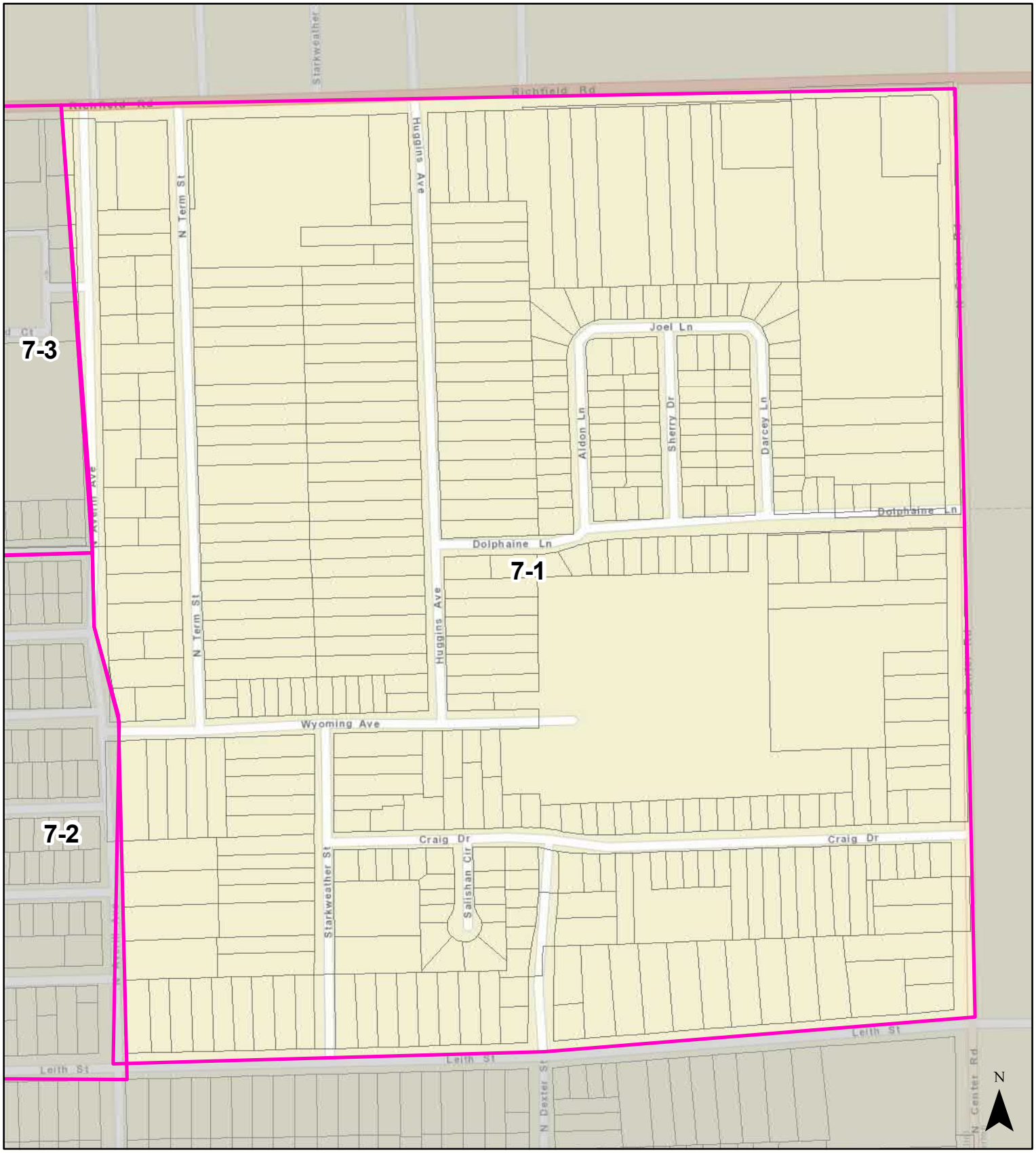
AECOM



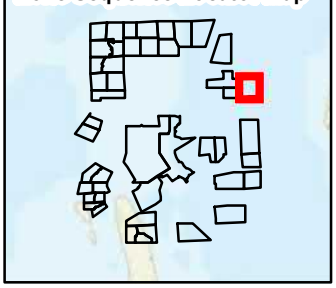


Fast Start Exploration Zone 7

AECOM

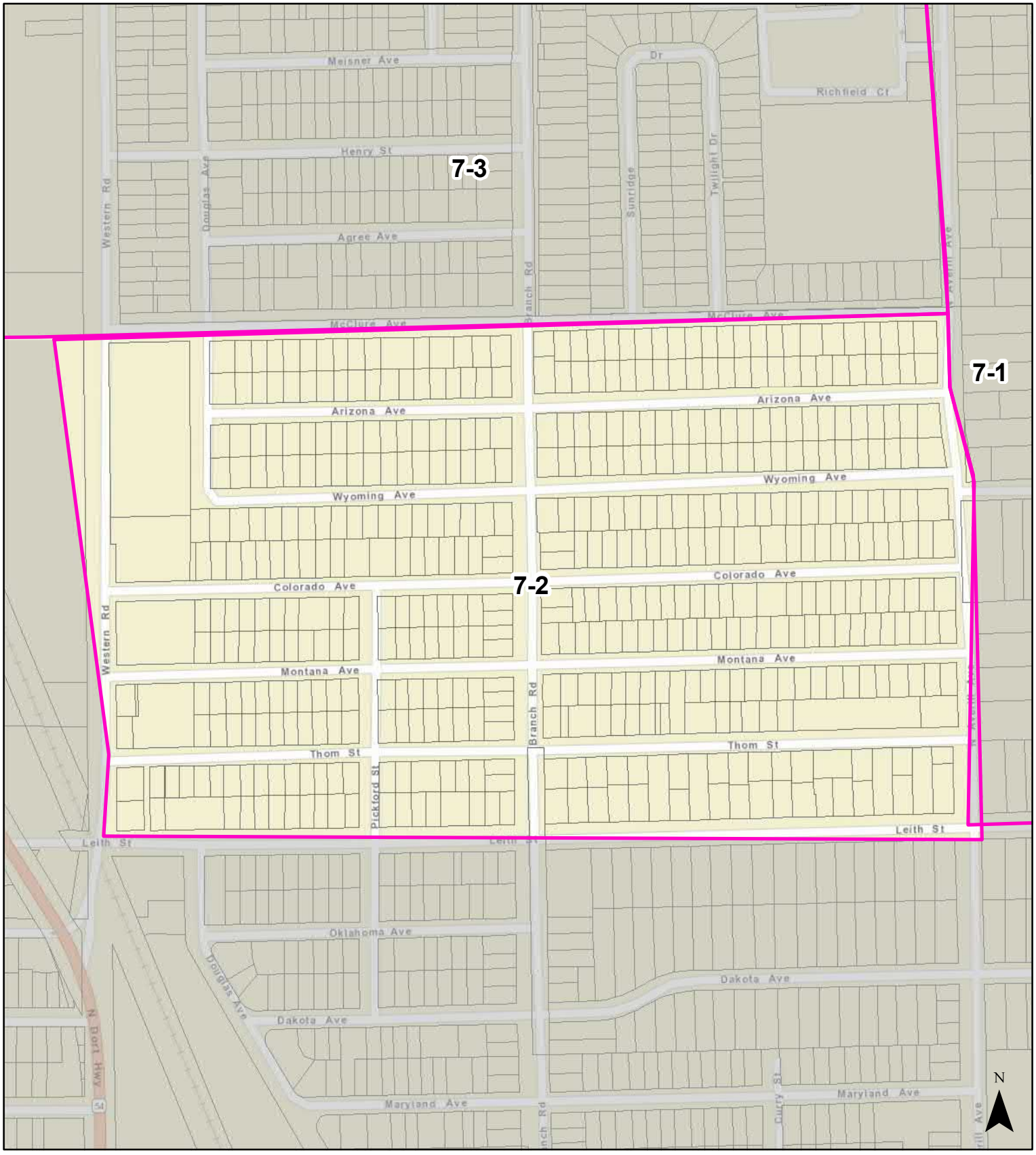


Zone Sequence Locator Map

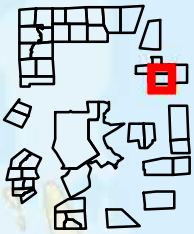


