CITY OF KNOXVILLE

2016 STREET IMPROVEMENTS

Project No. - 115.0718.01

LICENSED PROFESSIONAL ENGINEER ANDREW G. BURKE 19498 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. 01/29/2016 Andrew G. Burke, P.E. Date License Number 19498 My License Renewal Date is December 31, 2016 All Sheets

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

2016 STREET IMPROVEMENTS
KNOXVILLE, IOWA
S&A PROJECT NO. 115.0718.01

The following documents are a part of this contract:

Document	Pages
Notice to Bidders …….	NTB - 1 to NTB - 2
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
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Special Provisions

Part 1 - General Requirements	SP1 - 1 to SP1 - 6
Part 2 - Special Construction.....	SP2 - 1 to SP2 - 10
Part 3 – BNSF Work on Railroad Right-of Way…….	SP3 – 1 to SP3 - 12

Appendix

Soils Report	Appendix A

Specifications:

The Iowa Statewide Urban Standard Specifications for Public Improvements, 2016 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.

NOTICE TO BIDDERS
NOTICE OF PUBLIC HEARING
CITY OF KNOXVILLE
2016 STREET IMPROVEMENTS

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 1, 2016 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 1, 2016, in the Council Chambers of the City Hall, for consideration by the Knoxville City Council at its meeting on Monday, March 7, 2016. The City of Knoxville reserves the right to reject any and all bids.

Time for Commencement and Completion of Work. Work on the improvements shall begin on or before the date specified in a written Notice to Proceed. The anticipated date for written Notice to Proceed date is March 9, 2016. Work on the project shall be substantially completed by November 15, 2016. All surface restoration work shall be completed by May 31, 2017. Liquidated damages in the amount of Five Hundred Dollars ($500.00) will be assessed for each calendar day the work is not substantially complete by November 15, 2016. For this project substantial completion shall include completion and approval by City and Engineer of all roadway pavement, HMA overlay, driveways, sidewalks, backfill, and finish grading.

Bid Security. Each bidder shall accompany its bid with bid security 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 form acceptable to the City, for the faithful performance of the contract, in an amount equal to one hundred percent 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, a certified check, or a bank money order drawn on a FDIC insured bank in Iowa or 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 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 the Knoxville 2016 Street Improvements 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.

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.

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 7, 2016 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, storm intake replacement, subdrain construction, subgrade preparation, modified subbase, approximately 9,000 square yards of 7-inch PCC paving and 1,870 square yards of 6-inch PCC paving, pavement markings, traffic control, surface restoration, and miscellaneous associated work.

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

_____

Heather Ussery, City Clerk

Bid Date March 1, 2016
Time 2:00 p.m.

INSTRUCTIONS TO BIDDERS

Project Name 2016 Street Improvements
Knoxville, Iowa

S&A Project No. 115.0718.01

The work comprising the above referenced project shall be constructed in accordance with the 2016 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.	Part C – Bid Schedule
2.	Identity of Subcontractors
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 following 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 begin on or before the date specified in a written Notice to Proceed. The anticipated date for written Notice to Proceed date is March 9, 2016. Work on the project shall be substantially completed by November 15, 2016. All surface restoration work shall be completed by May 31, 2017. Liquidated damages in the amount of Five Hundred Dollars ($500.00) will be assessed for each calendar day the work is not substantially complete by November 15, 2016. For this project substantial completion shall include completion and approval by City and Engineer of all roadway pavement, HMA overlay, driveways, sidewalks, backfill, and finish grading.

SUBLETTING

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

IV. 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.

V. ELECTRONIC DOCUMENTS AND FILES AVAILABILITY

A. Electronic contract documents are available by clicking on the "BIDS" link at www.snyder-associates.com and choosing the Knoxville 2016 Street Improvements 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:

2016 STREET IMPROVEMENTS

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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. The anticipated date for written Notice to Proceed date is March 9, 2016.

