CITY OF KNOXVILLE

ROCHE STREET CULVERT REPLACEMENT

Project No. 119.0729.01

LICENSED PROFESSIONAL ENGINEER ANDREW G. BURKE P19498 IOWA	I hereby certify that this Engineering Document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa. 02/12/20 Andrew G. Burke, P.E. — Date License Number P19498 My License Renewal Date is December 31, 2020 Pages or sheets covered by this seal: ALL

SNYDER & ASSOCIATES, INC.
2727 SW Snyder Blvd
Ankeny, IA 50023
515-964-2020

ROCHE STREET CULVERT REPLACEMENT
KNOXVILLE, IOWA
S&A PROJECT NO. 119.0729

The following documents are a part of this contract:

Document	Pages
Notice to Bidders …….	NTB - 1 to NTB – 3
Notice of Hearing……..	NH - 1
Instruction to Bidders ……...	ITB - 1 to ITB - 3
Proposal ……	P - 1 to P – 8
Identity of Subcontractors ……	P - 9
Bid Bond ……..	BB - 1 to BB - 2
Contract ……	C - 1 to C - 8
Performance, Payment and Maintenance Bond …….……..	PM - 1 to PM - 5
Notice to Proceed …….	NP – 1 to NP - 2
Plan Sheets……	1 – 28

Special Provisions

Part 1 - General Requirements	SP1 - 1 to SP1 - 7
Part 2 - Special Construction.....	SP2 - 1 to SP2 - 10

Appendix

Geotechnical Exploration (ABE PN 191306, August 30, 2019)

Specifications

The Iowa Statewide Urban Standard Specifications for Public Improvements, 2020 Edition, referred to in the plans and specifications as SUDAS, shall apply to construction work on this project, except as modified in the plans and special provisions.

Bid Date March 10, 2020
Time 2:00 p.m.

INSTRUCTIONS TO BIDDERS

Project Name Roche Street Culvert Replacement
Knoxville, Iowa

S&A Project No. 119.0729

The work comprising the above referenced project shall be constructed in accordance with the 2020 edition of the Statewide Urban Design and Specifications (SUDAS), and as further modified by supplemental specifications and special provisions included in the contract documents. The terms used in the contract revision of the documents are defined in said Standard Specifications. The City of Knoxville is the Contracting Authority on this project and shall hereinafter be referred to as the "Jurisdiction." Before submitting your bid, please review the requirements of Division One, General Provisions and Covenants, in particular the sections regarding proposal requirements, bonding, contract execution and insurance requirements. Please be certain that all documents have been completed properly, and submit them to the Knoxville City Clerk, Knoxville City Hall, 305 S. Third Street, Knoxville, Iowa 50138.

I. BID SECURITY

The bid security must be in the minimum amount of 10% of the total bid. Bid security shall be in the form of a cashier's check, a certified check, or a bank money order drawn on a FDIC insured bank in Iowa or drawn on a FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the Jurisdiction. The bid bond must be submitted on the enclosed bid bond form as no other bid bond forms are acceptable. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature on the bid bond is not acceptable. Bid security other than said bid bond shall be made payable to the City of Knoxville, Iowa. "Miscellaneous Bank Checks," and personal checks, as well as "Money Orders" and "Traveler's Checks" issued by persons, firms or corporations licensed under Chapter 533B of the Iowa Code, are not acceptable bid security.

II. SUBMISSION OF THE PROPOSAL AND IDENTITY OF BIDDER

A. The proposal shall be sealed in an envelope, properly identified as the Proposal with the project title and the name and address of the bidder, and deposited with the Jurisdiction at or before the time and at the place provided in the Notice to Bidders. It is the sole responsibility of the bidder to see that its proposal is delivered to the Jurisdiction prior to the time for opening bids, along with the appropriate bid security sealed in the separate envelope identified as Bid Security and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered.

B. The following documents shall be completed, signed and returned in the Proposal envelope. The bid cannot be read if any of these documents are omitted from the Proposal envelope.

1. PROPOSAL – Complete each of the following parts:

- Part B – Acknowledgment of Addenda, if any have been issued;
- Part C – Bid Items, Quantities and Prices;
- Part F – Additional Requirements;

The following documents, which are proposal attachments, must be completed and attached:

ITEM NO.	**DESCRIPTION OF ATTACHMENT**
1.	Identity of Subcontractors
2.	
3.	
4.	
5.	
6.	

- Part G – Identity of Bidder;

Sign the proposal and have the signature notarized. The signature on the proposal and all proposal attachments must be an original signature in ink signed by the same individual who is the Company Owner or an authorized Officer of the Company; copies or facsimile of any signature will not be accepted.

The documents must be submitted as printed. No alterations, additions, or deletions are permitted. If the Bidder notes a requirement in the contract documents which the Bidder believes will require a conditioned or unsolicited alternate bid, the Bidder must immediately notify the Jurisdictional Engineer in writing. The Jurisdictional Engineer will issue any necessary interpretation by an addendum.

III. PROSECUTION AND PROGRESS OF THE WORK

A. The Work is located in the City of Knoxville. Work on Sundays or legal holidays require approval of the City.

B. Time is of the essence in this project.

C. Allowable working hours are between sunrise and sunset.

D. Work on the improvements shall commence any time after a written Notice to Proceed is issued, **no later than June 15, 2020**, and shall be completed as stated below. The Notice to Proceed will be issued after the preconstruction conference, which is expected to occur in April 2020.

The Contractor shall substantially complete the overall project **within seventy (70) working days.** For this project, substantial completion for the overall project shall be defined as all utility, grading, backfill, topsoil, finish grading, pavement, trail, and traffic control work completed with

the new streets, driveways, and sidewalks/trails fully open to traffic. Should the Contractor fail to substantially complete the work within this timeframe, liquidated damages of **Five Hundred Dollars ($500.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

The Contractor shall fully complete the overall project within **fifteen (15) working days** after substantial completion is met. For this project, fully completion shall be defined as completion and approval by City and Engineer of all punchlist items, surface restoration, and submittal of final payment application. Should the Contractor fail to fully complete the work within this timeframe, liquidated damages of **Two Hundred Fifty ($250.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

IV. SUBLETTING

A. The Contractor shall perform, with its own organization and forces, work amounting in no less than 20% of the total contract cost.

V. TAXES

A. The City will issue a sales tax exemption certificate to the Contractor for all materials purchased on the project. The City will issue the appropriate exemption certificates and authorization letters to the Contractor and all subcontractors completing work on the project. Tax exemption certificates are applicable only for the specific project for which the tax exemption certificate is issued.

B. The Contractor shall provide a listing to the City identifying all appropriate subcontractors qualified for use of the tax exemption certificate. The Contractor and subcontractors may make copies of the certificate and provide to each supplier providing construction material a copy of the tax exemption certificate.

VI. ELECTRONIC DOCUMENTS AND FILES AVAILABILITY

A. Electronic contract documents are available by clicking on the "BIDS" link at www.snyder-associates.com and choosing "Roche Street Culvert Replacement" on the left. Project information and planholder information is available at no cost at this website. Downloads require the user to register for a free membership at QuestCDN.com.

B. Digital CAD files of the proposed project may be requested following the completion and receipt of the "Snyder & Associates Electronic Media Transfer Agreement." Request CAD files directly from Snyder & Associates, Inc.

TO: The Honorable Mayor and
Members of the City Council
City of Knoxville, Iowa

PROPOSAL

PROPOSAL: PART A – SCOPE

The City of Knoxville, hereinafter called the "Jurisdiction," has need of a qualified contractor to complete the work comprising the below referenced improvements. The undersigned Bidder hereby proposes to complete the work comprising the below referenced improvements as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the City Manager, at the prices hereinafter provided in Part C of the Proposal, for the following described improvements:

ROCHE STREET CULVERT REPLACEMENT

General Nature of Public Improvement. The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

PROPOSAL: PART B – ACKNOWLEDGEMENT OF ADDENDA

The Bidder hereby acknowledges that all addenda become a part of the contract documents when issued, and that each such addendum has been received and utilized in the preparation of this bid. The Bidder hereby acknowledges receipt of the following addenda by inserting the number of each addendum in the blanks below:

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

and certifies that said addenda were utilized in the preparation of this bid.

PROPOSAL: PART C – BID ITEMS, QUANTITIES AND PRICES

UNIT BID PRICE CONTRACTS: The Bidder must provide the Unit Bid Prices and Total Bid Price on the Proposal Attachment labeled "BID SCHEDULE." In case of discrepancy, the Unit Bid Price governs. The quantities shown on the Proposal Attachment are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Total Base Bid shall be used only for comparison of bids. The Total Bid shall be used for determining the sufficiency of the bid security.

PROPOSAL: PART D – GENERAL

The Bidder hereby acknowledges that the Jurisdiction, in advertising for public bids for this project reserves the right to:

1. Reject any or all bids. Award of the contract, if any, to be to the lowest responsible, responsive bidder; and

2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsible, responsive bidder to be based on comparison of the total base bid; and

3. Make such alterations in the documents or in the proposal quantities as it determines necessary in accordance with the contract documents after execution of the contract. Such alterations shall not be considered a waiver of any conditions of the contract documents, and shall not invalidate any of the provisions thereof; and

The Bidder hereby agrees to:

1. Enter into a contract, if this proposal is selected, in the form approved by the Jurisdiction, provide proof of registration with the Iowa Division of Labor in accordance with Chapter 91C of the Iowa Code, and furnish a performance, maintenance, and payment bond; and

2. Forfeit bid security, not as a penalty but as liquidated damages, upon failure to enter into such contract and/or to furnish said bond; and

3. Commence the work on this project on or before the date specified in a written Notice to Proceed, **no later than June 15, 2020**. The anticipated date for written Notice to Proceed date is expected to occur in April 2020.

4. Work on the project is on Roche Street at the crossing of Competine Creek just north of Terrace Lane. Work on the improvements shall commence any time after a written Notice to Proceed is issued, **no later than June 15, 2020**, and shall be completed as stated below. The Notice to Proceed will be issued after the preconstruction conference, which is expected to occur in April 2020.

   The Contractor shall substantially complete the overall project **within seventy (70) working days**. For this project, substantial completion for the overall project shall be defined as all utility, grading, backfill, topsoil, finish grading, pavement, trail, and traffic control work completed with the new streets, driveways, and sidewalks/trails fully open to traffic. Should the Contractor fail to substantially complete the work within this

timeframe, liquidated damages of **Five Hundred Dollars ($500.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

The Contractor shall fully complete the overall project **within fifteen (15) working days** after substantial completion is met. For this project, fully completion shall be defined as completion and approval by City and Engineer of all punchlist items, surface restoration, and submittal of final payment application. Should the Contractor fail to fully complete the work within this timeframe, liquidated damages of **Two Hundred Fifty ($250.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

PROPOSAL: PART E – NON-COLLUSION AFFIDAVIT

The Bidder hereby certifies:

1. That this proposal is not affected by, contingent on, or dependent on any other proposal submitted for any improvement with the Jurisdiction; and

2. That no individual employed by the Bidder has employed any person to solicit or procure the work on this project, nor will any employee of the Bidder make any payment or agreement for payment of any compensation in connection with the procurement of this project; and

3. That no part of the bid price received by the Bidder was or will be paid to any person, corporation, firm, association, or other organization for soliciting the bid, other than the payment of their normal compensation to persons regularly employed by the Bidder whose services in connection with the construction of the project were in the regular course of their duties for the Bidder; and

4. That this proposal is genuine and not collusive or sham; that the Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to submit a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought, by agreement or collusion, or communication or conference, with any person, to fix the bid price of the Bidder or of any other bidder, and that all statements in this proposal are true; and

5. That the individual(s) executing this proposal have the authority to execute this proposal on behalf of the Bidder.

PROPOSAL: PART F – ADDITIONAL REQUIREMENTS

The Bidder hereby agrees to comply with the additional requirements listed below, which are included in this proposal:

ITEM NO.	DESCRIPTION OF ATTACHMENT
1.	Identity of Subcontractors
2.	
3.	
4.	
5.	
6.	