Fast Start Exploration Zones
Zone Sequence Area 7-1

AECOM

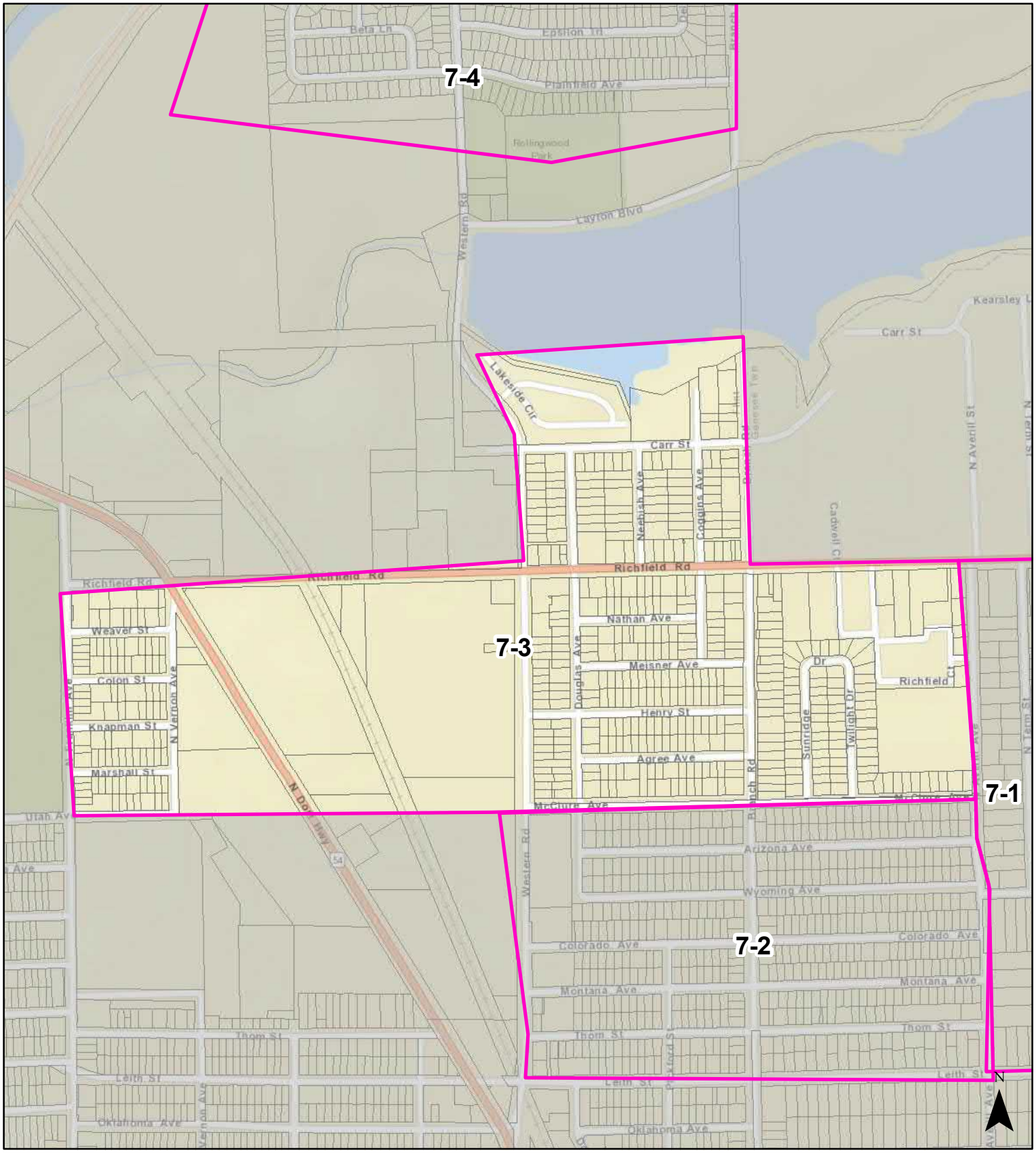


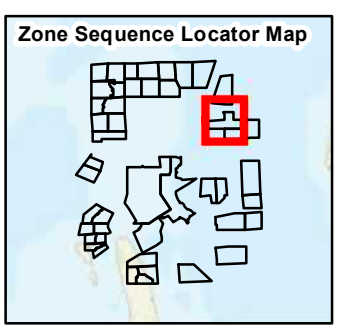
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 7-2