4. Work on the project shall be substantially completed by November 15, 2016. All surface restoration work shall be completed by May 31, 2017. Liquidated damages in the amount of Five Hundred Dollars ($500.00) will be assessed for each calendar day the work is not substantially complete by November 15, 2016. For this project substantial completion shall include completion and approval by City and Engineer of all roadway pavement, HMA overlay, driveways, sidewalks, backfill, and finish grading.

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.	Part C – Bid Schedule
2.	Identity of Subcontractors
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 _____, 2016.

_____
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	ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	2010-108-D-1	TOPSOIL, ON SITE	1326	CY	$	$
2	2010-108-E-0	EXCAVATION, CLASS 10	2060	CY	$	$
3	2010-108-G-0	SUBGRADE PREPARATION, POLYMER GRID	3590	SY	$	$
4	2010-108-G-0	SUBGRADE PREPARATION	12960	SY	$	$
5	2010-108-I-1	SUBBASE, SPECIAL BACKFILL	200	TON	$	$
6	2010-108-I-1	SUBBASE, MODIFIED	2036	CY	$	$
7	2010-999-9-9	EARTH SHOULDER FINISHING	47.45	STA	$	$
8	2010-108-L-0	COMPACTION TESTING	1	LS	$	$
9	3010-108-F-0	TRENCH COMPACTION TESTING	1	LS	$	$
10	4010-108-A-1	SANITARY SEWER GRAVITY MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 8 IN	337	LF	$	$
11	4040-108-A-0	SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	5675	LF	$	$
12	4040-108-C-0	SUBDRAIN CLEANOUT	12	EACH	$	$
13	4040-108-D-0	SUBDRAIN OUTLET AND CONNECTIONS, DR-303	14	EACH	$	$
14	6010-108-B-0	INTAKE, SW-501	6	EACH	$	$
15	6010-108-B-0	INTAKE, SW-507 MODIFIED	2	EACH	$	$
16	6010-108-B-0	INTAKE, SW-511	4	EACH	$	$
17	6010-108-C-0	DROP CONNECTION, SW-307	1	EACH	$	$
18	6010-108-E-0	MANHOLE ADJUSTMENT, MINOR	10	EACH	$	$
19	6010-108-E-0	INTAKE ADJUSTMENT, MINOR	6	EACH	$	$
20	6010-108-F-0	INTAKE ADJUSTMENT, MAJOR	3	EACH	$	$

ITEM	ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
21	6010-108-G-0	CONNECTION TO EXISTING MANHOLE	3	EACH	$	$
22	6010-108-H-0	REMOVE INTAKE	12	EACH	$	$
23	7010-108-A-0	PAVEMENT, PCC, 6 IN.	1865	SY	$	$
24	7010-108-A-0	PAVEMENT, PCC, 7 IN.	9027	SY	$	$
25	7010-108-A-0	DRIVEWAY, PAVED, PCC, 6 IN.	1173	SY	$	$
26	7010-108-I-0	PCC PAVEMENT SAMPLES AND TESTING	1	LS	$	$
27	7020-108-A-0	OVERLAY, HMA (1,000,000 ESAL)	750	TON	$	$
28	7020-108-H-0	HMA PAVEMENT SAMPLES AND TESTING	1	LS	$	$
29	7030-108-A-0	REMOVAL OF SIDEWALK	595	SY	$	$
30	7030-108-A-0	REMOVAL OF DRIVEWAY	993	SY	$	$
31	7030-108-E-0	SIDEWALK, PCC, 6 INCHES	554	SY	$	$
32	7030-108-G-0	DETECTABLE WARNINGS	336	SF	$	$
33	7040-108-A-0	FULL-DEPTH PATCHES	1233	SY	$	$
34	7040-108-G-0	MILLING	5746	SY	$	$
35	7040-108-H-0	PAVEMENT REMOVAL	11006	SY	$	$
36	9010-108-B-0	HYDRAULIC SEEDING, FERTILIZATION, AND MULCHING	4	ACRE	$	$
37	9010-108-E-0	WARRANTY	1	LS	$	$
38	9040-108-A-2	SWPPP MANAGEMENT	1	LS	$	$
39	9040-108-D-1	FILTER SOCKS, 6"	775	LF	$	$
40	9040-108-D-2	FILTER SOCKS, REMOVAL	775	LF	$	$
41	9040-108-O-1	STABILIZED CONSTRUCTION ENTRANCE	150	TON	$	$
42	9040-108-T-1	INLET PROTECTION DEVICE, WATTLE	31	EACH	$	$
43	9040-108-T-2	INLET PROTECTION DEVICE, MAINTENANCE	31	EACH	$	$
44	9999-999-9-9	TRAFFIC CONTROL	1	LS	$	$
45	9999-999-9-9	SAFETY CLOSURE	30	EACH	$	$
46	9999-999-9-9	ADJUSTMENT OF VALVE BOX	6	EACH	$	$
47	9999-999-9-9	P.C. CONCRETE PARKING BUMPER	31	EACH	$	$