PROPOSAL: PART G – IDENTITY OF BIDDER

The Bidder shall indicate whether the bid is
Submitted by a/an:

- ☐ Individual, Sole Proprietorship
- ☐ Partnership
- ☐ Corporation
- ☐ Joint-venture: all parties must join-in and execute all documents
- ☐ Other

_____
Bidder

_____
Signature

By _____
Name (Print/Type)

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone Number

The Bidder shall enter its Public Registration Number ___ ___ ___ ___ ___ - ___ ___ issued By the Iowa Commissioner of Labor Pursuant Section 91C.5 of the Iowa Code.

In the event the above signature is not that of the company's owner, president, CEO, etc., provide the Chief Official's Name and Title below.

_____
Name

_____
Title

NOTE: The signature on this proposal must be an original signature in ink; copies or facsimile of any signature will not be accepted.

Subscribed and sworn to before me this _____ day of _____, 2020.

_____
Notary Public in and for

State of _____
County of _____

My commission expires _____.

PROPOSAL ATTACHMENT: PART C

BID SCHEDULE

The Bidder must provide the Unit Bid Prices and the Total Bid; in case of discrepancy, the Unit Bid Price governs. This is a Unit Bid Price Contract. The quantities shown on the Bid Schedule are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Total Bid shall be used only for comparison of bids. The Total Bid shall be used for determining the sufficiency of the bid security.

Item No.	Item Code	Item Description	Unit	Total Quantities	Unit Price	Total Costs
2.01	2010-108-A-0	Clearing and Grubbing	LS	1		
2.02	2010-108-D-1	Topsoil, On-site	CY	150		
2.03	2010-108-E-0	Excavation, Class 10	CY	1125		
2.04	2010-108-G-0	Subgrade Preparation	SY	341		
2.05	2010-108-I-0	Subbase, Modified, 6 Inches	SY	341		
2.06	2010-108-L-0	Compaction Testing	LS	1		
3.01	3010-108-F-0	Trench Compaction Testing	LS	1		
4.01	4010-108-A-1	Sanitary Sewer Gravity Main, Trenched, PVC, 8 In.	LF	46		
4.02	4010-108-H-0	Removal of Sanitary Sewer, 8 In.	LF	46		
4.03	4020-108-A-1	Storm Sewer, Trenched, RCP, 15 In.	LF	134		
4.04	4020-108-C-0	Removal of Storm Sewer, RCP, 15 In.	LF	141		
4.05	4040-108-A-0	Subdrain, HDPE, 4 In.	LF	220		
4.06	4040-108-C-0	Subdrain Cleanout, Type A-1, 6 In.	EA	4		
4.07	4040-108-E-0	Subdrain Outlets and Connections	EA	4		
5.01	5010-108-A-1	Water Main, Trenched, C900 PVC, 8 In.	LF	137		
5.02	5010-109-C-1	Fitting, 8" x 45° Bend	EA	8		
5.03	5010-109-C-1	Fitting, 8" x 6" Reducer	EA	1		
5.04	5010-108-D-0	Water Service Stub	EA	1		
5.05	5010-999-9-9	Water Main, Insulation	LF	22		
5.06	5010-999-9-9	Water Main, Abandon or Remove, 6 In.	LF	127		
5.07	5010-999-9-9	Water Main, Connection to Existing	EA	2		
6.01	6010-108-B-0	Intake, SW-501	EA	1		
6.02	6010-108-B-0	Intake, SW-503	EA	1		
6.03	6010-108-E-0	Manhole Adjustment, Major	EA	1		

Item No.	Item Code	Item Description	Unit	Total Quantities	Unit Price	Total Costs
6.04	6010-108-H-0	Remove Intake	EA	2		
7.01	7010-108-A-0	Pavement, PCC, 7 In.	SY	293		
7.02	7010-108-D-0	Special Subgrade Compaction for Shared Use Path	SY	307		
7.03	7010-108-I-0	PCC Pavement Samples and Testing	LS	1		
7.04	7030-108-I-0	Shared Use Path, PCC, 6 In.	SY	221		
7.05	7030-108-G-0	Detectable Warning, Cast Iron	SF	24		
7.06	7030-108-H-1	Driveway, Paved, PCC, 6 In.	SY	10		
7.07	7030-999-9-9	Temporary Surfacing, 12 In.	TON	150		
7.08	7040-108-H-0	Pavement Removal	SY	305		
8.01	8030-108-A-0	Temporary Traffic Control	LS	1		
8.02	8030-999-9-9	Temporary Barrier Rail	LF	300		
9.01	9040-108-D-1	Filter Sock, 12 Inch.	LF	410		
9.02	9040-108-D-2	Filter Sock, Removal	LF	410		
9.03	9040-108-J-0	Rip Rap	TON	262		
9.04	9040-108-Q-0	Erosion Control Mulching, Hydromulching with Temporary Seed	AC	0.3		
9.05	9040-108-Q-0	Hydroseeding, Fertilizer, Hydromulch, Type 1 Seeding	AC	0.3		
11.01	11,010-108-A	Construction Survey	LS	1		
11.02	11,020-108-A	Mobilization	LS	1		
11.03	11,030-108-A-0	Maintenance of Postal Service	LS	1		
11.04	11,030-108-B-0	Maintenance of Solid Waste Collection	LS	1		
11.05	11,050-108-A-0	Concrete Washout	LS	1		
99.01	2102-0425071	Special Backfill	CY	39		
99.02	2107-3825025	Granular Material for Blanket and Subdrain	CY	72		
99.03	2401-6745650	Removal of Existing Structures	LS	1		
99.04	2402-2720000	Excavation, Class 20	CY	902		
99.05	2415-2100000	Precast Concrete Box Culvert	LF	74		
99.06	2415-2200000	Precast Concrete Box Culvert End Section	EA	2		
99.07	2501-8400172	Temporary Shoring	LS	1		
99.08	2519-1001000	Fence, Chain-Link, Vinyl Coated	LF	75		

TOTAL BID: $_____
(NUMBERS)

TOTAL BID: _____DOLLARS
(WORDS)

NOTE:
IT IS UNDERSTOOD THAT THE ABOVE QUANTITIES ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE JURISDICTION. QUANTITY CHANGES THAT AMOUNT TO TWENTY (20) PERCENT OR LESS OF THE TOTAL BID SHALL NOT AFFECT THE UNIT BID PRICE.

PROPOSAL: PART F – ADDITIONAL REQUIREMENTS
ITEM 2 – IDENTITY OF SUBCONTRACTORS

In all instances in which the bidder intends to assign, sublet, or subcontract any portion of the work exceeding $25,000, the Bidder shall mark the appropriate box and shall provide a description of the work to be done by each subcontractor or assignee, the amount of each subcontract or the value of the work to be assigned, and the identity of each subcontractor or assignee below. The Bidder certifies that said subcontractors or assignees shall be utilized on this project, if acceptable to the City of Knoxville. If the Bidder does not intend to utilize any subcontractors or assignees, or if each subcontract or assignment is less than $25,000; the Bidder shall so indicate by marking the appropriate box below. The Bidder need not identify material suppliers or manufacturers who do not provide labor at the worksite to incorporate such material or manufactured goods into the improvement.

The Bidder shall indicate the proposed use of subcontractors by completing the following:

☐ **The Bidder <u>does not intend</u> to utilize any subcontractors or assignees,** or the value of each subcontract or assignment is less than $25,000. The Bidder shall so indicate by marking the box at the left.

☐ **The Bidder <u>intends</u> to utilize subcontractors or assignees,** and the value of the subcontract or assignment is $25,000 or greater. The Bidder shall so indicate by marking the box at the left and shall report below only those subcontracts or assignments with a value of $25,000 or greater by providing a description of the work to be done by each subcontractor or assignee, the amount of each subcontract or the value of the work to be assigned, and the identity of each subcontractor or assignee in the space provided below. The Bidder certifies that said subcontractors or assignees shall be utilized on this project as stated below, if acceptable to the City of Knoxville. The Bidder need not identify material suppliers or manufacturers who do not provide labor at the worksite to incorporate such material or manufactured goods into the improvement.

DESCRIPTION	AMOUNT	SUBCONTRACTOR IDENTITY (name, address, including zip)

The Bidder may attach additional contact sheets, if necessary.

BID BOND

KNOW ALL BY THESE PRESENTS:

That we, _____ , as Principal, and _____ , as Surety, are held and Firmly bound unto _____ the City of Knoxville, Iowa _____ As Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of _____ _____ Dollars ($ _____) , lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The condition of the above obligation is such that whereas the Principal has submitted to the Jurisdiction a certain proposal, in a separate envelope, and hereby made a part hereof, to enter into a contract in writing, for the following described improvements;

ROCHE STREET CULVERT REPLACEMENT

General Nature of Public Improvement. The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

The Surety hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept such bid or execute such Contract; and said Surety does hereby waive notice of any such extension.

In the event that any actions or proceedings are initiated with respect to this bond, the parties agree that the venue thereof shall be Marion County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of the bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all damages, costs, and attorney fees incurred by enforcing any of the provisions of this bond. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against Surety for any amount guaranteed hereunder whether action is brought against Principal or whether Principal is joined in any such action or actions or not.

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____ day of _____, 2020.

SURETY:	PRINCIPAL:
_____ Surety Company	_____ Bidder
BY _____ Signature Attorney-in-Fact/Officer	By _____ Signature
_____ Name of Attorney-in-Fact/Officer	_____ Name (Print/Type)
_____ Company Name	_____ Title
_____ Company Address	_____ Address
_____ City, State, Zip Code	_____ City, State, Zip Code
_____ Company Telephone Number	_____ Telephone Number

NOTE: All signatures on this bid bond must be original signatures in ink; copies or facsimile of any signature will not be accepted. This bond must be sealed with the Surety's raised, embossing seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.

CONTRACT NO. 119.0729.01

CONTRACT DATE _____

THIS CONTRACT, made and entered into at Knoxville, Iowa this _____ day of _____, 2020, by and between the City of Knoxville by its Mayor upon order of its City Council hereinafter Called the "Jurisdiction", and _____
Hereinafter called the "Contractor".

WITNESSETH:

The Contractor hereby agrees to complete the work comprising the below referenced improvements as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the City Administrator. This contract includes all contract documents. The work under this contract shall be constructed in accordance with the 2020 edition of the Iowa Statewide Urban Specifications for Public Improvements (SUDAS), and as further modified by supplemental specifications and special provisions included in the contract documents, and the Contract Attachment which is attached hereto. The Contractor further agrees to complete the work in strict accordance with said contract documents, and guarantee the work as required by law, for the time required in said contract documents, after its acceptance by the Jurisdiction.

This contract is awarded and executed for completion of the work specified in the contract documents for the bid prices shown on the Contract Attachment: "Bid Items, Quantities and Prices," which were proposed by the Contractor in its proposal submitted in accordance with the Notice to Bidders and Notice of Public Hearing for the following described improvements:

ROCHE STREET CULVERT REPLACEMENT

Nature of Public Improvement. The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

The Contractor agrees to perform said work for and in consideration of the Jurisdiction's payment of the bid _____DOLLARS ($_____), which amount shall constitute the required amount of the performance, payment, and maintenance bond. The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written Notice to Proceed by the Jurisdiction, **no later than June 15, 2020**. The anticipated date for written Notice to Proceed date is April 2020. Work on the project is on Roche Street at the crossing of Competine Creek just north of Terrace Lane. Work on the improvements shall commence any time after a written Notice to Proceed is issued, **no later than June 15, 2020,** and shall be completed as stated below. The Notice to Proceed will be issued after the preconstruction conference, which is expected to occur in April 2020.

The Contractor shall substantially complete the overall project within **seventy (70) working days.** For this project, substantial completion for the overall project shall be defined as all utility, grading, backfill, topsoil, finish grading, pavement, trail, and traffic control work completed with the new streets, driveways, and sidewalks/trails fully open to traffic. Should the Contractor fail to substantially complete

the work within this timeframe, liquidated damages of **Five Hundred Dollars ($500.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

The Contractor shall fully complete the overall project within **fifteen (15) working days** after substantial completion is met. For this project, fully completion shall be defined as completion and approval by City and Engineer of all punchlist items, surface restoration, and submittal of final payment application. Should the Contractor fail to fully complete the work within this timeframe, liquidated damages of **Two Hundred Fifty ($250.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

JURISDICTION	CONTRACTOR:
By _____ Mayor	_____ Contractor
(Seal) ATTEST:	By _____ Signature
_____ City Manager	_____ Title
FORM APPROVED BY:	_____ Street Address
_____ Attorney for Jurisdiction	_____ City, State, Zip Code
	_____ Telephone

CONTRACTOR PUBLIC REGISTRATION INFORMATION to be provided by:

1. All Contractors: The Contractor shall enter its Public Registration Number _ _ _ _ _ - _ _ issued by the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code.