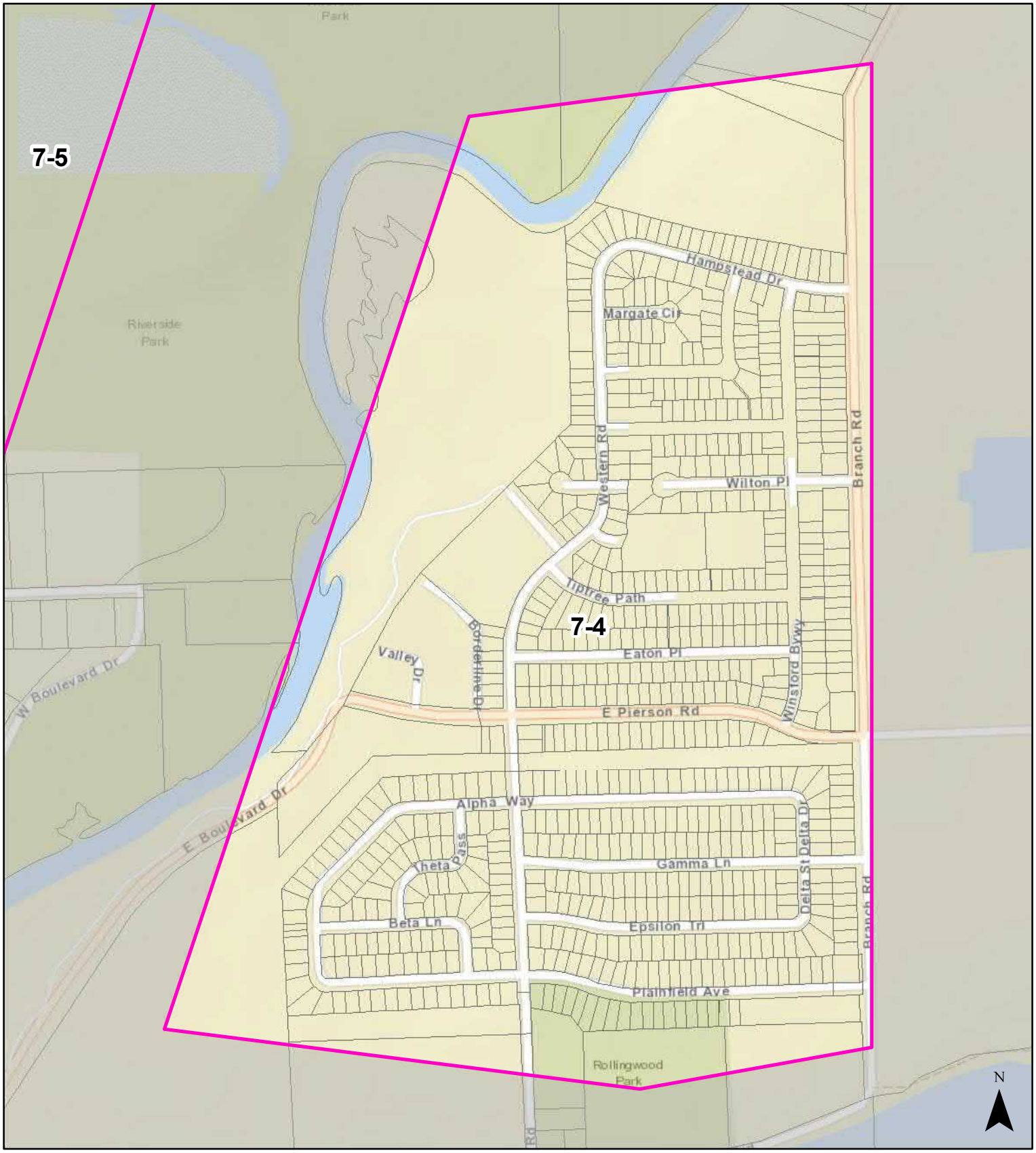
AECOM



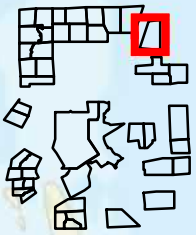


Fast Start Exploration Zones
Zone Sequence Area 7-3

AECOM

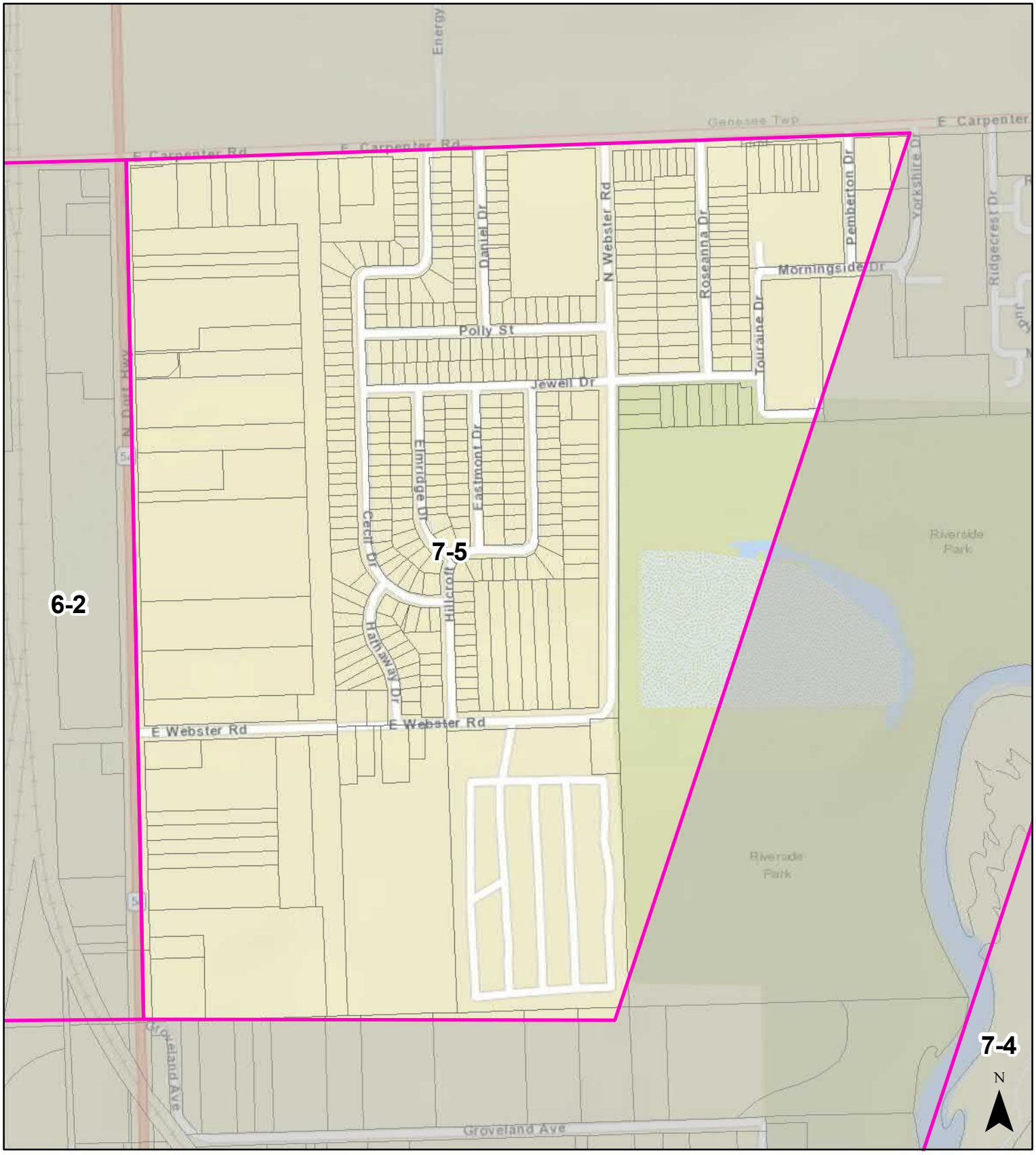


Zone Sequence Locator Map

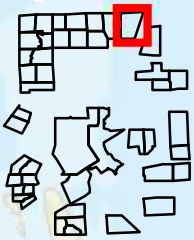


Fast Start Exploration Zones
Zone Sequence Area 7-4

AECOM

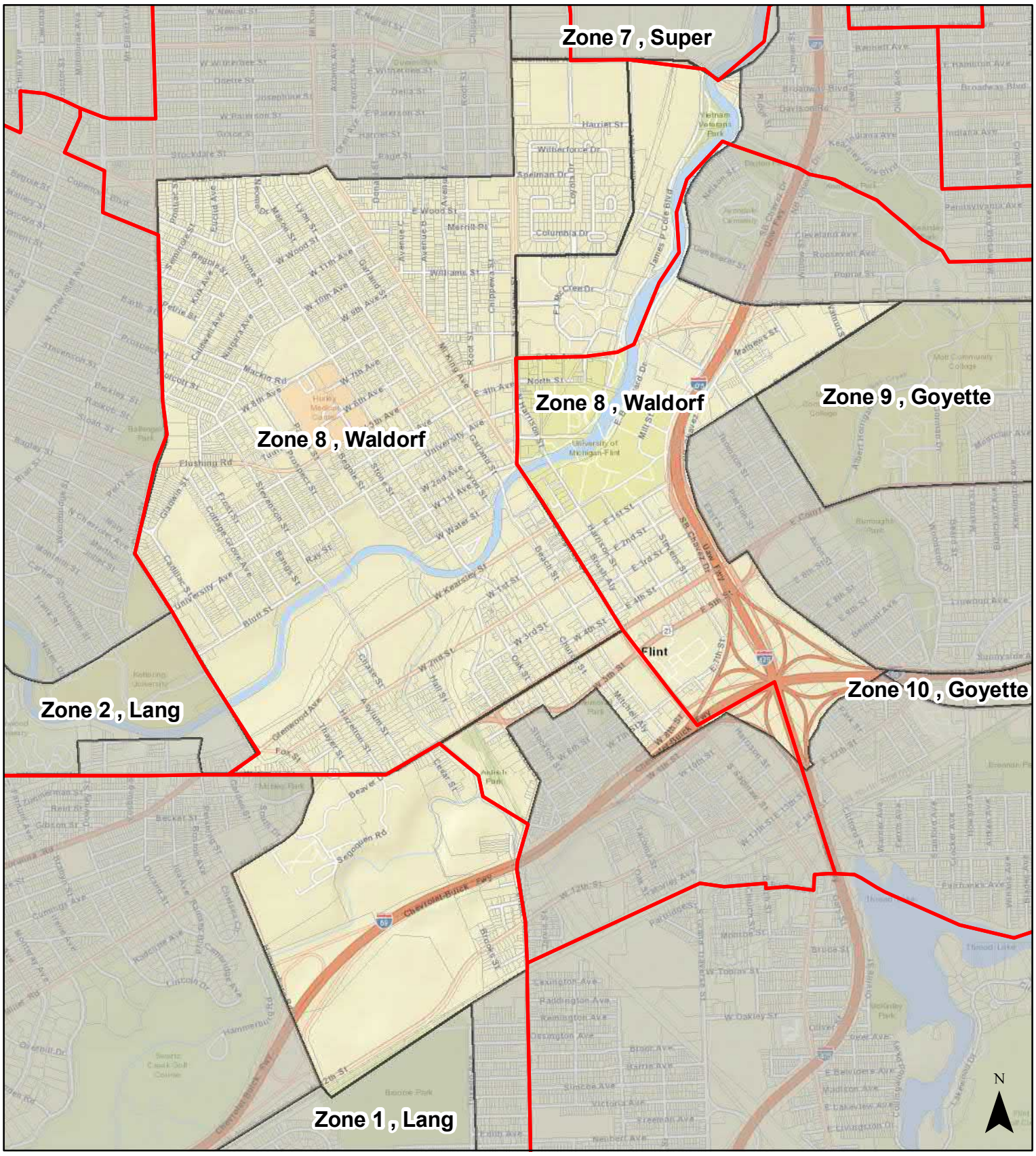


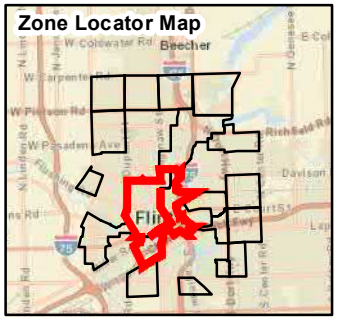
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 7-5