ITEM	ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
48	9999-999-9-9	CLEANING AND PREPARATION OF BASE	0.4	MILE	$	$
49	9999-999-9-9	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	420	TON	$	$
50	9999-999-9-9	BNSF WORK ON RAILROAD RIGHT-OF-WAY AND FLAGGER PROTECTION	1	LS	$	$
51	9999-999-9-9	PATCHES BY COUNT	13	EACH		
52	11010-108-A	CONSTRUCTION SURVEY	1	LS	$	$
53	11020-108-A	MOBILIZATION	1	LS	$	$
54	11030-108-B	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT BASED	25.83	STA	$	$
55	11040-108-A	MAINTENANCE OF POSTAL SERVICE	1	LS	$	$
56	11040-108-B	MAINTENANCE OF SOLID WASTE COLLECTION	1	LS	$	$
57	11060-108-A	CONCRETE WASHOUT	1	LS	$	$

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 Pleasant Hill. 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 Pleasant Hill. 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;

2016 STREET IMPROVEMENTS

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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 Polk 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 _____, 2016.

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. 115.0718.01
DATE _____

CONTRACT

THIS CONTRACT, made and entered into at Knoxville, Iowa this _____ day of _____, 2016, 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 2016 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:

2016 STREET IMPROVEMENTS

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, storm intake replacement, subdrain construction, subgrade preparation, modified subbase, approximately 9,000 square yards of 7-inch PCC paving and 1,870 square yards of 6-inch PCC paving, pavement markings, traffic control, surface restoration, and miscellaneous associated 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. The anticipated date for written Notice to Proceed date is March 9, 2016. Work on the project shall be substantially completed by November 15, 2016. All surface restoration work shall be completed by May 31, 2017. Liquidated damages in the amount of Five Hundred Dollars ($500.00) will be assessed for each calendar day the work is not substantially complete by November 15, 2016. For this project substantial completion shall include completion and approval by City and Engineer of all roadway pavement, HMA overlay, driveways, sidewalks, backfill, and finish grading.