2. Out-of-State Contractors:

   A. Pursuant to Section 91C.7 of the Iowa Code, an out-of-state contractor, before commencing a contract in excess of five thousand dollars in value in Iowa, shall file a bond with the division of labor services of the department of workforce development. The contractor should contact 515-242-5871 for further information. Prior to contract execution, the City Engineer may forward a copy of this contract to the Iowa Department of Workforce Development as notification of pending construction work. It is the contractor's responsibility to comply with said Section 91C.7 before commencing this work.

   B. Prior to entering into contract, the designated low bidder, if it be a corporation organized under the laws of a state other than Iowa, shall file with the Jurisdictional Engineer a certificate from the Secretary of the State of Iowa showing that it has complied with all the provisions of Chapter 490 of the Code of Iowa, or as amended, governing foreign corporations. For further information, contact the Iowa Secretary of State Office at 515-281-5204.

NOTE: All signatures on this contract must be original signatures in ink; copies or facsimile of any signature will not be accepted.

CORPORATE ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of this Board of Directors; that _____ and _____acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____

INDIVIDUAL ACKNOWLEDGEMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of this Board of Directors; that _____ and _____acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of this Board of Directors; that _____ and _____acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____

CONTRACT ATTACHMENT: PART C

BID SCHEDULE

The Bidder must provide the Unit Bid Prices and the Total Bid; in case of discrepancy, the Unit Bid Price governs. This is a Unit Bid Price Contract. The quantities shown on the Bid Schedule are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Total Bid shall be used only for comparison of bids. The Total Bid shall be used for determining the sufficiency of the bid security.

Item No.	Item Code	Item Description	Unit	Total Quantities	Unit Price	Total Costs
2.01	2010-108-A-0	Clearing and Grubbing	LS	1		
2.02	2010-108-D-1	Topsoil, On-site	CY	150		
2.03	2010-108-E-0	Excavation, Class 10	CY	1125		
2.04	2010-108-G-0	Subgrade Preparation	SY	341		
2.05	2010-108-I-0	Subbase, Modified, 6 Inches	SY	341		
2.06	2010-108-L-0	Compaction Testing	LS	1		
3.01	3010-108-F-0	Trench Compaction Testing	LS	1		
4.01	4010-108-A-1	Sanitary Sewer Gravity Main, Trenched, PVC, 8 In.	LF	46		
4.02	4010-108-H-0	Removal of Sanitary Sewer, 8 In.	LF	46		
4.03	4020-108-A-1	Storm Sewer, Trenched, RCP, 15 In.	LF	134		
4.04	4020-108-C-0	Removal of Storm Sewer, RCP, 15 In.	LF	141		
4.05	4040-108-A-0	Subdrain, HDPE, 4 In.	LF	220		
4.06	4040-108-C-0	Subdrain Cleanout, Type A-1, 6 In.	EA	4		
4.07	4040-108-E-0	Subdrain Outlets and Connections	EA	4		
5.01	5010-108-A-1	Water Main, Trenched, C900 PVC, 8 In.	LF	137		
5.02	5010-109-C-1	Fitting, 8" x 45° Bend	EA	8		
5.03	5010-109-C-1	Fitting, 8" x 6" Reducer	EA	1		
5.04	5010-108-D-0	Water Service Stub	EA	1		
5.05	5010-999-9-9	Water Main, Insulation	LF	22		
5.06	5010-999-9-9	Water Main, Abandon or Remove, 6 In.	LF	127		
5.07	5010-999-9-9	Water Main, Connection to Existing	EA	2		
6.01	6010-108-B-0	Intake, SW-501	EA	1		
6.02	6010-108-B-0	Intake, SW-503	EA	1		
6.03	6010-108-E-0	Manhole Adjustment, Major	EA	1		

Item No.	Item Code	Item Description	Unit	Total Quantities	Unit Price	Total Costs
6.04	6010-108-H-0	Remove Intake	EA	2		
7.01	7010-108-A-0	Pavement, PCC, 7 In.	SY	293		
7.02	7010-108-D-0	Special Subgrade Compaction for Shared Use Path	SY	307		
7.03	7010-108-I-0	PCC Pavement Samples and Testing	LS	1		
7.04	7030-108-I-0	Shared Use Path, PCC, 6 In.	SY	221		
7.05	7030-108-G-0	Detectable Warning, Cast Iron	SF	24		
7.06	7030-108-H-1	Driveway, Paved, PCC, 6 In.	SY	10		
7.07	7030-999-9-9	Temporary Surfacing, 12 In.	TON	150		
7.08	7040-108-H-0	Pavement Removal	SY	305		
8.01	8030-108-A-0	Temporary Traffic Control	LS	1		
8.02	8030-999-9-9	Temporary Barrier Rail	LF	300		
9.01	9040-108-D-1	Filter Sock, 12 Inch.	LF	410		
9.02	9040-108-D-2	Filter Sock, Removal	LF	410		
9.03	9040-108-J-0	Rip Rap	TON	262		
9.04	9040-108-Q-0	Erosion Control Mulching, Hydromulching with Temporary Seed	AC	0.3		
9.05	9040-108-Q-0	Hydroseeding, Fertilizer, Hydromulch, Type 1 Seeding	AC	0.3		
11.01	11,010-108-A	Construction Survey	LS	1		
11.02	11,020-108-A	Mobilization	LS	1		
11.03	11,030-108-A-0	Maintenance of Postal Service	LS	1		
11.04	11,030-108-B-0	Maintenance of Solid Waste Collection	LS	1		
11.05	11,050-108-A-0	Concrete Washout	LS	1		
99.01	2102-0425071	Special Backfill	CY	39		
99.02	2107-3825025	Granular Material for Blanket and Subdrain	CY	72		
99.03	2401-6745650	Removal of Existing Structures	LS	1		
99.04	2402-2720000	Excavation, Class 20	CY	902		
99.05	2415-2100000	Precast Concrete Box Culvert	LF	74		
99.06	2415-2200000	Precast Concrete Box Culvert End Section	EA	2		
99.07	2501-8400172	Temporary Shoring	LS	1		
99.08	2519-1001000	Fence, Chain-Link, Vinyl Coated	LF	75		

TOTAL BID: $_____
(NUMBERS)

TOTAL BID: _____DOLLARS
(WORDS)

NOTE:
IT IS UNDERSTOOD THAT THE ABOVE QUANTITIES ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE JURISDICTION. QUANTITY CHANGES THAT AMOUNT TO TWENTY (20) PERCENT OR LESS OF THE TOTAL BID SHALL NOT AFFECT THE UNIT BID PRICE.

SURETY BOND NO. _____

PERFORMANCE, PAYMENT AND MAINTENANCE BOND

KNOW ALL BY THESE PRESENTS:

That we,_____, as Principal (hereinafter the "Contractor" or "Principal") and _____, as Surety are held and firmly bound unto _____, as Obligee (hereinafter referred to as "the Jurisdiction"), and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of _____DOLLARS ($_____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these presents.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction, bearing date the ____ day of _____, 2020, hereinafter the "Contract" wherein said Contractor undertakes and agrees to construct the following described improvements:

ROCHE STREET CULVERT REPLACEMENT

General Nature of Public Improvement. The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

Work includes commitment to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract Documents.

It is expressly understood and agreed by the Contractor and Surety in this bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

1. PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill and abide by each and every covenant, condition and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

2. PAYMENT: The Contractor and the Surety on this Bond are hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price which the Jurisdiction is required to retain until completion of the improvement, but the Contractor and

Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573, Code of Iowa, which by this reference is made a part hereof as though fully set out herein.

3. MAINTENANCE: The Contractor and the Surety on this Bond hereby agree, at their own expense:

   A. To remedy any and all defects that may develop in or result from work to be performed under the Contract within the period **four (4) years** from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work;

   B. To keep all work in continuous good repair; and

   C. To pay the Jurisdiction's reasonable costs of monitoring and inspection to assure that any defects are remedied, and to repay the Jurisdiction all outlay and expense incurred as a result of Contractor's and Surety's failure to remedy any defect as required by this section.

Contractor's and Surety's agreement herein made extend to defects in workmanship or materials not discovered or known to the Jurisdiction at the time such work was accepted.

4. GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

   A. To consent without notice to any extension of time to the Contractor in which to perform the Contract;

   B. To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this bond, provided that all such changes do not, in the aggregate, involve an increase of more than twenty percent of the total contract price, and that this bond shall then be released as to such excess increase; and

   C. To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

The Contractor and every Surety on the bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

(CON'T – PERFORMANCE, PAYMENT AND MAINTENANCE BOND)

D. That no provision of this Bond or of any other contract shall be valid which limits to less than five years after the acceptance of the work under the Contract the right to sue on this Bond.

E. That as used herein, the phrase "all outlay and expense" is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits and overhead where applicable. Accordingly, "all outlay and expense" would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorney's fees (including overhead expenses of the Jurisdiction's staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor's failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required.

In the event the Jurisdiction incurs any "outlay and expense" in defending itself with respect to any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety's obligation under this bond shall not exceed 125% of the penal sum of this bond.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Marion County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly and severally, to pay the Jurisdiction all outlay and expense incurred therefore by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to Surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action or actions or not.

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

When a work, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

(CON'T – PERFORMANCE, PAYMENT AND MAINTENANCE BOND)

Witness our hands, in triplicate, this _____ day of _____ , 2020 .

Surety Countersigned By:

_____
Signature of Iowa Resident Commission Agent as Prescribed by Chapter 515.52-57, Iowa Code. (Require only if Attorney-in-Fact is not also an Iowa Resident Commission Agent).

_____
Name of Resident Commission Agent

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

PRINCIPAL:

_____
Contractor

By: _____
Signature

_____
Title

SURETY:

_____
Surety Company

By: _____
Signature Attorney-in-Fact

_____
Name of Attorney-in-Fact

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

FORM APPROVED BY:

_____
Attorney for Jurisdiction

NOTE: All signatures on this performance, payment & maintenance bond must be original signatures in ink; copies or facsimile of any signature will not be accepted. This bond must be sealed with the Surety's raised, embossing seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.

NOTICE TO BIDDERS
JURISDICTION OF CITY OF KNOXVILLE
ROCHE STREET CULVERT REPLACEMENT

Time and Place for Filing Sealed Proposals. Sealed bids for the work comprising the improvements as stated below must be filed before 2:00 p.m., Tuesday, March 10, 2020 in the office of the ***City Clerk, Knoxville City Hall, 305 S. Third Street, Knoxville, Iowa 50138***.

Time and Place Sealed Proposals Will be Opened and Considered. Sealed proposals will be opened and bids tabulated at 2:00 p.m., Tuesday, March 10, 2020 in the Council Chambers of the City Hall, for consideration by the ***Knoxville City Council*** at its meeting on Monday, March 16, 2020.

The ***City of Knoxville*** reserves the right to reject any and all bids. The ***City of Knoxville*** reserves the right to defer acceptance of any bid for a period of sixty (60) calendar days after receipt of bids and no bid may be withdrawn during this period.

Time for Commencement and Completion of Work. Work on the improvements shall commence any time after a written Notice to Proceed is issued, **no later than June 15, 2020,** and shall be completed as stated below. The Notice to Proceed will be issued after the preconstruction conference, which is expected to occur in April 2020.