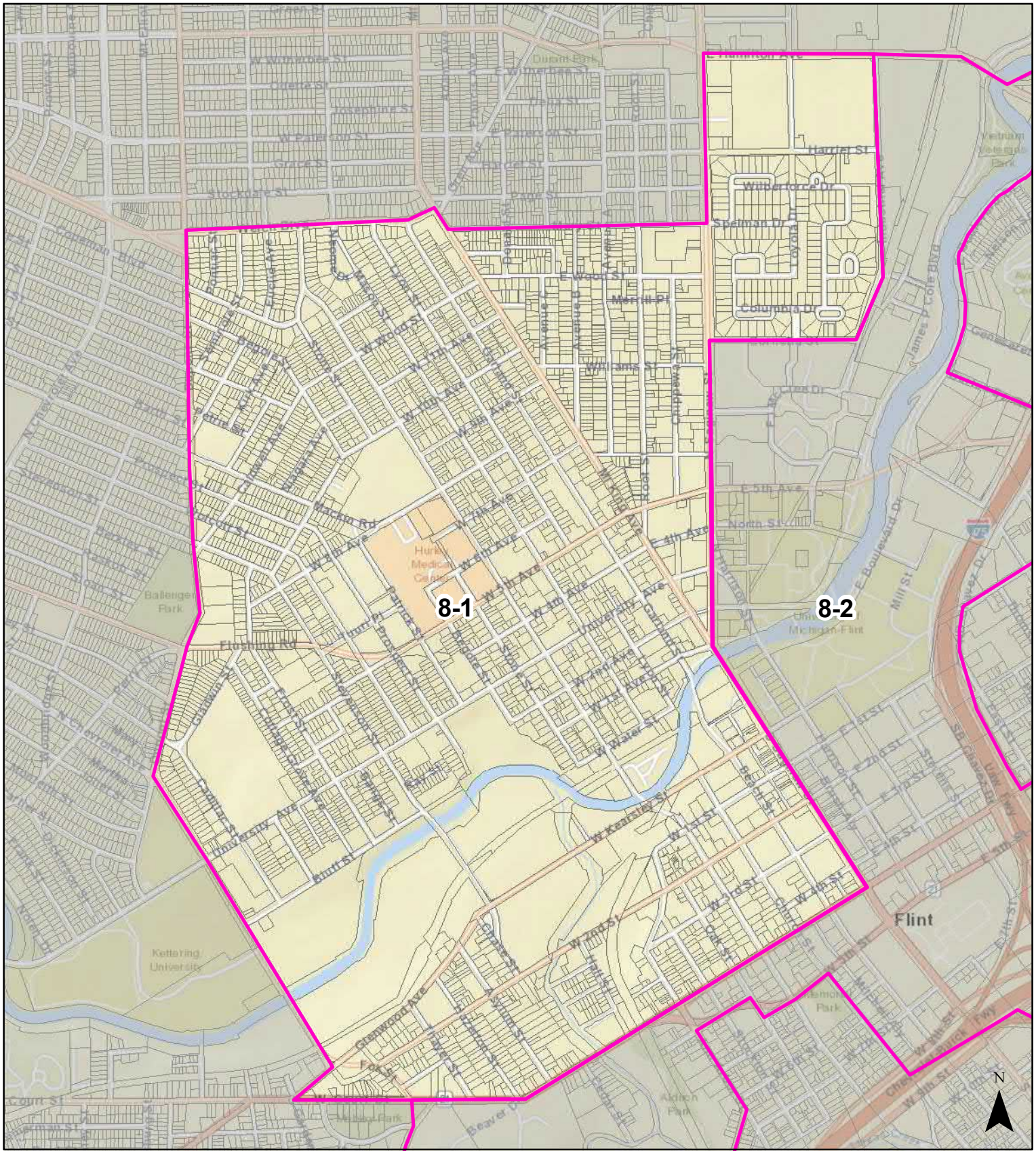
AECOM

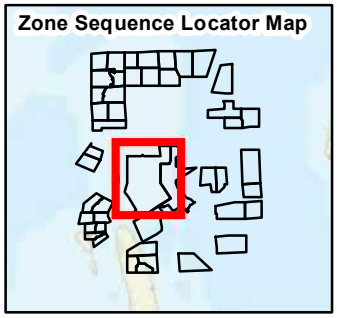




Fast Start Exploration Zone 8

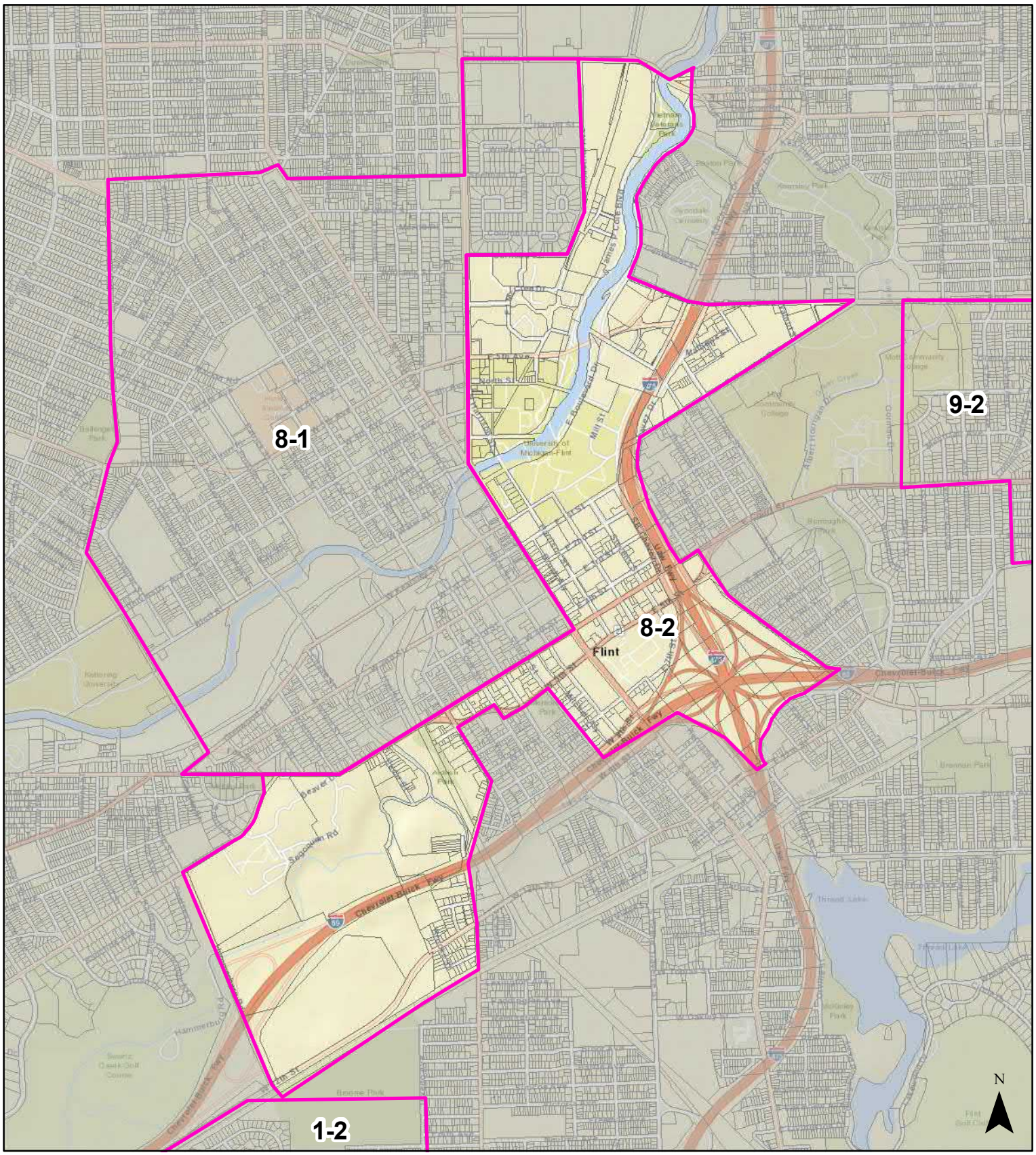
AECOM



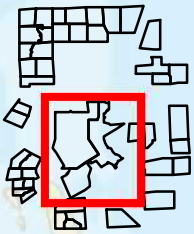


Fast Start Exploration Zones
Zone Sequence Area 8-1

AECOM

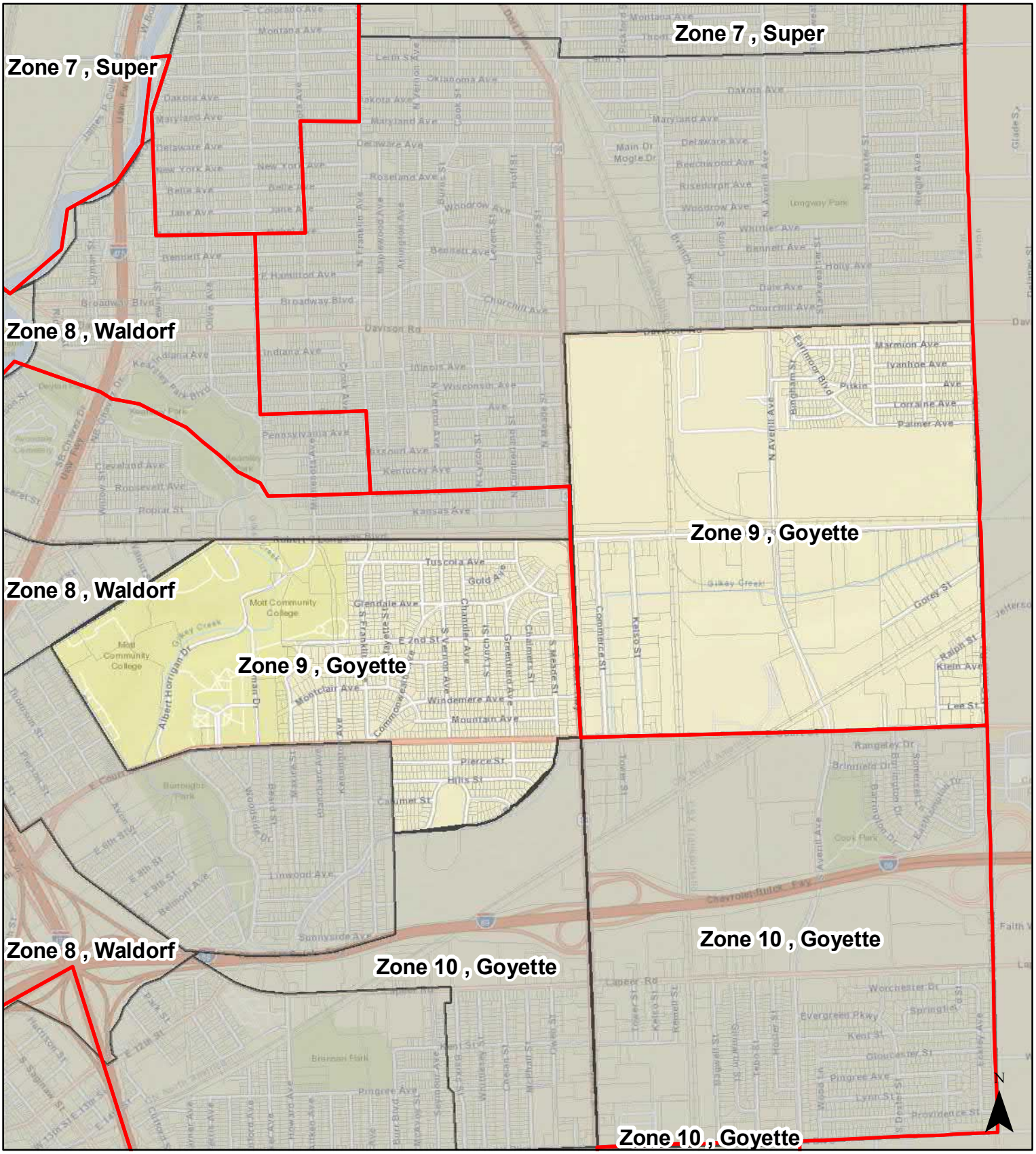


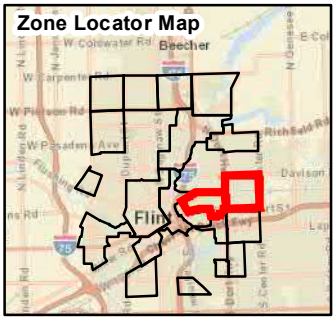
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 8-2