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	ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	2010-108-D-1	TOPSOIL, ON SITE	1326	CY	$	$
2	2010-108-E-0	EXCAVATION, CLASS 10	2060	CY	$	$
3	2010-108-G-0	SUBGRADE PREPARATION, POLYMER GRID	3590	SY	$	$
4	2010-108-G-0	SUBGRADE PREPARATION	12960	SY	$	$
5	2010-108-I-1	SUBBASE, SPECIAL BACKFILL	200	TON	$	$
6	2010-108-I-1	SUBBASE, MODIFIED	2036	CY	$	$
7	2010-999-9-9	EARTH SHOULDER FINISHING	47.45	STA	$	$
8	2010-108-L-0	COMPACTION TESTING	1	LS	$	$
9	3010-108-F-0	TRENCH COMPACTION TESTING	1	LS	$	$
10	4010-108-A-1	SANITARY SEWER GRAVITY MAIN, TRENCHED, POLYVINYL CHLORIDE PIPE (PVC), 8 IN	337	LF	$	$
11	4040-108-A-0	SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	5675	LF	$	$
12	4040-108-C-0	SUBDRAIN CLEANOUT	12	EACH	$	$
13	4040-108-D-0	SUBDRAIN OUTLET AND CONNECTIONS, DR-303	14	EACH	$	$
14	6010-108-B-0	INTAKE, SW-501	6	EACH	$	$
15	6010-108-B-0	INTAKE, SW-507 MODIFIED	2	EACH	$	$
16	6010-108-B-0	INTAKE, SW-511	4	EACH	$	$
17	6010-108-C-0	DROP CONNECTION, SW-307	1	EACH	$	$
18	6010-108-E-0	MANHOLE ADJUSTMENT, MINOR	10	EACH	$	$
19	6010-108-E-0	INTAKE ADJUSTMENT, MINOR	6	EACH	$	$
20	6010-108-F-0	INTAKE ADJUSTMENT, MAJOR	3	EACH	$	$

ITEM	ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
21	6010-108-G-0	CONNECTION TO EXISTING MANHOLE	3	EACH	$	$
22	6010-108-H-0	REMOVE INTAKE	12	EACH	$	$
23	7010-108-A-0	PAVEMENT, PCC, 6 IN.	1865	SY	$	$
24	7010-108-A-0	PAVEMENT, PCC, 7 IN.	9027	SY	$	$
25	7010-108-A-0	DRIVEWAY, PAVED, PCC, 6 IN.	1173	SY	$	$
26	7010-108-I-0	PCC PAVEMENT SAMPLES AND TESTING	1	LS	$	$
27	7020-108-A-0	OVERLAY, HMA (1,000,000 ESAL)	750	TON	$	$
28	7020-108-H-0	HMA PAVEMENT SAMPLES AND TESTING	1	LS	$	$
29	7030-108-A-0	REMOVAL OF SIDEWALK	595	SY	$	$
30	7030-108-A-0	REMOVAL OF DRIVEWAY	993	SY	$	$
31	7030-108-E-0	SIDEWALK, PCC, 6 INCHES	554	SY	$	$
32	7030-108-G-0	DETECTABLE WARNINGS	336	SF	$	$
33	7040-108-A-0	FULL-DEPTH PATCHES	1233	SY	$	$
34	7040-108-G-0	MILLING	5746	SY	$	$
35	7040-108-H-0	PAVEMENT REMOVAL	11006	SY	$	$
36	9010-108-B-0	HYDRAULIC SEEDING, FERTILIZATION, AND MULCHING	4	ACRE	$	$
37	9010-108-E-0	WARRANTY	1	LS	$	$
38	9040-108-A-2	SWPPP MANAGEMENT	1	LS	$	$
39	9040-108-D-1	FILTER SOCKS, 6"	775	LF	$	$
40	9040-108-D-2	FILTER SOCKS, REMOVAL	775	LF	$	$
41	9040-108-O-1	STABILIZED CONSTRUCTION ENTRANCE	150	TON	$	$
42	9040-108-T-1	INLET PROTECTION DEVICE, WATTLE	31	EACH	$	$
43	9040-108-T-2	INLET PROTECTION DEVICE, MAINTENANCE	31	EACH	$	$
44	9999-999-9-9	TRAFFIC CONTROL	1	LS	$	$
45	9999-999-9-9	SAFETY CLOSURE	30	EACH	$	$
46	9999-999-9-9	ADJUSTMENT OF VALVE BOX	6	EACH	$	$
47	9999-999-9-9	P.C. CONCRETE PARKING BUMPER	31	EACH	$	$
48	9999-999-9-9	CLEANING AND PREPARATION OF BASE	0.4	EACH	$	$