The Contractor shall substantially complete the overall project within **seventy (70) working days.** For this project, substantial completion for the overall project shall be defined as all utility, grading, backfill, topsoil, finish grading, pavement, trail, and traffic control work completed with the new streets, driveways, and sidewalks/trails fully open to traffic. Should the Contractor fail to substantially complete the work within this timeframe, liquidated damages of **Five Hundred Dollars ($500.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

The Contractor shall fully complete the overall project within **fifteen (15) working days** after substantial completion is met. For this project, fully completion shall be defined as completion and approval by City and Engineer of all punchlist items, surface restoration, and submittal of final payment application. Should the Contractor fail to fully complete the work within this timeframe, liquidated damages of **Two Hundred Fifty ($250.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

Bid Security. Each bidder shall accompany its bid with bid security as defined in Iowa Code Section 26.8, as security that the successful bidder will enter into a contract for the work bid upon and will furnish after the award of contract a corporate surety bond, in a form acceptable to the Jurisdiction, for the faithful performance of the contract, in an amount equal to 100% of the amount of the contract. The bidder's security shall be in the amount fixed in the Instruction to Bidders and shall be in the form of a cashier's check or a certified check drawn on an FDIC insured bank in Iowa or on an FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond on the form provided in the contract documents with corporate surety satisfactory to the Jurisdiction. The bid shall contain no condition except as provided in the specifications.

Contract Documents. The contract documents are available with the City Manager and may be examined at the ***Knoxville City Hall, 305 S Third Street, Knoxville, Iowa 50138***. Hard copies of the project documents may be obtained from Snyder & Associates, Inc. 2727 SW Snyder Blvd, Ankeny, Iowa 50023 at no charge.

Electronic contract documents are available by clicking on the "BIDS" link at www.snyder-associates.com and choosing "Roche Street Culvert Replacement" on the left. Project information, engineer's cost opinion, and planholder information is available at no cost at this website. Downloads require the user to register for a free membership at QuestCDN.com.

Iowa Preference. By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor, to the extent lawfully required under Iowa statutes.

In accordance with Iowa statutes, a resident bidder shall be allowed a preference as against a nonresident bidder from a state or foreign country if that state or foreign country gives or requires any preference to bidders from that state or foreign country, including but not limited to any preference to bidders, the imposition of any type of labor force preference, or any other form of preferential treatment to bidders or laborers from that state or foreign country. The preference allowed shall be equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident. In the instance of a resident labor force preference, a nonresident bidder shall apply the same resident labor force preference to a public improvement in this state as would be required in the construction of a public improvement by the state or foreign country in which the nonresident bidder is a resident.

Sales Tax Exemption. A sales tax exemption certificate will be available for all materials purchased for incorporation in the project.

Public Hearing on Proposed Contract Documents and Estimated Costs for Improvements. A public hearing will be held by the City of Knoxville on the proposed contract documents (plans, specifications and form of contract) and estimated cost for the improvements at its meeting at 6:15 p.m., Monday, March 16, 2020 in said ***Council Chambers of the City Hall, 305 S Third Street, Knoxville, Iowa 50138***.

General Nature of Public Improvement. The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

Surety Bond. Each successful bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by ***the City of Knoxville*** and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless ***City of Knoxville*** from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of two years from and after acceptance of the contract. The guaranteed maintenance period for new paving shall be four years.

Nondiscrimination. The ***City of Knoxville***, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

This Notice is given by authority of the ***City of Knoxville***.

_____

Tricia Kincaid, City Clerk

NOTICE OF HEARING

NOTICE OF PUBLIC HEARING ON PROPOSED PLANS, SPECIFICATIONS, FORM OF CONTRACT, AND ESTIMATE OF COST FOR THE ***Roche Street Culvert Replacement*** FOR THE ***City of Knoxville, Iowa.***

Public Notice is hereby given that at ***6:15 P.M.*** on the ***16th*** day of **March, *2020***, the ***City of Knoxville City Council*** will, in the ***Council Chambers of the City Hall, 305 S Third Street, Knoxville, Iowa 50138***, hold a hearing whereat said ***Council*** will resolve to adopt plans, specifications, form of contract and estimate of cost for the construction of the ***Roche Street Culvert Replacement*** and, at the time, date and place specified above, or at such time, date and place as then may be fixed, to act upon proposals and enter into contract for the construction of said improvements.

General Nature of the Public Improvement

The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

At said hearing, the ***Council*** will consider the proposed plans, specifications, form of contract and estimate of cost for said project, the same now being on file in the ***City Hall, 305 S Third Street, Knoxville, Iowa 50138***, reference to which is made for a more detailed and complete description of the proposed improvements, and at said time and place the said Council will also receive and consider any comments/objections to said plans, specifications and form of contract or to the estimated cost of said improvements made by any interested party.

This Notice is given by authority of the ***City of Knoxville***

_____

City of Knoxville

Published in the ***Knoxville Journal Express***

NOTICE TO PROCEED

TO: _____ DATE: _____

_____ PROJECT: ROCHE STREET CULVERT REPLACEMENT

_____ KNOXVILLE, IOWA

_____ Project #119.0729

You are hereby notified to commence work in accordance with the Contract dated _____ 2020, and you are to begin construction work as soon as possible to complete the project prior to the date noted below and you are to complete the work as follows: The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8'x6' precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

Work on the project is on Roche Street at the crossing of Competine Creek just north of Terrace Lane and shall begin upon notice to proceed. Work on the improvements shall commence any time after a written Notice to Proceed is issued, **no later than June 15, 2020,** and shall be completed as stated below. The Notice to Proceed will be issued after the preconstruction conference, which is expected to occur in April 2020.

The Contractor shall substantially complete the overall project within **seventy (70) working days.** For this project, substantial completion for the overall project shall be defined as all utility, grading, backfill, topsoil, finish grading, pavement, trail, and traffic control work completed with the new streets, driveways, and sidewalks/trails fully open to traffic. Should the Contractor fail to substantially complete the work within this timeframe, liquidated damages of **Five Hundred Dollars ($500.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

The Contractor shall fully complete the overall project within **fifteen (15) working days** after substantial completion is met. For this project, fully completion shall be defined as completion and approval by City and Engineer of all punchlist items, surface restoration, and submittal of final payment application. Should the Contractor fail to fully complete the work within this timeframe, liquidated damages of **Two Hundred Fifty ($250.00) per calendar day** will be assessed for the work not completed within the designated Contract term(s).

Dated this _____ day of April, 2020.

CITY OF KNOXVILLE

By:_____

Title: Project Engineer

Snyder and Associates, Inc.

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____ on this the _____ day of _____, 2020.

By: _____

Title: _____

SPECIAL PROVISIONS

FOR

PART 1 - GENERAL REQUIREMENTS

INDEX

1. DEFINITION AND INTENT
2. WORK REQUIRED
3. SALVAGE OF MATERIALS AND EQUIPMENT
4. PLANS AND SPECIFICATIONS
5. CONSTRUCTION FACILITIES
6. SUBMITTALS
7. STANDARDS AND CODES
8. MATERIALS TESTS
9. FIELD TESTS
10. CONSTRUCTION STAKING
11. PAVEMENT POST PLACEMENT, TESTING, AND ACCEPTANCE
12. MEASUREMENT AND PAYMENT
13. INCIDENTAL CONTRACT ITEMS

1. DEFINITION AND INTENT

A. The Technical Specifications that apply to the materials and construction practices for this project are defined as follows:

1. The 2020 edition of the Iowa Statewide Urban Specifications for Public Improvements (SUDAS), except as modified by these Special Provisions to the Technical Specifications.

2. The intent of the Technical Specifications is to describe the construction desired, performance requirements, and standards of materials and construction.

A. Engineer: Snyder & Associates, Inc., 2727 S.W. Snyder Blvd., Ankeny, Iowa 50023; Phone (515) 964-2020.

2. WORK REQUIRED

A. Work under this contract includes all materials, equipment, transportation, and labor necessary to complete the improvements. The work includes all materials, equipment, transportation, and labor necessary to complete the improvements. The proposed project includes, pavement removal, grading, excavation, 74 LF of twin 8’x6’ precast box culvert with end sections, 134 linear feet of 15-inch RCP storm sewer, 46 linear feet of 8-inch PVC sanitary sewer, 137 linear feet of 8-inch C900 PVC water main, PC concrete pavement, PC concrete trail, channel shaping, rip-rap, traffic control, surface restoration, erosion control, and other miscellaneous work.

B. This project consists of one contract for all work described.

C. Schedule and coordinate the construction work to facilitate timely construction of the improvements.

3. SALVAGE OF MATERIALS AND EQUIPMENT

A. The City of Knoxville retains first right of refusal for retaining any existing materials removed by the contractor during the course of construction.

B. The Contractor shall carefully remove, in a manner to prevent damage, all materials and equipment specified or indicated to be salvaged. The Contractor shall protect and store items as specified.

C. Any items damaged in removal, storage, or handling through carelessness or improper procedures shall be replaced by the Contractor in kind with new items.

4. PLANS AND SPECIFICATIONS

A. The City will furnish 5 sets of plans and specifications to the Contractor after award of the contract. The Contractor shall compensate the City for printing costs for additional copies required.

B. Provide one complete set of plans and specifications for each foreman and superintendent in charge of each crew on the job.

5. CONSTRUCTION FACILITIES

A. Provide telephone numbers where Contractor's representative can be reached during work days and on nights and weekends in the event of an emergency.

B. Provide and maintain suitable sanitary facilities for construction personnel for duration of work; remove upon completion of work.

C. Do not store construction equipment, employee's vehicles, or materials on streets open to traffic. Location for storage of equipment by Contractors is subject to approval by the City and Engineer.

D. The Contractor shall provide suitable storage facilities necessary for proper storage of materials and equipment.

E. Provide fence, barricades, and/or workers to prevent access of unauthorized persons to site where work is in progress and to ensure the safety of the public when allowed on site. No trenches shall be left open overnight and during non-working hours.

F. Provide an access for EMS vehicles and workers at all times to and through the construction site.

G. Compressed air, sanitary facilities, storage areas, and other services shall be furnished by the Contractor to meet their own requirements and at their own cost.

6. SUBMITTALS

A. Provide construction schedule showing dates of starting and completing various portions of work.

B. Provide 3 copies plus copies required by Contractor. This information shall be submitted to the Engineer at the preconstruction conference or at least 14 days prior to utilization of the particular item on this project. Submit the following information for Engineer's review:

1. Testing reports as outlined in Sections 8 & 9.

2. Manufacturer's data for materials that are to be permanently incorporated into the project.

3. Details of proposed methods of any special construction required.

4. Submit purchase orders and subcontracts without prices.

5. Such other information as the Engineer may request to ensure compliance with contract documents.

6. Certificate of Insurance to the Engineer which includes the Jurisdiction and Engineer as additional insured.

7. STANDARDS AND CODES

A. Construct improvements with best present day construction practices and equipment.

B. Conform with and test in accordance with applicable sections of the following standards and codes.

1. American Association of State Highway and Transportation Officials (AASHTO).

2. American Society for Testing and Materials (ASTM).

3. Iowa Department of Transportation Standard Specifications (Iowa DOT).

4. American National Standards Institute (ANSI).

5. American Water Works Association (AWWA).

6. American Welding Society (AWS).

7. Federal Specifications (FS).

8. Iowa Occupational Safety and Health Act of 1972 (IOSHA).

9. Manual of Accident Prevention in Construction by Associated General Contractors of America, Inc. (AGC).

10. SUDAS Standard Specification, 2016 Edition

11. Iowa DOT Standard Specifications, Most Recent Edition

12. Iowa DOT Materials I.M.s, Most Recent Edition

13. Standards and Codes of the State of Iowa and the ordinances of the City of Knoxville, Iowa.

14. Other standards and codes which may be applicable to acceptable standards of the industry for equipment, materials and installation under the contract.

8. MATERIALS TESTS

A. Material testing is incidental to construction and will be completed by an independent testing laboratory retained by the Contractor and approved by the Engineer. Testing shall meet the requirements of SUDAS.

B. Coordinate all material testing with the Engineer.

C. Provide transportation of all samples to the laboratory.

D. Do not ship materials to the project site until laboratory tests have been furnished showing compliance of materials with specifications.

E. Provide gradation and materials certifications for all granular materials. Certify that sources of Portland Cement and aggregates are Iowa DOT approved.

F. Certify that materials and equipment are manufactured with applicable specifications.

9. FIELD TESTS

A. Field testing is incidental to construction and will be completed by an independent testing laboratory retained by the Contractor and approved by the Engineer. Testing shall meet the requirements of SUDAS.

B. Coordinate all field testing with the Engineer.

C. The Contractor is responsible for meeting the specified testing requirements in the SUDAS for construction relating to Divisions 2, 3, 4, 6, 7, and 9 of said specification, if deemed necessary for the completion of the work specified.