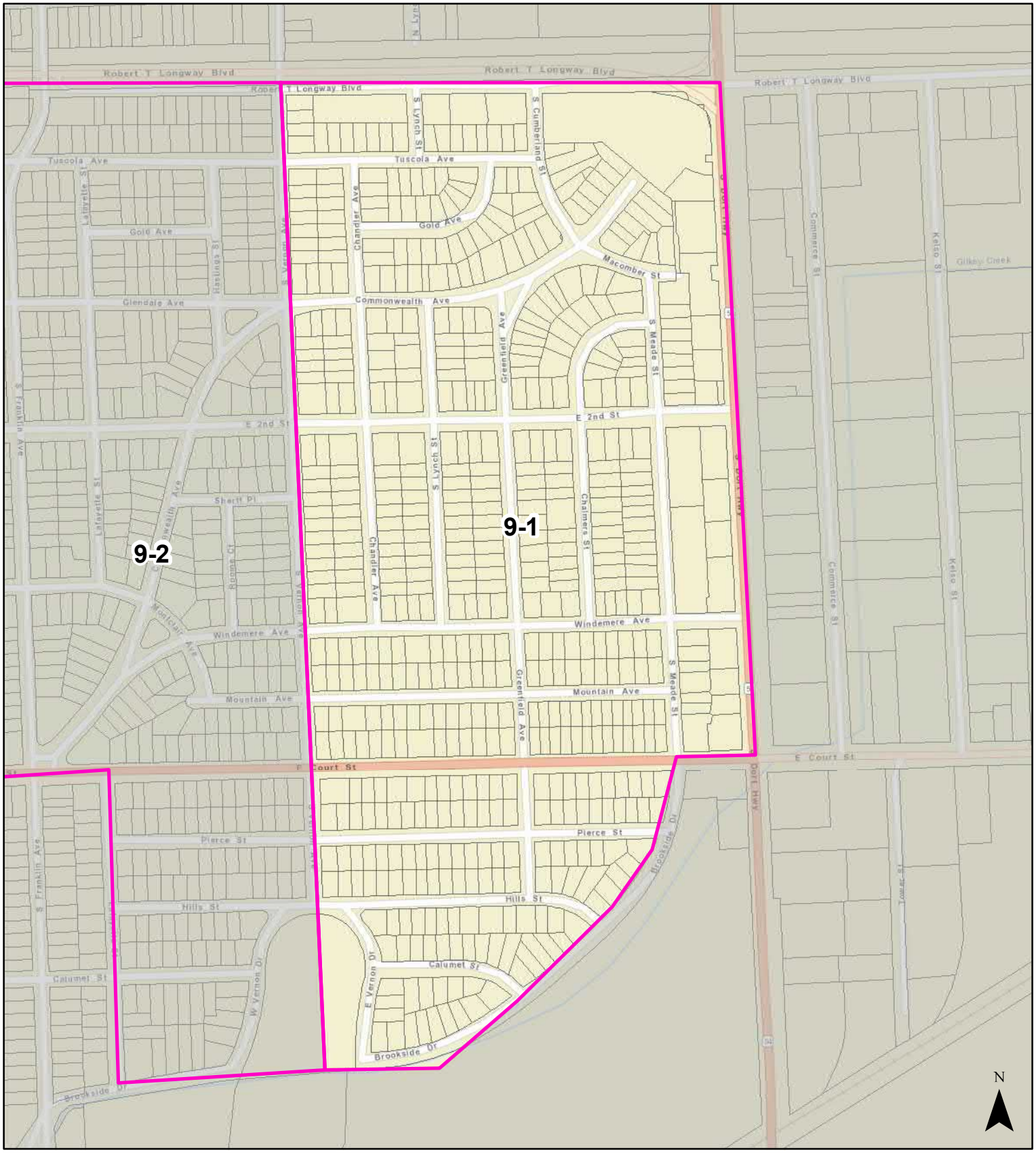
AECOM



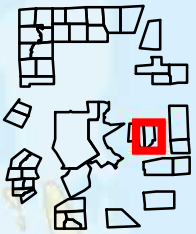


Fast Start Exploration Zone 9

AECOM

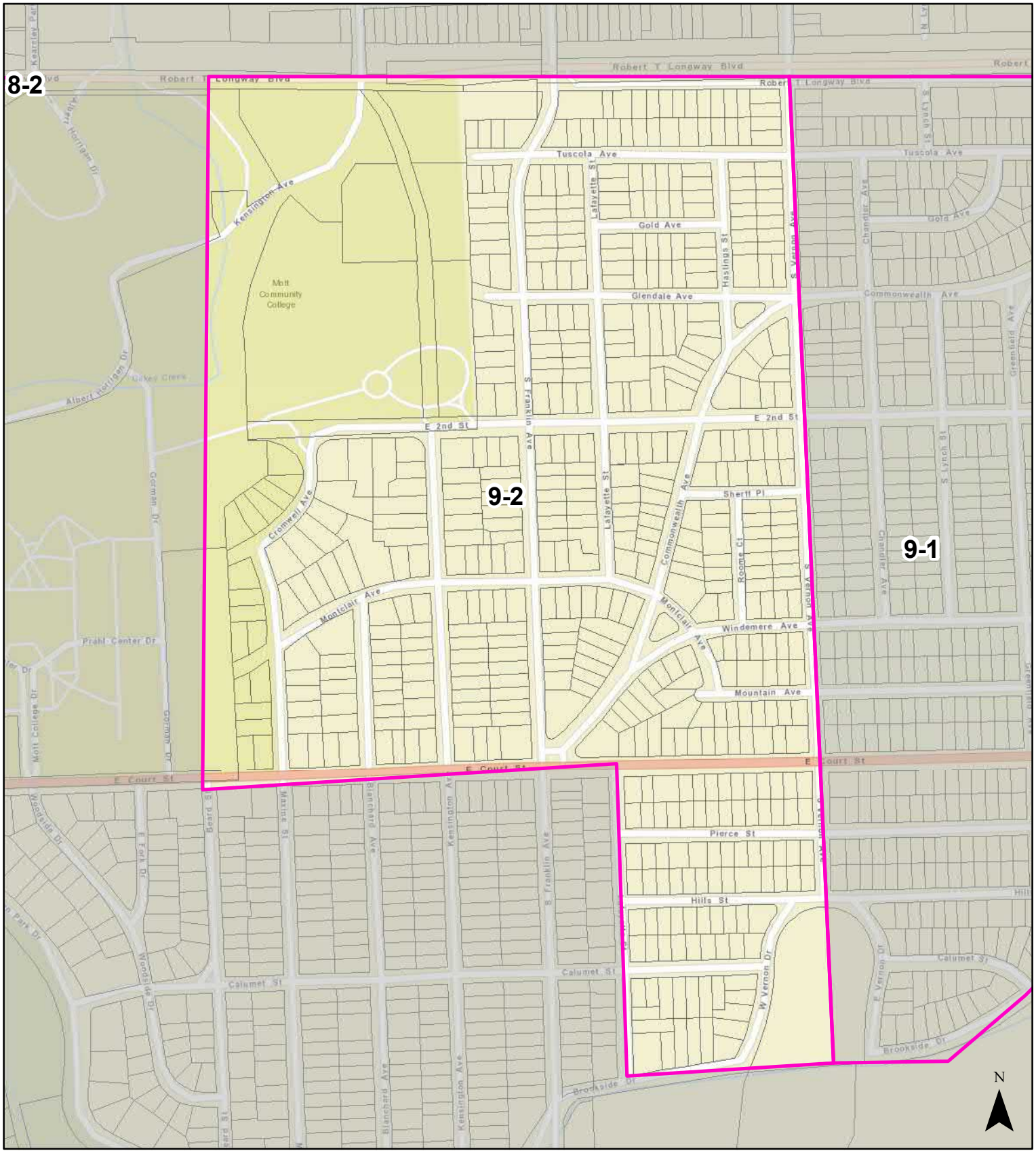


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 9-1

AECOM

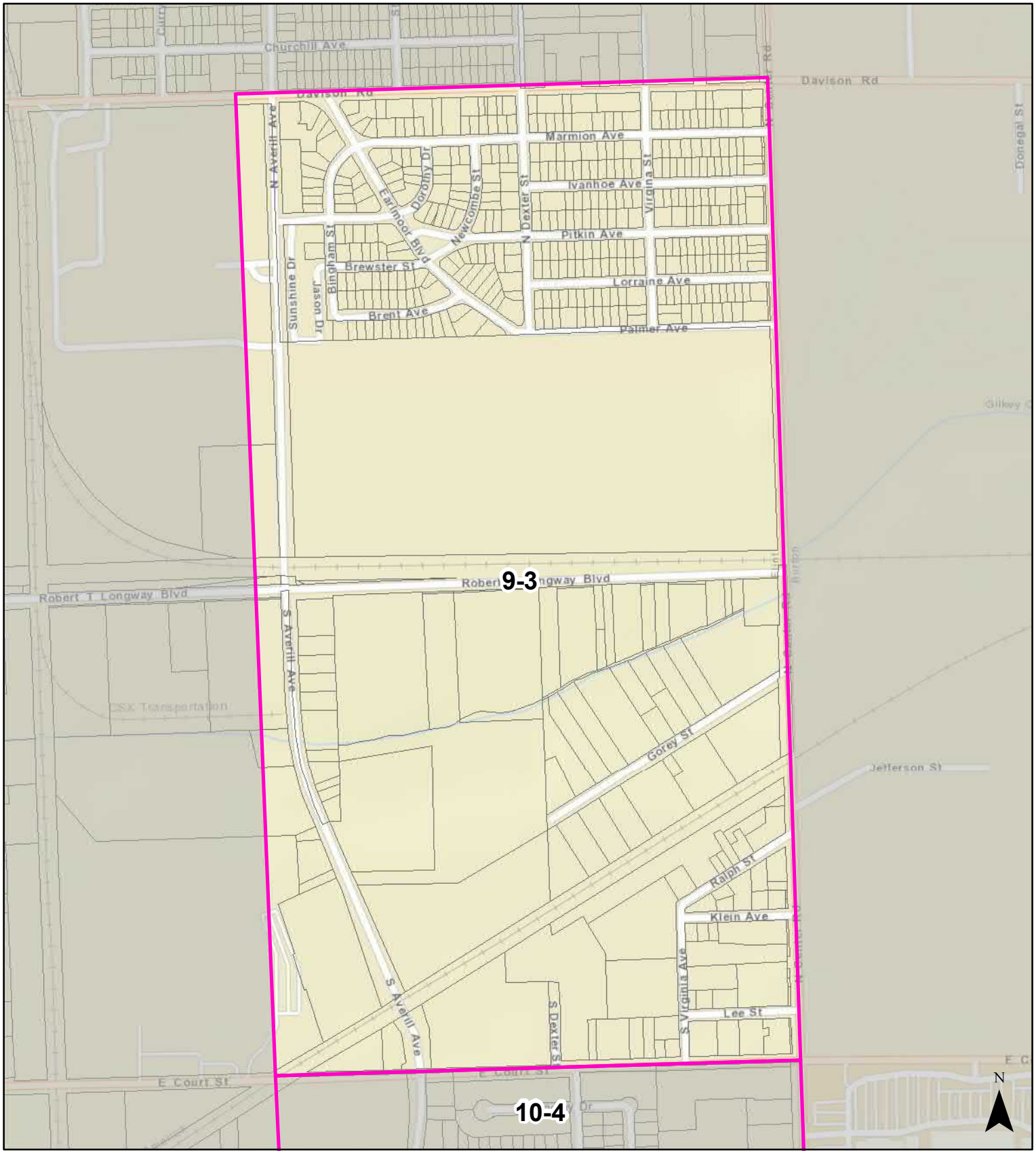


Zone Sequence Locator Map

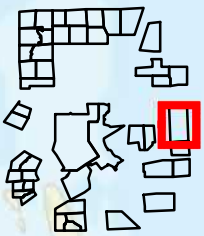


Fast Start Exploration Zones
Zone Sequence Area 9-2

AECOM

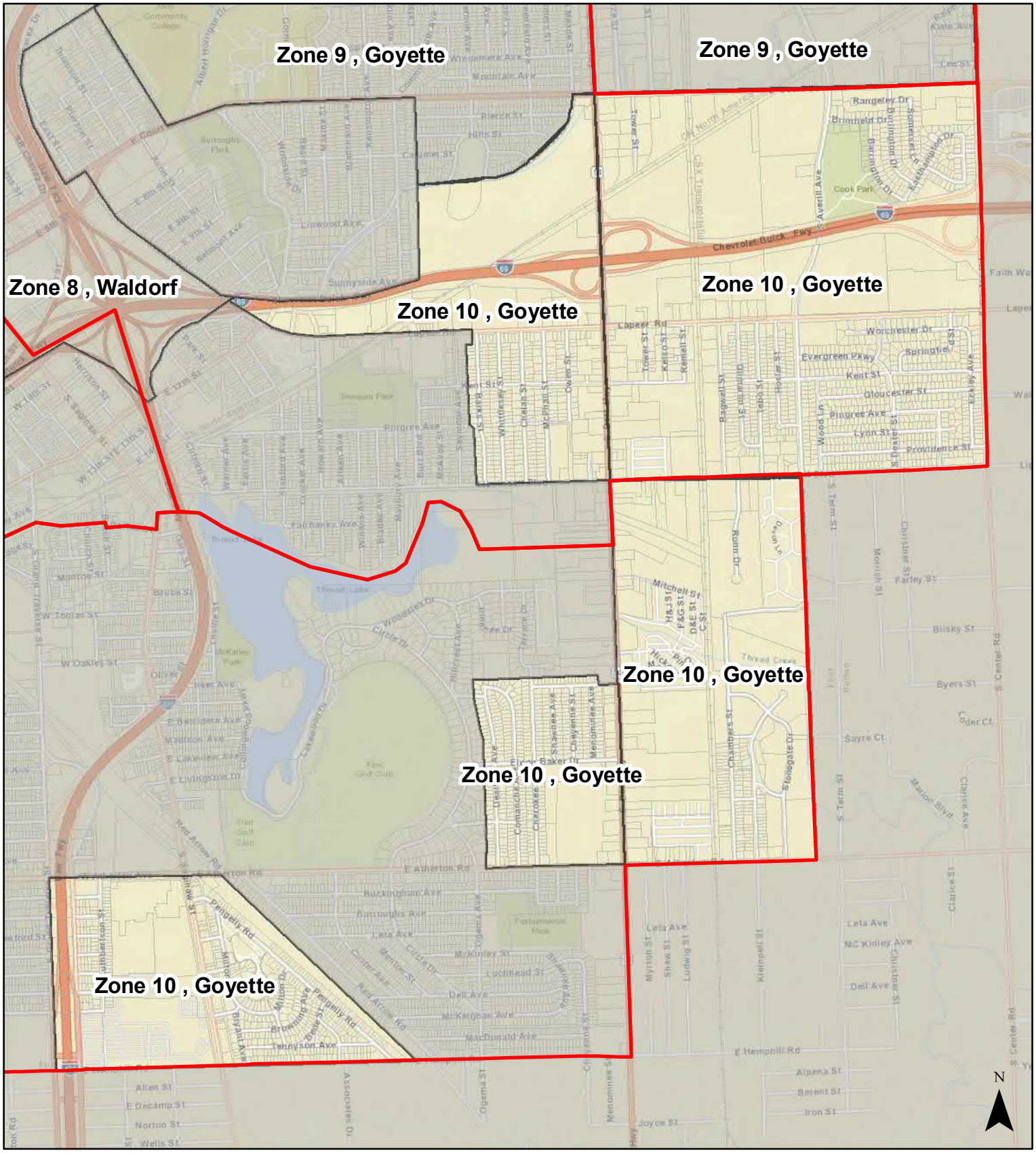


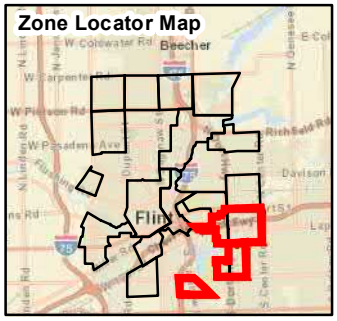
Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 9-3