1. Trench backfill: Section 3010, Part 2 and Section 3010, Part 3.06 and Special Provisions of these specifications

a. Compact trench and structure backfill to not less than 95% of maximum Standard Proctor Density in a street or road right-of-way and under any granular or paved surfaces.

b. Compact to not less than 90% maximum Standard Proctor Density in all other areas.

c. Compaction requirements remain in effect during cold weather.

D. If test results do not meet those specified, the Contractor shall make necessary corrections and repeat testing to demonstrate compliance with the specifications. Contractor shall pay all costs for retesting.

10. MEASUREMENT AND PAYMENT

A. Contract unit or lump sum prices are full compensation for furnishing all materials, equipment, tools, transportation and labor necessary to construct and complete each item of work as specified. No separate payment will be made for work included in this project except as set forth in the bid item reference notes. Refer to Plans for bid item reference notes. All other items of work are incidental to construction.

11. INCIDENTAL CONTRACT ITEMS

A. The following list includes major items that are incidental to the project and will not be paid for as separate bid items. Other items may be designated as incidental under certain bid items.

- Cold weather protection for PCC Pavement
- Construction fencing
- Construction staging & phasing
- Coordination and cooperation with utility companies
- Coordination and cooperation with affected property owners
- Coordination and cooperation with the City of Knoxville
- Curb and pavement backfill
- Dewatering and handling storm water flow during construction

- Dust control measures
- Excavation, verification, and protection of existing utilities (public and private)
- Finish grading
- Flaggers
- Granular backfill and bedding for storm sewer installation
- Granular surfacing removal
- Handbill notification of street closures & utility disruption to affected Residents
- Locate of existing utilities, potholing if necessary
- Maintaining garbage and utility service to users
- Maintenance and watering for seeding and sodding
- All material & field testing
- Monitoring weather conditions
- Mowing – to maintain grass height below 18 inches
- Proof rolling
- Protection of existing utilities and light poles
- Protection of existing trees and plantings not removed
- Repair of field tiles, if encountered
- Reseeding and/or resodding
- Safety closures
- Full depth sawcutting
- Site cleanup
- Temporary sheeting and shoring
- Working backfill to reduce moisture content or addition of moisture and incorporating into backfill
- Special care to protect existing features to remain
- Special backfill and compaction around structures

SPECIAL PROVISIONS

FOR

PART 2 - SPECIAL CONSTRUCTION

INDEX

1. GENERAL
2. EXISTING UTILITIES
3. PROJECT SUPERVISION
4. COORDINATION WITH OTHERS
5. CONSTRUCTION LIMITS
6. CONSTRUCTION SCHEDULE
7. CONSTRUCTION STAKING
8. GARBAGE COLLECTION
9. POSTAL SERVICE
10. DISPOSAL
11. EROSION/POLLUTION PREVENTION PLAN
12. DEWATERING
13. TRAFFIC CONTROL
14. REMOVALS
15. TEMPORARY FENCES
16. RESPONSIBILITY OF CONTRACTOR
17. CONCRETE PAVEMENT (PCC)
18. EXCAVATION AND BACKFILL
19. STORM SEWERS AND STRUCTURES
20. WATER MAINS AND APPURTENANCES
21. FIXTURE ADJUSTMENTS
22. SURFACE RESTORATION

1. GENERAL

A. Procedures outlined herein are not intended to fully cover all special construction procedures but are offered as an aid to the Contractor in planning work.

B. Cooperate with the City of Knoxville and the Engineer to minimize inconvenience to property owners and motorists and to prevent delays in construction and interruption to continuous operation of utility services and site access.

C. Notify City of Knoxville, impacted residents & businesses, police, and fire department at least three (3) business days in advance of closing any street or entrance for construction.

D. The Contractor is expected to provide adequate personnel and equipment to perform work within specified time of construction. **Once work within a specified area has commenced the Contractor shall put full and continuous workforce to complete the area as soon as possible to minimize inconvenience to traveling public, property owners, and EMT service.**

E. Install and maintain orange safety fence around all open trenches or open structures when left unattended. No trenches shall be left open during non-working hours and at night.

F. Provide an access for EMS vehicles during construction. Existing and temporary sidewalks may be used for access of EMS vehicles during construction.

G. Provide surface restoration and clean up as construction progresses.

2. EXISTING UTILITIES

A. Location of utility lines, mains, cables and appurtenances shown on plans are from information provided by utility companies and records of the Owner.

B. Prior to construction, contact all utility companies and have all utility lines and services located. Some utility companies are planning to relocate their facilities during this Project. The Contractor is responsible for excavating and exposing underground utilities in order to confirm their locations ahead of the work.

C. Contractor is solely responsible for damage to utilities or private or public property due to utility disruption.

D. The Contractor shall notify utility company immediately if utility infrastructure is damaged during construction.

E. In general, utility companies will relocate utility infrastructure in direct conflict with line and grade of the work during construction. Some utility infrastructure will not be relocated and the Contractor shall support and protect all utilities that are not moved.

F. Utility services are not generally shown on plans; protect and maintain services during construction. Notify Owner and affected property owners 48 hours prior to any planned utility service interruptions.

G. If utility work does occur during the construction period, work schedules from the contractor and from the utility companies will be submitted to the Engineer for coordination to obtain mutual acceptable schedules, if possible.

H. Existing utilities shall remain in substantially continuous operation during construction. Select the order and methods of construction that will not interfere with the operation of the utility systems. Interrupt utility services only with approval of Owner and Engineer.

I. No claims for additional compensation or time extensions will be allowed to the Contractor for interference or delay caused by utility companies.

3. PROJECT SUPERVISION

A. The Prime Contractor shall be represented in person at the construction site at all times that construction operations are proceeding by a qualified superintendent or other designated, qualified representative capable of providing adequate supervision. The superintendent or representative must be duly authorized to receive and execute instructions, notices and written orders from the Engineer.

B. Issues that arise during construction relating to traffic control, construction staging, resident notifications, mail service, garbage service, access to residences, etc. are the responsibility of the Prime Contractor.

C. A meeting with the Contractor, Engineer and Owner will be held at the project site before construction to coordinate the construction work.

D. Refer to Division 1 – General Provisions and Covenants, Section 1080 – Contractual Provisions, Prosecution and Progress, Section 1.10 Contractor's Employees, Methods and Equipment for additional requirements.

4. COORDINATION WITH OTHERS

A. Cooperate and coordinate construction with the City of Knoxville, adjacent businesses, utility companies, affected property owners and other contractors working in vicinity of this project.

B. It is the Contractor′s responsibility to schedule and coordinate work to minimize construction delays and conflicts.

5. CONSTRUCTION LIMITS

A. Confine the construction operations within the construction limits shown on the plans, consisting of public right-of way and temporary easements, if available.

B. Do not store equipment, vehicles or materials within the right-of-way of any streets open to traffic at any time without approval of the City.

6. CONSTRUCTION SCHEDULE

A. The Contractor will prepare and submit to the Engineer for approval a project schedule that will assure the completion of the project within the time specified.

B. The Contractor shall be required to meet the final completion date as specified in the written Notice to Proceed.

C. Notify the City and property owners at least three (3) business days prior to any street or driveway closures.

7. CONSTRUCTION STAKING

A. Construction Staking will be provided by the Contractor. The Contractor shall be responsible for the preservation of stakes and marks. The costs of replacing damaged stakes and marks will be solely borne by the Contractor.

8. GARBAGE AND RECYCLING COLLECTION

A. If work does or does not take place on a normal garbage or recycling collection day, coordinate collection of garbage and recycling from individual properties with the local collection agencies operating in the project areas.

B. Refer to Plans for other requirements for coordination of garbage and recycling collection.

9. POSTAL SERVICE

A. Coordinate delivery of mail with U.S. Postal Service. Coordinate temporary mailbox locations with U.S. Postal Service, if roadway mailboxes exist.

B. Maintain postal service at all times. Provide access to all residences along the project for mail carriers. If access cannot be maintained, provide and install temporary mail boxes at the end of each street or as required by the U.S. Postal Service so that mail delivery is maintained on a daily basis.

10. DISPOSAL

A. Remove from project site and dispose of trees, shrubs, vegetation, excess soil excavation, rubbish, concrete, granular materials and other materials encountered as shown on plans and as specified.

B. Dispose of materials in accordance with applicable laws and ordinances. Disposal sites are subject to the review and approval of the Engineer.

1. Burning of brush and other debris is not permitted. Contractor responsible for selecting disposal site.

2. Dispose of broken concrete, asphalt, granular material, rubble, excess or unsuitable excavated material. Contractor is responsible for selecting disposal site.

2. Cooperate with all applicable City, State and Federal agencies concerning disposal of materials.

3. The Owner has the first right to any excess materials from construction.

11. EROSION/POLLUTION PREVENTION PLAN

A. The Owner will provide the pollution prevention plan and NPDES permit, if required. The contractor is responsible for maintaining the pollution prevention plan, co-permittee signature, and providing NPDES management.

12. DEWATERING

A. Perform all construction work in dry conditions.

B. Submit dewatering methods to the Engineer for review. Obtain the Engineer′s approval on methods prior to construction.

C. Groundwater levels are subject to variation. No additional compensation will be permitted due to high groundwater conditions.

D. If excavation encounters only cohesive soils with no wet sand seams or layers, it may be possible to control water seepage by draining groundwater to temporary construction sumps and pumping it outside the perimeter of the excavation.

E. Do not pump water from open excavation in sand and gravel below the natural ground water level.

F. Maintain water levels 2 feet or more below the bottom of excavations in saturated cohesionless (sand and/or gravel) soils to prevent upward seepage, which could reduce subgrade support.

1. Install dewatering system (well points or shallow wells) when working in cohesionless soils.

2. Costs of installing and operating dewatering system are incidental.

G. Provide for handling surface water encountered during construction.

1. Prevent surface water from flowing into excavation, remove water as it accumulates.

1. Divert storm sewer flow around areas of construction.

2. Do not use sanitary sewers for the disposal of trench water.

H. Backfill pipe and structures prior to stopping dewatering operations. Do not lay pipe or construct concrete structures on excessively wet soils.

I. The costs of handling both surface water and groundwater are incidental.

13. TRAFFIC CONTROL

A. Furnish, erect and maintain traffic control devices as specified in the construction drawings and directed by the Engineer including signs, barrels, cones, and barricades to direct traffic and separate traffic from work areas.

B. Provide traffic control devices in accordance with the Iowa DOT Standard Specification, Section 2528, Traffic Control, and the latest edition of the Manual on Uniform Traffic control Devices (MUTCD).

C. Adjustments to the traffic control or the addition of flaggers will be required if, in the opinion of the Engineer, undue traffic congestion occurs.

B. Provide continuous access for police, fire, and other emergency vehicles.

C. Do not store construction equipment or materials on street open to traffic.

D. Contractor shall check traffic control devices daily. Repair or replace damaged traffic control devices promptly.

14. REMOVALS

A. Pavement Removal

1. Includes existing street, driveway, sidewalk and curb & gutter concrete as shown in the construction drawings. Includes temporary street and temporary sidewalk.

2. Full-depth saw-cut the concrete at the removal limits is considered incidental.

B. Miscellaneous Removals

1. Do not remove any items within the street right-of-way that are not specifically marked for removal on the construction drawings.

15. TEMPORARY FENCES

A. Install temporary fencing around open excavations or material storage areas and as directed by Engineer to prevent access of unauthorized persons to construction areas.

B. Provide orange plastic mesh safety fence with a nominal height of 48”. Support fence securely on driven posts in vertical position without sagging.

1. Materials: Iowa DOT Section 4188.03.

2. Use unless required otherwise.

C. Temporary fencing installed around open excavations or material storage areas is incidental to construction and will not be measured for payment.

D. Remove temporary fencing upon completion of construction.

16. RESPONSIBILITY OF CONTRACTOR

A. Supervision of the work.

B. Protection of all property from injury or loss resulting from construction operations.

C. Replace or repair objects sustaining any such damage, injury or loss to satisfaction of Owner and Engineer.

D. Cooperate with Owner, Engineer, and representatives of utilities in locating underground utility lines and structures. Incorrect, inaccurate or inadequate information concerning location of utilities or structures shall not relieve the Contractor of responsibility for damage thereto caused by construction operations.

E. Keep cleanup current with construction operations.

F. Comply with all Federal, State of Iowa, and City of Knoxville, Iowa laws and ordinances.

17. CONCRETE PAVEMENT (PCC)

A. Comply with IOWA URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, Sections 7010 and 7030, except as modified herein.

B. Coarse Aggregate: USE CLASS 3 DURABILITY LIMESTONE, Iowa DOT, SECTION 4115.04.

C. Mix Design: Iowa DOT C-4 mix shall be used for all concrete as specified on the construction drawings.

D. Restore core holes by tamping non-shrink cement grout into hole; finish and texture surface.

E. The use of maturity testing as per Iowa DOT IM 383 will be allowed with a minimum of one set of cylinders made each day to verify compressive strength.

F. Each truck load of concrete must be identified by an acceptable plant charge ticket showing plant name, contractor, project name, date, quantity, class, and time batched.

G. Provide cold weather protection as specified in the Contract Documents. Costs associated with cold weather protection shall be considered incidental.

H. Special care should be taken when forming at intersections so that the profiles and elevations shown on the cross sections, plan and profile, and intersection detail sheets are obtained. Short lengths of forms or flexible forms may be necessary at these locations.

I. Maturity testing can be utilized to expedite street opening.

18. EXCAVATION AND BACKFILL

A. Comply with IOWA URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, Sections 2010, 3010, and 3020, except as modified herein.

B. Excavate all materials encountered to depth indicated or specified; comply with OSHA safety rules and other state and federal government regulations.

C. Pile excavated material suitable for backfill in an orderly manner sufficient distance back from edge of excavation to avoid slides or cave-ins; 2' minimum clear distance.

D. Remove excavated material not suitable for backfill; waste at disposal area approved by Engineer; removal is incidental to construction.

E. Where new work crosses existing utilities or utility services, excavate in advance of pipe laying; determine crossing arrangement including exact construction line and grade.

F. Storm Sewer: Type R-2 pipe embedment per SUDAS detail 3010.102 is required for all RCP storm sewer pipes within roadway right-of-way, including pipes beneath pavement.

G. Sanitary Sewer: Type F-3 pipe embedment per SUDAS detail 3010.103 is required for all sanitary sewers.

I. Compact backfill with pneumatic or mechanical tampers adjacent to or within 12" over pipe. Rollers or vibrating plate compactors may be used after sufficient backfill has been placed to assure that such equipment will not damage or disturb the pipe.

19. SANITARY SEWERS AND STRUCTURES

A. Comply with IOWA STATEWIDE URBAN DESIGN AND SPECIFICATIONS, Section 4010 and Division 6, except as modified herein.

B. The pipe material used for the sanitary sewers shall be Solid Wall PVC at locations shown on the plans.

1. The pipe materials must conform to the material requirements stipulated as follows:

    1. Solid Wall PVC: As per Section 4010, 2.01A.

2. Provide bedding for the sanitary sewers and as detailed on the plans or specified herein.

20. STORM SEWERS AND STRUCTURES

A. Comply with IOWA STATEWIDE URBAN DESIGN AND SPECIFICATIONS, Section 4020 and Division 6, except as modified herein.

B. Subdrain: corrugated exterior, smooth interior, corrugated PVC or corrugated HDPE as per Section 4040, 2.02. Subdrain pipe shall be slotted.

C. Backfill with porous backfill for subdrain and granular material for pipe bedding.

D. The pipe material used for the storm sewers shall be RCP in locations shown on the plans.

1. The pipe materials must conform to the material requirements stipulated as follows:

    1. Reinforced Concrete Pipe (RCP): As per Section 4020, 2.01A.

    2. Reinforced Concrete Arch Pipe (RCAP): As per Section 4020, 2.01B.

    3. Bituminous Jointing Material: As per Section 4020, 2.01L.

    4. Bituminous Joint Primer: As per Section 4020, 2.01M.

    5. Reinforced Concrete Flared End Section: As per Section 4030, 2.02.

    6. Apron Guards: As per Section 4030, 2.04.

2. Provide bedding for the storm sewers and as detailed on the plans.

E. Intake grates: All roadway intake grates shall be Type “R” (vaned). All SW-512 intake castings shall be Type 3B, unless otherwise noted.

F. Special compaction around structures shall be performed to minimize settling.

21. FIXTURE ADJUSTMENTS

A. Adjust existing manholes as indicated on the construction drawings to finished grade in accordance with the SUDAS. Adjustments include providing new castings, adjusting rings, and installing a new internal chimney seal infiltration barrier (sanitary sewer).

B. Adjust existing valve boxes as indicated in the construction drawings to finished grade in accordance with the SUDAS. Utilize the existing valve boxes, or install new valve boxes provided by the Knoxville Water Works. This work is incidental to construction.

C. Locate the existing water curb stop boxes for the residences along the proposed construction and protect or adjust to finished grade as necessary. This work is incidental to construction.

22. SURFACE RESTORATION

A. Finish grade all disturbed areas to smooth, uniform lines without large clods, lumps, or debris. Remove all debris. Remove all rocks and provide grade for positive drainage.

B. Prepare the finished surface for sodding or seeding as designated in the Contract Documents. Provide and place additional clean topsoil on any disturbed areas that, in the opinion of the Engineer, are lacking in natural topsoil. Provide organic material that is free of vegetation, rubble or other debris. Additional topsoil import to meet Specification Section 2010 shall be considered incidental to the Project.

C. All areas to be sodded or seeded shall be prepared, fertilized, watered, maintained, and warranted in accordance with SUDAS Section 9020.

D. Any areas disturbed by construction that are outside of the construction limits shall be repaired and restored at the Contractor's expense. No extra payment will be allowed for surface restoration on these areas.

E. Install silt fences and other erosion control structures at the locations directed by the Engineer during construction and any locations needed to prevent soil erosion.

F. Sodding or seeding work completed after the specified sodding / seeding dates in SUDAS Section 9020, Part 3.03 shall be at the risk of the contractor. Warranty period will not begin and payment will not be made until sodding / seeding has taken and healthy, weed-free vegetation has established.

ALLENDER BUTZKE ENGINEERS INC.
GEOTECHNICAL • ENVIRONMENTAL • CONSTRUCTION Q. C.

August 30, 2019 **PN 191306**

GEOTECHNICAL EXPLORATION

ROCHE STREET CULVERT REPLACEMENT
SOUTH ROCHE STREET AND TERRACE LANE
KNOXVILLE, IOWA

PERFORMED FOR

SNYDER AND ASSOCIATES, INC.
2727 SW SNYDER BOULEVARD
ANKENY, IOWA 50023

3660 109TH STREET • URBANDALE, IOWA 50322 • PHONE 515-252-1885 • FAX 515-252-1888

ALLENDER BUTZKE ENGINEERS INC.
GEOTECHNICAL • ENVIRONMENTAL • CONSTRUCTION Q. C.

August 30, 2019

Snyder and Associates, Inc.
2727 Snyder Boulevard
Ankeny, Iowa 50023
Attn: Andy Burke, P.E.

RE: Geotechnical Exploration
Roche Street Culvert Replacement
South Roche Street and Terrace Lane
Knoxville, Iowa
PN 191306

Dear Mr. Burke:

As authorized by David Moeller, P.E. with Snyder and Associates, Inc., Allender Butzke Engineers Inc. (ABE) has completed the geotechnical exploration for the above referenced project. The geotechnical exploration was conducted to evaluate physical characteristics of subsurface conditions with respect to design and construction of this project. The enclosed report summarizes the project characteristics as we understand them, presents the findings of the boring and laboratory tests, discusses the observed subsurface conditions, and provides geotechnical engineering recommendations for this project.

We appreciate the opportunity to provide our geotechnical engineering services for this project. If you have any questions or need further assistance, please contact us at your convenience. We are also staffed and equipped to provide construction testing and inspection services on this project as well as environmental site assessments.

Respectfully submitted,
ALLENDER BUTZKE ENGINEERS INC.

Anton J. Schneider Jr., P.E.
Staff Engineer

Stacy G. Brocka, P.E.
Senior Project Engineer

LICENSED PROFESSIONAL ENGINEER
STACY G. BROCKA
14203
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

8/30/19

Stacy G. Brocka, P.E. License Number 14203 Date
My license renewal date is December 31, 2019.
Pages covered by this seal: All Pages.

1 Email and 1 PC Above

GEOTECHNICAL EXPLORATION

ROCHE STREET CULVERT REPLACEMENT
SOUTH ROCHE STREET AND TERRACE LANE
KNOXVILLE, IOWA

PN 191306

TABLE OF CONTENTS

PROJECT INFORMATION 1

FIELD EXPLORATION 1

SUBSURFACE CONDITIONS 2
- Soil Profile 2
- Groundwater Level Observations 2

ANALYSES AND RECOMMENDATIONS 3
- Site Preparation 3
- Embankment and Roadway Fill Construction 3
- Excavation, Stability and Dewatering 5
- Embankment and Roadway Fill Area Settlement 5
- Culvert Support 6
- Lateral Earth Pressures 6
- Frost Heave 7

GENERAL 8

APPENDIX
- Boring Log Description/Legend
- Boring Log
- Site Plan

GEOTECHNICAL EXPLORATION

ROCHE STREET CULVERT REPLACEMENT
SOUTH ROCHE STREET AND TERRACE LANE
KNOXVILLE, IOWA

PN 191306

August 30, 2019

PROJECT INFORMATION

Snyder and Associates, Inc. is designing a new culvert located approximately 60 feet north of the Terrace Lane intersection under South Roche Street in Knoxville, Iowa. The proposed project will consist of replacing the existing 6′x6′ culvert and presumably some of pavement sections on either side of the culvert. Based on proposed and existing grades, we assume the roadway alignment and profile will not change significantly, but fill depths on the order of 5 to 10 feet may be required near the culvert edges and outside of the existing roadway to achieve desired final grades. We expect the flowline of the new culvert to match that of the existing culvert, which is near elevation 832.9 feet at the upstream end and near 832.6 feet at the downstream end. To accommodate the new culvert, excavation and backfill depths on the order of 15 may be required.

FIELD EXPLORATION

One boring was conducted at this site to a depth of 25 feet below existing grades on August 15, 2019. The approximate location of the boring is shown on the enclosed Site Plan and was measured in the field from existing landmarks. The boring surface elevation, indicated on the enclosed Boring Log, was determined by differential leveling and referenced to an existing manhole to the north of the culvert with a reported rim elevation of 847.11 feet. Methods of drilling, sampling, standard laboratory testing, and classifying of subsurface materials are discussed in the Boring Log Description/Legend pages of the Appendix.

SUBSURFACE CONDITIONS

Soil Profile

Detailed descriptions of soils and depictions of the relative deposit elevations in the boring encountered by this exploration are provided on the Boring Log enclosed in the Appendix. Following is a discussion of the subsurface materials encountered in the boring. Unless otherwise indicated, the depths of soil stratum and groundwater levels are referenced from below existing grade at the individual boring locations at the time of drilling.

Approximately 5.5 inches of Portland cement concrete (PCC) was encountered at the surface in the boring. Existing fill was encountered underlying the pavement and consisted of brown to gray fat clay shale (CH) material with trace gravel, brown fat clay (CH) with sand, and crushed concrete near the bottom of the fill. The variable soft to stiff and damp to moist fill extended to a depth of 9.5 feet.

Very dark gray fat clay (CH) cohesive alluvium was encountered below the existing fill. The moist to very moist and medium stiff cohesive alluvium extended to a depth of 16.8 feet.

Weathered bedrock consisting of dark gray with gray weathered clay shale was encountered underlying the cohesive alluvium. The weathered bedrock transitioned to intact light gray shale bedrock near a depth of 21 feet. Carbonaceous shale and coal was encountered from 22.5 to 24 feet. The boring terminated in the hard, damp bedrock near a depth of 25 feet.

Groundwater Level Observations

The boring was monitored during and shortly after drilling operations to detect moisture seepage and groundwater accumulation. The results of our water level observations are noted on the Boring Logs enclosed in the Appendix.