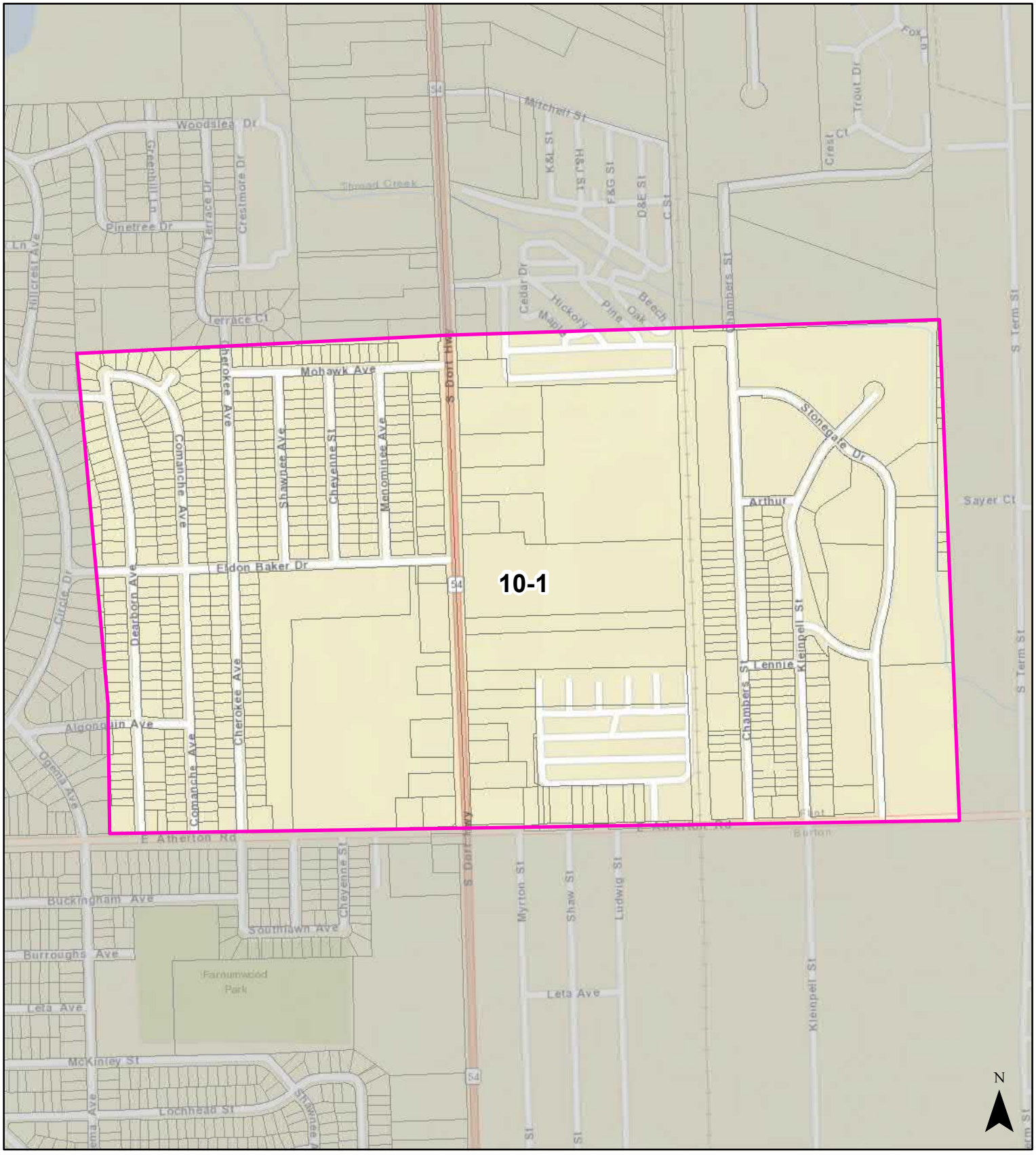
AECOM



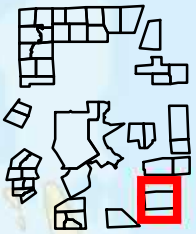


Fast Start Exploration Zone 10

AECOM

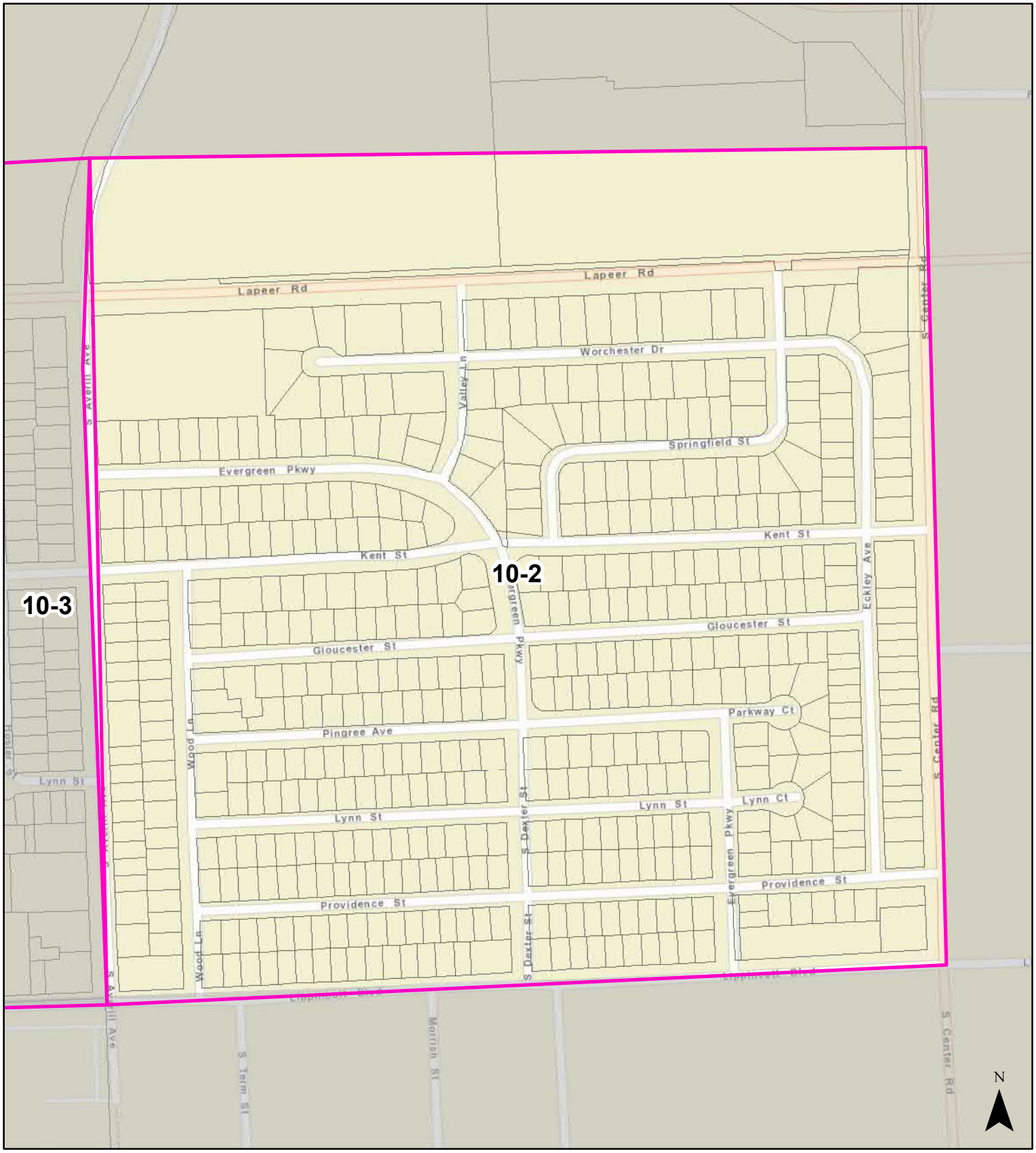


Zone Sequence Locator Map

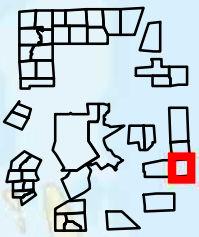


Fast Start Exploration Zones
Zone Sequence Area 10-1

AECOM

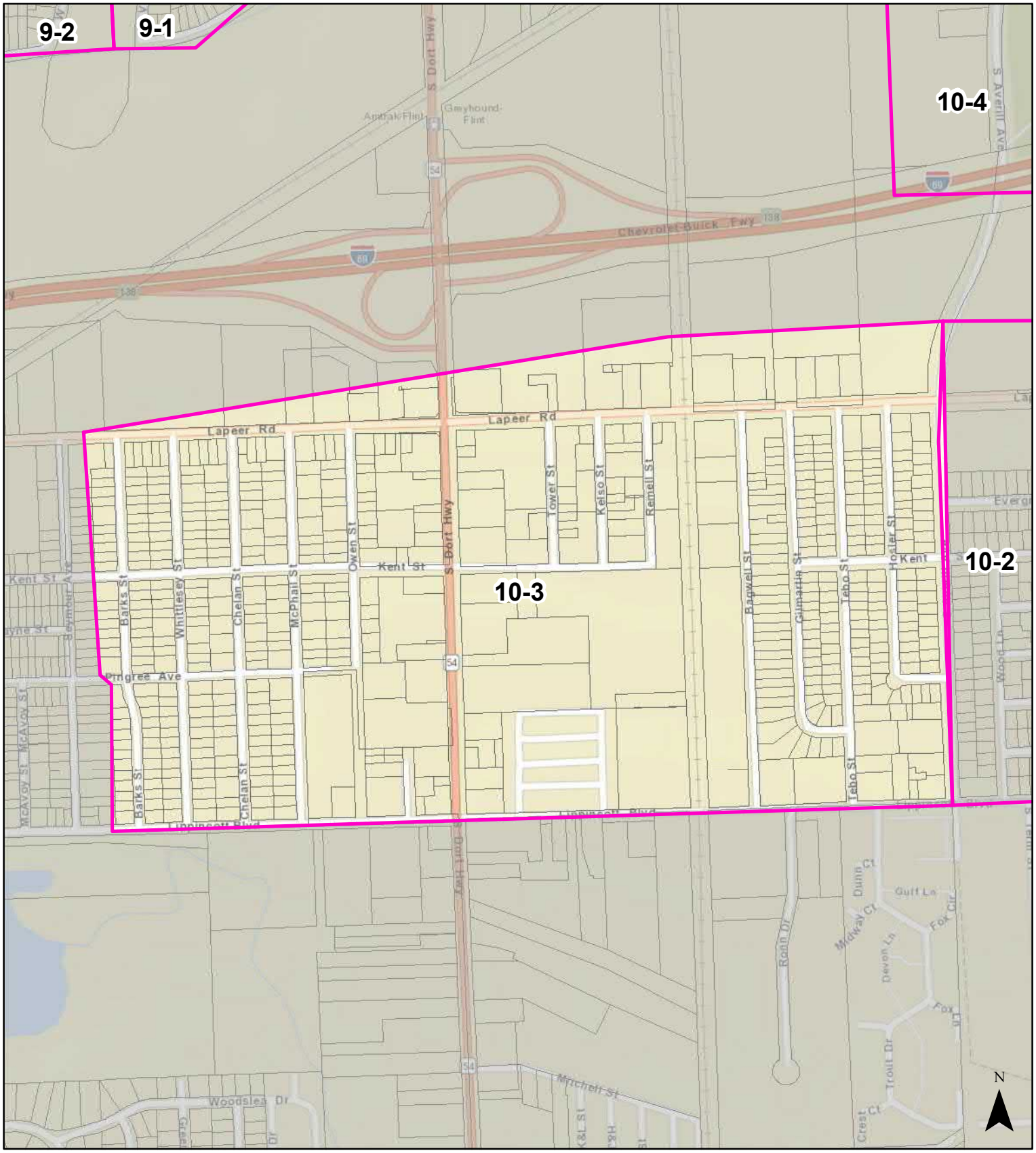


Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 10-2

AECOM