During drilling operations, moisture seepage was noted near a depth of 14 feet below existing grade. Groundwater accumulation was observed near a depth of 24.5 feet at the completion of drilling operations. It should be recognized that these short-term water levels are not necessarily a true indication of the groundwater table. Long-term observations would be necessary to accurately define the groundwater variations at this site. Fluctuation of groundwater levels can occur due to seasonal variations in the amount of rainfall, surface drainage, subsurface drainage, site topography, irrigation practices, stage level of the creek and ground cover (pavement or vegetation).

ANALYSES AND RECOMMENDATIONS

Site Preparation

Cut-and-fill construction will be performed at this site to achieve the desired final grades. Prior to the placing of pavements on this site, or before any fill is placed, the organic and loose materials in addition to all vegetation must be stripped. We expect that a minimum stripping depth of 6 inches will be required. Deeper stripping depths of 1 to 2 feet may be necessary within the existing ditches, existing creek bottom, or in the isolated areas at the toes of the proposed sideslope in order to remove surficial softer or organic deposits. The stripping depths may vary due to localized variations in vegetation cover and subgrade stability. The strippings could be used for landscaping purposes in non-critical areas where future support for structures and pavements is not required. The subgrade should then be proof rolled to delineate zones of soft soils present near the surface which may require additional removal or compaction. Trees and rootballs from large trees should be completely removed prior to filling operations, where present.

Existing embankment sideslopes should be adequately benched in order to integrate the new fill sections on the existing slopes. Typically, benches on the order of 3 to 5 feet tall and 8 to 10 feet wide are required to accommodate construction equipment traffic. The subgrade should then be proof-rolled to delineate zones of soft soils present near the surface which may require additional removal or compaction. Depending upon subgrade conditions encountered prior to filling operations, it may be necessary to construct a coarse granular working mat in the lower lying areas to provide a stable working platform for earthmoving equipment and to facilitate filling operations.

Embankment and Roadway Fill Construction

We recommend that cohesive or cohesionless soils, free of rubble and organics, be used as compacted fill. Inorganic existing soil such as the existing fill and cohesive alluvium (CH) soils would be suitable soil types for general fill applications. It should be noted that the fat clay (CH) soils encountered in the soil profile are typically considered highly expansive and not recommended for use below streets without chemical modification. However, if the existing street performance near the boring is considered acceptable, the owner may wish to continue to utilize this material untreated.

The following Table A lists recommended minimum compaction requirements for cohesive and cohesionless fill materials in specific applications. For cohesive soils, moisture contents within a range of -1 to +4 percent of the material's optimum moisture content are necessary to achieve the desired fill qualities. The expansive soils should be compacted within a

moisture content range of +1 to +4 percent of the material's optimum moisture content to achieve a semi-swelled condition. However, soils compacted closer to optimum moisture content will exhibit greater stability under construction traffic loading. Consequently, a compromise is often required to have a lower moisture content for constructability purposes as compared to a higher moisture content to potentially reduce future heaving.

TABLE A
RECOMMENDED DEGREE OF COMPACTION GUIDELINES

Construction Application	Standard Proctor (ASTM D698) Cohesive Soil	Standard Proctor (ASTM D698) Cohesionless Soil	*Relative Density (D4253 & D4254) Cohesionless Soil
Class 1	95%	98%	70%
Class 2	90%	93%	45%
Class 3	85%	88%	20%

Class 1 - Subgrade for building foundations, slabs-on-grade, pavements and other critical backfill areas.
Class 2 - Backfill adjacent to structures not supporting other structures - Minor subsidence possible.
Class 3 - Backfill in non-critical areas - Moderate subsidence possible.

*Use Relative Density technique (ASTM D4253 & D4254) where Standard Proctor technique (ASTM D698) does not result in a definable maximum dry density and optimum moisture content.

The on-site soils can be excavated utilizing conventional excavation equipment. Granular soils can generally be suitably compacted with vibratory compaction equipment whereas cohesive soils are more suitable for compaction with sheepsfoot or pneumatic type compactors. Care should be exercised in properly backfilling and compacting all trenches, especially utility trenches under or adjacent to the pavement. Loosely compacted or sand backfilled trenches can collect surface water and inadvertently direct it to the pavement subgrade and cause softening of the soil as well as increasing frost heave potential.

At the time of this geotechnical exploration, moisture content of the upper portion the existing fill was below the recommended moisture content range for compaction whereas the deeper existing fill and cohesive alluvium was generally near or above the recommended moisture. Depending upon precipitation levels prior to and during construction, adjustment of soil moisture content may be required in order to lower or raise the moisture to within the recommended moisture content range. Discing and aeration is generally the most economical method to lower soil moisture content, if the construction schedule and climatic conditions allow. Chemical modification of very moist soils with Portland cement, quicklime, or Class C fly

ash can be accomplished if construction scheduling does not permit field drying. Chemical modification of the soils would also be useful for mitigating the expansive nature of the existing soils, as previously mentioned in this section. If grading or fill placement at the site will be conducted during colder weather, it should be noted that common chemical modification methods may be ineffective when temperatures are near or below 40° Fahrenheit.

Excavation, Stability and Dewatering

Excavations at this site will encounter predominately cohesive soils with no wet sand seams or layers. However, granular soils could be present in other unexplored areas of the site. If excavations encounter only cohesive soils with no wet sand seams or layers, it is expected that the water seepage can be controlled by permitting it to drain into temporary construction sumps and be pumped outside the perimeter of the excavations. More extensive dewatering such as sand points and wells may be required for excavations which extend down into water bearing sand layers. We recommend that prior to excavating in saturated sand, water levels be maintained 2 feet or more below the bottom of excavations in saturated sand to prevent upward seepage forces which could reduce subgrade support.

The extent of bracing or sloping of open cut excavations will be dependent upon depth of cut, groundwater conditions, soils encountered, length of time the excavation will be open, area available for excavation and local governing regulations. Predominately cohesive soils may appear to stand nearly vertical in shallow excavations for short periods of time. However, soil creep, surcharge loads, precipitation, subsurface moisture seepage, construction activity vibrations and other factors may cause these soils to cave within an unpredictable period of time. Excavations encountering sand may tend to cave rapidly, especially if water is flowing through the sand. Unstable granular excavation walls may also cause surrounding cohesive soils to become unstable. Temporary shoring, flattening of the excavation slopes or use of trench boxes may be required to maintain a safe condition. Determining the appropriate OSHA classifications of the soil types encountered and implementing the required provisions for sloping, shoring, and bracing of excavations throughout the project during construction are the responsibility of the contractor per OSHA.

Embankment and Roadway Fill Area Settlement

Based on boring information and assumed fill depths on the order of 15 feet, the weight of the earth fill may consolidate the underlying compressible cohesive alluvium soils causing embankments to settle if the new culvert will be extended beyond the existing roadway embankment. We estimate long-term total settlement due to the new fill sections will be on the order of 1 to 2 inches. We estimate 75 percent of the soil consolidation will occur within a month of final fill placement. We recommend a minimum waiting period of 4 weeks after final

embankment construction prior to paving or final road surfacing outside the existing roadway section. This waiting period could be reduced if closely monitored settlement monuments are installed in deep fill areas to determine when a majority of soil consolidation has occurred.

Culvert Support

The underlying cohesive alluvium soils expected below the proposed flow line elevation of 832.6 to 832.9 feet (approximately 12 feet below existing grades) will be easily disturbed by construction traffic. Therefore, a granular blanket of clean coarse crushed rock (similar to or coarser than Iowa DOT 4115) of 18 inches thick is recommended below the culvert bottom to provide a uniform bearings surface and a stable working platform. The coarse crushed rock layer and underlying cohesive alluvium would be capable of supporting a maximum net allowable bearing pressure of 2,000 pounds per square foot. If soft areas are encountered or a higher bearing pressure is desired, a deeper over-excavation and crushed rock backfill procedure will be required. The over-excavation and crushed rock backfill should extend 9 inches laterally for every foot of over-excavation depth. We recommend visual observations and test probing be conducted by an ABE representative at the time of construction to confirm removal of all unsuitable soils

Lateral Earth Pressures

Culvert walls constructed to retain soil should be designed to accommodate unbalanced lateral earth pressures. Estimated lateral earth pressures for cohesive and cohesionless (granular) backfill are presented in the following Table B.

Active earth pressure design assumes that the wall can rotate and deflect at the top. If the wall is rigidly fixed, higher lateral earth pressures will develop against the wall and at-rest pressure parameters should be used for design. Increased earth pressures can also develop from restricted soil drainage, surcharge loads adjacent to the wall, and compaction of the adjacent backfill. Expansive materials (CH), either natural or backfill, should not be within 3 feet of below grade walls.

Coefficient of sliding friction values of 0.3 and 0.7 may be used for P.C. concrete on cohesive and crushed rock subgrades, respectively. This ultimate value assumes no safety factor and design with this ultimate value should include a minimum factor of safety of 1.5.

TABLE B
LATERAL EARTH PRESSURE PARAMETERS

Condition	Cohesive Soil (non-expansive clay)	Cohesionless Soil (Crushed Rock)
Assumed Backfill Characteristics		
Approximate Total Density	130 pcf	130 pcf
Approximate Friction Angle	15º - 20º	40º - 45º
Active Pressure Coefficient, K_a	0.5	0.2
At-Rest Pressure Coefficient, K_o	0.7	0.3
Passive Pressure Coefficient, K_p	2	5.8
Estimated Lateral Earth Pressure[1] (Equivalent Fluid Pressures)		
Active - Drained	65 pcf	20 pcf
Active - Undrained[2]	95 pcf	75 pcf
At-Rest - Drained	90 pcf	40 pcf
At-Rest - Undrained[2]	110 pcf	80 pcf
Passive - Drained	260 pcf	760 pcf
Passive - Undrained[3]	135 pcf	395 pcf

1) Assumes no safety factor, negligible wall friction, vertical wall, level backfill, zero surcharge loads and ignores cohesion shear strength.
2) Combined buoyant backfill unit weight and hydrostatic (water @ 62.4 pcf) loading.
3) Excludes hydrostatic loading.

Frost Heave

Key elements contributing to frost heave including freezing temperatures, available water, and fine-grained frost susceptible soils are generally present at sites in Iowa. As a result, frost heave problems are generally common (and most noticeable) in pavements or sidewalks adjacent to non-frost susceptible elements such as manholes, light poles, and exterior doors or frost protected stoops. Frost heave can cause pavement cracks to develop parallel to and several feet from curbs. This generally occurs where cleared paved areas exposed to freezing temperatures heave more than adjoining paved areas insulated by piled snow. Areas cleared of snow not exposed to periodic sunshine during the winter, such as under canopies, on the north shaded side of buildings and other shaded areas may experience more frost heave than other sunshine exposed areas. Sometimes it is not readily apparent why frost heave problems occur at one location and not at another seemingly similar location.

While it is appropriate to implement measures to reduce frost heave such as insulation, replacing frost susceptible soils with less frost susceptible soils, void forms, sealing cracks/joints to reduce surface water infiltration, or drainage improvements (surface and subsurface), these measures may simply move the frost heave problem to a different location where preventative measures have not been implemented. Having a smooth transition between heaved and non-

heaved areas is desirable, but may be difficult and/or costly to accomplish. We are available to meet with you to discuss options for your consideration to reduce frost heave potential on this project.

GENERAL

The analyses and recommendations in this report are based in part upon the data obtained from the soil boring performed at the indicated location and from any other information discussed in this report. This report does not reflect any variations which may occur from the boring across the site. The nature and extent of such variations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

It is recommended that the geotechnical engineer be provided the opportunity to review the plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observation during earthwork and foundation construction phases to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, expressed or implied, is made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer.

The scope of our service was not intended to include any environmental assessment or exploration for the presence of hazardous or toxic materials in the soil, surface water, groundwater or air on, below or adjacent to this site.

APPENDIX

BORING LOG DESCRIPTION/LEGEND

The material types encountered during the drilling operations were recorded on field logs. The profile represented on the Boring Log is based on final classification performed by a geotechnical engineer using the field logs, laboratory observation and testing. The material stratigraphy demarcation lines shown on the Boring Logs indicate changes in soil characteristics, however, actual soil changes or variations may occur as a gradual transition. Soil profile discussion, Log Boring information, water levels and recommendations presented in this report are based upon measured depths below ground levels existing at time of the field exploration, unless otherwise specified.