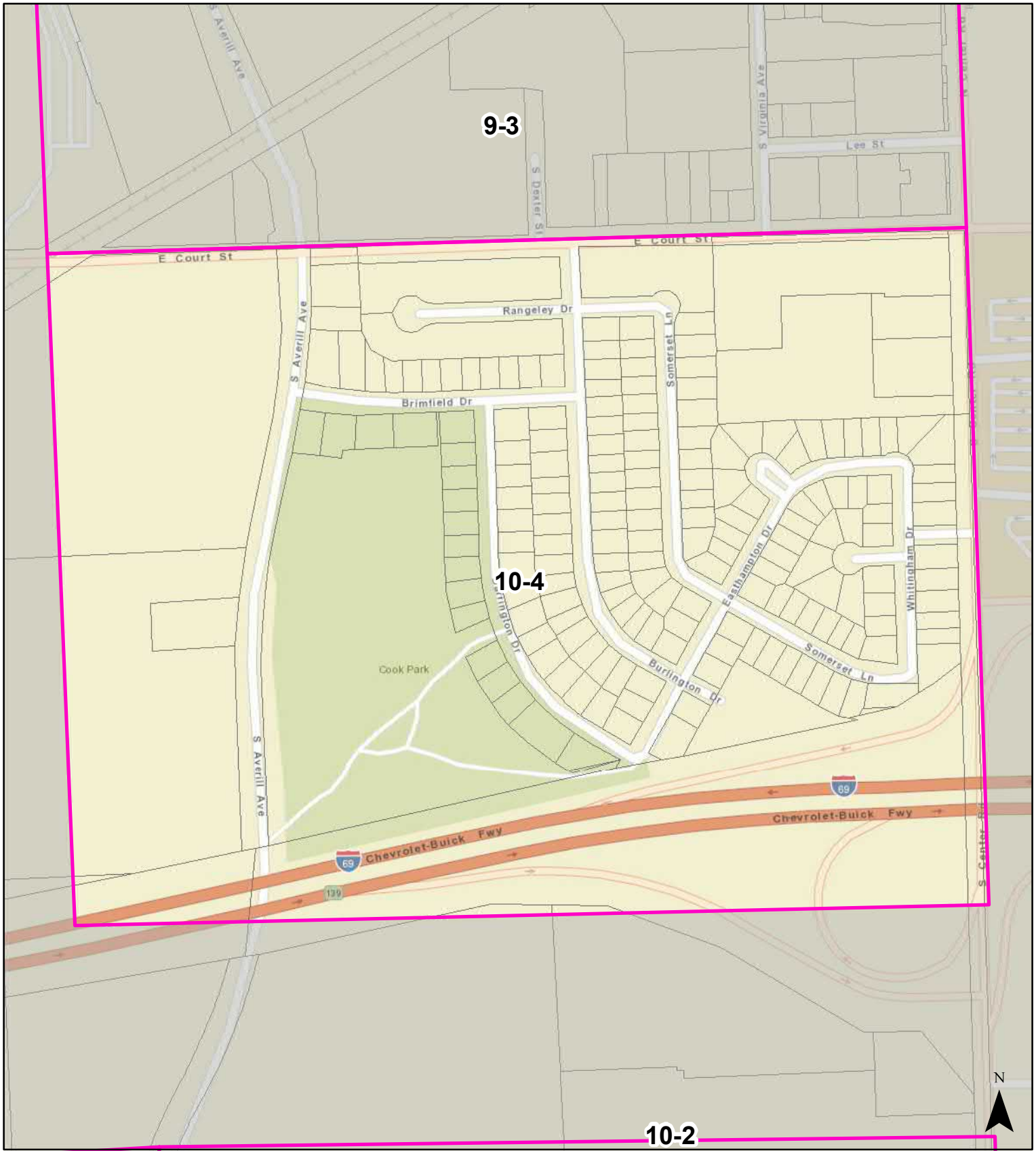


Zone Sequence Locator Map

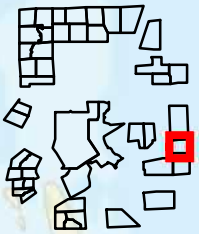


Fast Start Exploration Zones
Zone Sequence Area 10-3

AECOM

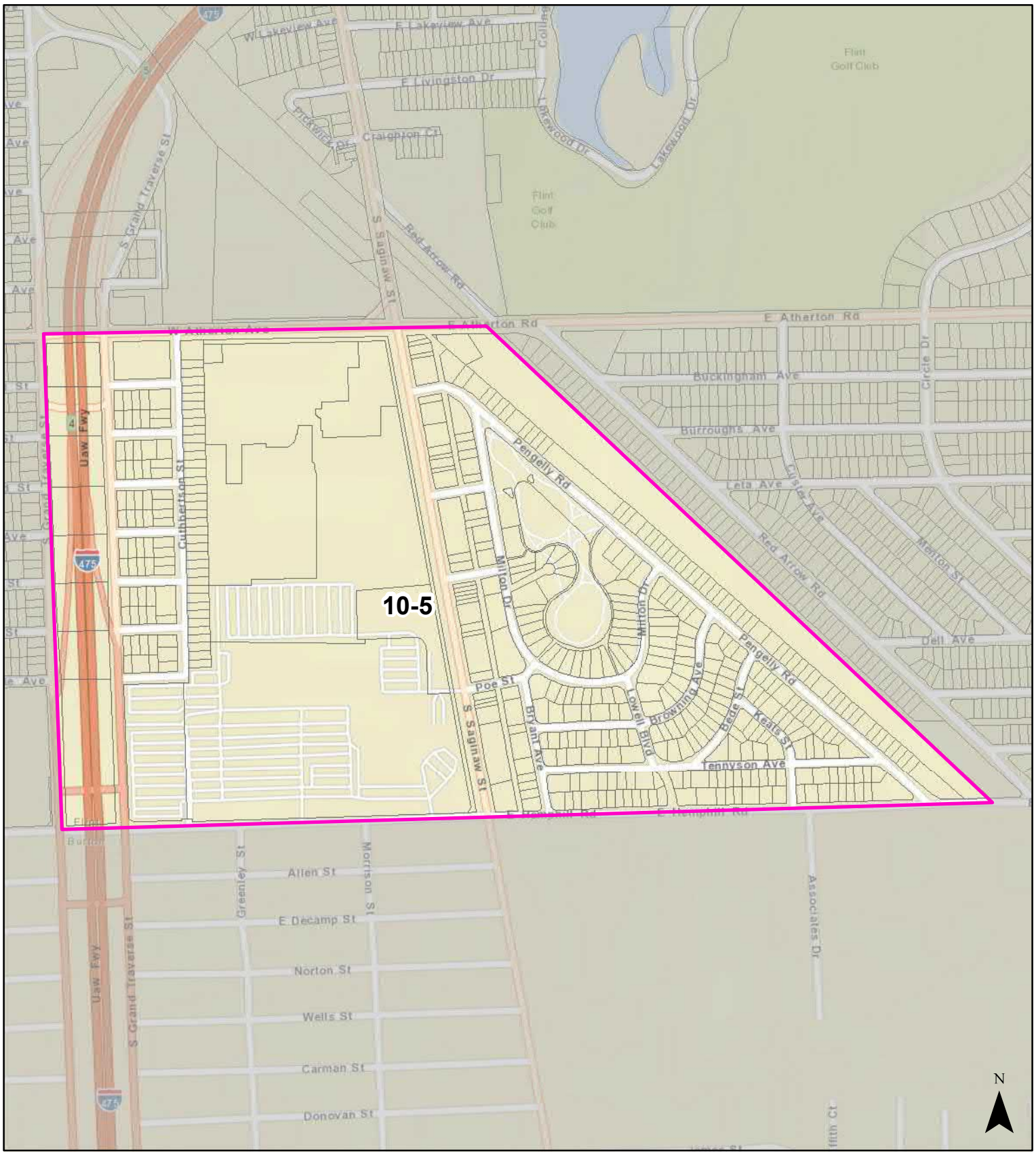


Zone Sequence Locator Map

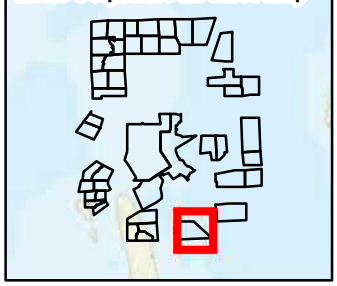


Fast Start Exploration Zones
Zone Sequence Area 10-4

AECOM



Zone Sequence Locator Map



Fast Start Exploration Zones
Zone Sequence Area 10-5

AECOM