DRILLING AND SAMPLING

The borings were conducted with either a truck or all-terrain rotary drill rig using the drilling methods indicated on each Boring Log. Soil sampling and/or in-situ testing such as Shelby Tube (ST), split-spoon (SS), drive cone (DC), or core (C) was conducted at depth intervals which were selected in consideration of the characteristics of the proposed construction. Generally undisturbed soil samples are taken at 5 foot depth intervals or change in soil types. Disturbed soil samples from the auger, either jar size or bulk size samples, may be taken at intermediate intervals for the purpose of soil classification or laboratory testing. Borings conducted for soil classification only, will show no designation of sampling although disturbed sampling is performed. Soil samples obtained in the field were identified and sealed for transportation to the laboratory for performance of pertinent physical testing and engineering classification.

Drilling Methods

CFA - Continuous Flight Auger: 4, 6, or 8-inch diameter (ASTM D1452).
RD - Rotary Drilling: Using drilling fluid in cased or uncased boring (ASTM D2113).
HSA - Hollow Stem Auger: 6 or 8-inch diameter, continuous flight auger remains in boring with soil removed from the hollow stem through which undisturbed sampling is conducted.
HA - Hand Auger: 4-inch or less diameter.

Sample Types

ST - Shelby Tube: Thin-walled tube samples of cohesive soils (ASTM D1587).
SS - Split Spoon with 140 lb. manual hammer: Standard penetration test and split-barrel samples (ASTM D1586).
SSA - Split Spoon with 140 lb. automatic hammer: Standard penetration test and split-barrel samples (ASTM D1586).
DC - Drive Cone: Dynamic in-place testing of soil using a 2-inch diameter cone with a 60 degree point driven into the soil for continuous 1-foot intervals in the same manner as Split Spoon, no sample is obtained.
C - Core: Sampling hard soil or bedrock with a diamond core barrel in a rotary drill boring (ASTM D2113).
SPT - Standard Penetration Test: Number of blows required to drive sampler (split spoon or drive cone) into the soil with a 140-pound weight dropping a distance of 30-inches (ASTM D1586), number of blows recorded for each 6-inch interval in an 18-inch (or more) penetration depth, values shown are for each 6-inch interval (if series of number sets are shown) or a total of the last two 6-inch intervals (if only one number is shown) which is commonly referred to as "N" in blows per foot. High resistance is indicated by a high number of blows for a lesser penetration depth listed in inches.
BS - Bulk Sample: Disturbed.
CPT - Cone Penetration Test: Quasi-static in-place testing of soils using a 60 degree cone and friction sleeve which are steadily pushed into the soil and measure skin friction and end bearing (ASTM D3441).

STANDARD LABORATORY TESTING

Representative undisturbed soil samples obtained by the Shelby Tube sampler were tested for moisture content (ASTM D2216), density (dry) and unconfined compressive strength (ASTM D2166) in the laboratory. Results of these tests appear on the respective Boring Logs. Additional soil testing including particle size analysis (ASTM D422) and Atterberg Limits (ASTM D4318) may be conducted, if necessary, to define in more detail pertinent soil characteristics for classification in accordance with the Unified Soil Classification System. Specialized laboratory tests (if conducted) to determine pertinent soil characteristics are discussed in the "Laboratory Testing" section of the report.

WATER LEVEL MEASUREMENT

Water levels indicated on the Boring Logs are the levels measured in the borings at the times indicated. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels is not possible with short term observations.

BORING LOG DESCRIPTION/LEGEND

DESCRIPTIVE SOIL CLASSIFICATION

Soil description is based on the Unified Classification System as outlined in ASTM Designations D-2487 and D-2488. This classification is primarily based upon visual and apparent physical soil characteristics, comparison with other soil samples, and our experience with the soil. Additional laboratory testing may be conducted, if necessary to define in more detail pertinent soil characteristics. The Unified Soil Classification group symbol shown on the boring logs corresponds with the group names listed below. The description includes soil constituents, moisture conditions, color and any other appropriate descriptive terms.

Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name
GW	Well-Graded Gravel	SW	Well-Graded Sand	CL	Lean Clay	CH	Fat Clay
GP	Poorly-Graded Gravel	SP	Poorly-Graded Sand	ML	Silt	MH	Elastic Silt
GM	Silty Gravel	SM	Silty Sand	OL	Organic Clay Organic Silt	OH	Organic Clay Organic Silt
GC	Clayey Gravel	SC	Clayey Sand			PT	Peat

RELATIVE PROPORTIONS			GRAIN SIZE TERMINOLOGY	
Descriptive Term(s) (Of components also present in sample)	Sand and Gravel % of Dry Weight	Fines % of Dry Weight	Major Component of Sample	Size Range
Trace	<15	<5	Cobbles	12 in. to 3 in. (300mm to 75mm)
With	15-30	5-12	Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Modifier	>30	>12	Sand	#4 to #200 sieve (4.75mm to 0.074mm)
			Silt or Clay	Passing #200 sieve (.074 mm)

CONSISTENCY OF FINE-GRAINED SOILS			RELATIVE DENSITY OF COARSE-GRAINED SOILS	
Unconfined Compressive Strength, Qu, psf	Consistency	SPT, bpf	SPT, bpf	Relative Density
< 500	Very Soft	0-2	0-4	Very Loose
500-1,000	Soft	2-4	4-10	Loose
1,000-2,000	Medium Stiff	4-8	10-30	Medium Dense
2,000-4,000	Stiff	8-15	30-50	Dense
4,000-8,000	Very Stiff	15-30	50-80	Very Dense
8,000-16,000	Hard	30-100	80+	Extremely Dense
> 16,000	Very Hard	>100		

BORING LOG DESCRIPTION/LEGEND

ABBREVIATIONS

COMMONLY USED ABBREVIATIONS	
ft. or ' - feet	elev. - Elevation
in. or " - inches	% - Percent
psf - pounds per square foot	No. - Number
plf - pound per lineal foot	TB - Test Boring
pcf - pounds per cubic feet	N - blow count (SPT, bpf)
kip - 1000 pounds	USCS - Unified Soil Classification System
ksf - 1000 pounds per square foot	LL - Liquid Limit
klf - 1000 pounds per lineal foot	PL - Plastic Limit
tsf - tons per square foot	PI - Plasticity Index
bpf - blows per foot (SPT, N)	

BORING LOG NO. 1

Project No.: 191306

Project: Roche Street Culvert Replacement
S. Roche Street and Terrace Lane
Knoxville, Iowa

Client: Snyder and Associates, Inc.
2727 SW Snyder Boulevard
Ankeny, Iowa 50023

Surface Elevation: 844.7'
Datum: Existing Manhole = 847.11'

Date Drilled: 8/15/2019
Drilling Depth, ft.: 25

Drilling Method: 4" CFA
Page: 1 of 1

Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength psf	Material Description*	USCS	Water Level	Depth / Elevation ft.
								PC CONCRETE (5.5"±)			0.5
844	0							Brown to brown-gray fat clay shale with sand, trace gravel, damp Moist after 1.5'	CH		844.2
842											
840	4	1	SSA	4	20.7			**FILL** Brown fat clay with sand, trace gravel after 5.5'	CH		
838											
836	8	2	SSA	16	20.7 25.2			Very dark brown after 7.8' With crushed concrete from 8.5' to 9.5'			9.5
834								Very dark gray fat clay, trace sand, moist	CH		835.2
832	12	6	ST		21.8	92	1960				
830		3	ST		20.9		2630	Very moist after 13' **COHESIVE ALLUVIUM** Moisture seepage near 14'			
828	16	7	SSA	10	26.0 16.0						16.8
826		4	SSA	18	24.2			Dark gray with gray weathered clay shale, moist **WEATHERED BEDROCK**			827.9
824	20										21
822								Light gray shale, damp Very dark gray carbonacious shale with coal from 22.5' to 24' **BEDROCK**			823.7
820	24	5	SSA	55	20.8					▽	25
818								End of Boring			819.7

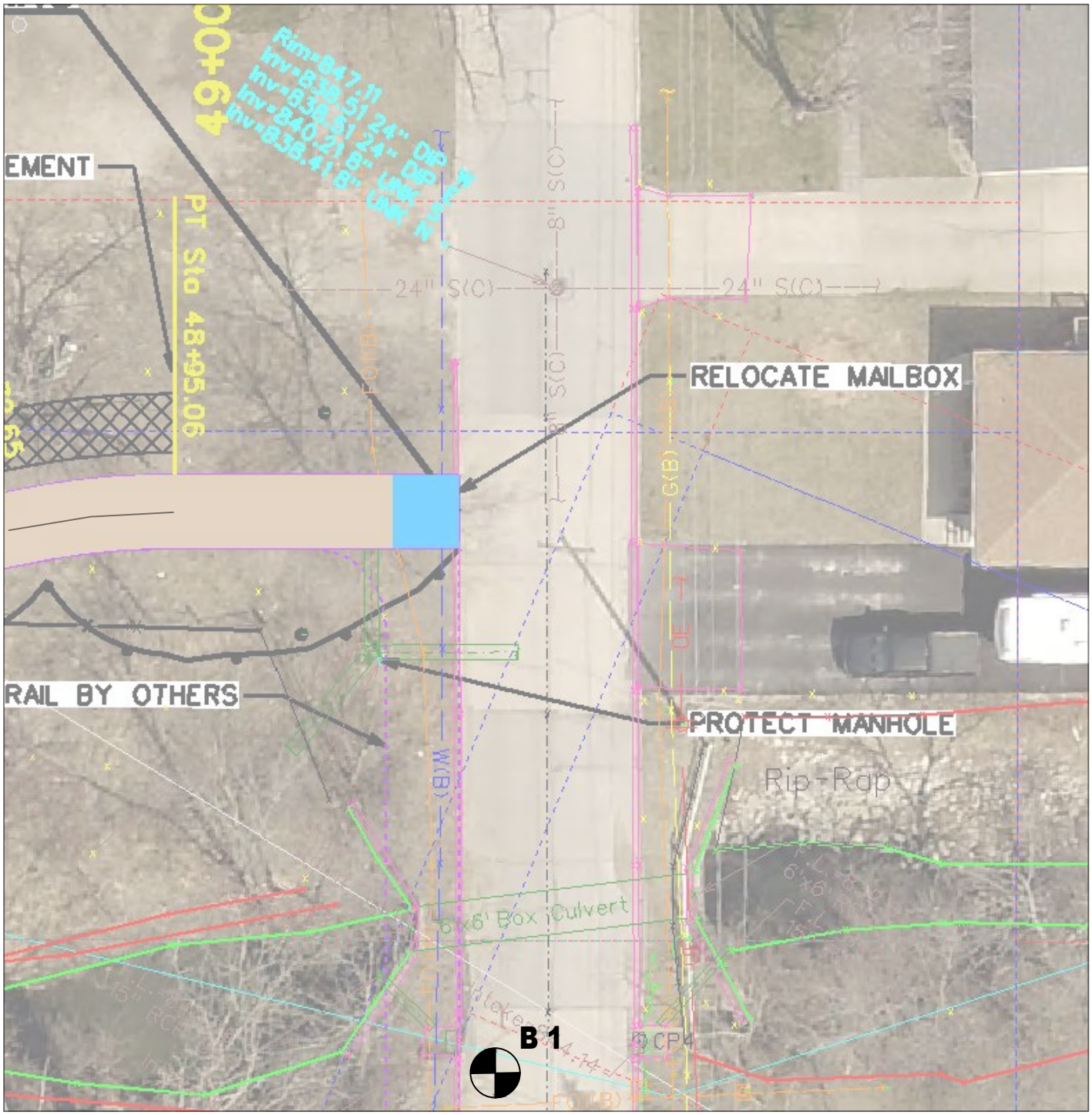
*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation

Time:	at completion	_____ hrs.	_____ days
Depth to water:	24.5CW ft. ▽	_____ ft. ▽	_____ ft. ▽

ALLENDER BUTZKE ENGINEERS, INC.

Geotechnical | Environmental | Construction Q.C.



0 20 40

Scale (feet)

B # Approximate Soil Boring Location

Base Plan by Snyder

ALLENDER BUTZKE ENGINEERS INC. 3660 - 109th Street Urbandale, IA 50322	Roche Street Culvert Replacement South Roche St & Terrace Ln Knoxville, Iowa	PN 191306 Site Plan

NOTES