ITEM	ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
48	9999-999-9-9	CLEANING AND PREPARATION OF BASE	0.4	MILE	$	$
49	9999-999-9-9	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	420	TON	$	$
50	9999-999-9-9	BNSF WORK ON RAILROAD RIGHT-OF-WAY AND FLAGGER PROTECTION	1	LS	$	$
51	9999-999-9-9	PATCHES BY COUNT	13	EACH	$	$
52	11010-108-A	CONSTRUCTION SURVEY	1	LS	$	$
53	11020-108-A	MOBILIZATION	1	LS	$	$
54	11030-108-B	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT BASED	25.83	STA	$	$
55	11040-108-A	MAINTENANCE OF POSTAL SERVICE	1	LS	$	$
56	11040-108-B	MAINTENANCE OF SOLID WASTE COLLECTION	1	LS	$	$
57	11060-108-A	CONCRETE WASHOUT	1	LS	$	$

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 _____, 20___, hereinafter the "Contract" wherein said Contractor undertakes and agrees to construct the following described improvements:

2016 STREET IMPROVEMENTS

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, storm intake replacement, subdrain construction, subgrade preparation, modified subbase, approximately 9,000 square yards of 7-inch PCC paving and 1,870 square yards of 6-inch PCC paving, pavement markings, traffic control, surface restoration, and miscellaneous associated work.

and 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, attorneys 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 Polk 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.

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

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 _____ , 20____.

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 PROCEED

TO: _____ DATE: _____

_____ PROJECT: 2016 STREET IMPROVEMENTS

_____ KNOXVILLE, IOWA

_____ Project #115.0718.01

You are hereby notified to commence work in accordance with the Contract dated _____, 20 16 , and you are to begin construction work on or before _____, and you are to complete the work as follows: storm sewer intakes, grading, roadway, driveway, surface restoration and erosion control shall work on the project shall be substantially completed by November 15, 2016. All surface restoration work shall be completed by May 31, 2017. Liquidated damages in the amount of Five Hundred Dollars ($500.00) will be assessed for each calendar day the work is not substantially complete by November 15, 2016. For this project substantial completion shall include completion and approval by City and Engineer of all roadway pavement, HMA overlay, driveways, sidewalks, backfill, and finish grading.

Dated this __ day of ____ _____, 2016.

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 _____, 2016.

By: _____

Title: _____

SPECIAL PROVISIONS

FOR

PART 1 - GENERAL REQUIREMENTS

INDEX

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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 2016 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, labor, equipment, transportation, traffic control and associated work for the construction of the 2016 Street Improvements as described in the Official Publication.

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 over night 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
- Coordination and cooperation with railroad access, personal and scheduling
- Curb and pavement backfill

- Dewatering and handling storm water flow during construction
- Dust control measures
- Engineering fabric
- 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
- Sawcutting
- Site cleanup/surface restoration and seeding
- Temporary sheeting and shoring
- Watering of seeded and sodded areas
- Working backfill to reduce moisture content
- Special care to protect existing features to remain
- Special backfill and compaction around structures

SPECIAL PROVISIONS

FOR

PART 2 - SPECIAL CONSTRUCTION

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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) days in advance of closing any street or entrance for construction or interruption of water service.

D. The Contractor is expected to provide adequate personnel and equipment to perform work within specified time of construction.

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. 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.

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 72 hours 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 takes 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.

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. The contractor is responsible for maintaining the pollution prevention plan and providing weekly inspections.

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 2 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 shall 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 safety rules of the state and federal governments.

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 in 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.

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 pipe; corrugated exterior, smooth interior, corrugated PVC or corrugated PE as per Section 4040, 2.02. Subdrain pipe shall be slotted.

C. Backfill with porous backfill or 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 chimney seal.

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 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 seeding. 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.

C. All areas to be seeded shall be prepared, fertilized, seeded, mulched, staked, watered, maintained, and warranted in accordance with SUDAS Section 9010.

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 at the locations directed by the Engineer during construction and any locations needed to prevent soil erosion.

J. Seeding work completed after the specified seeding dates in SUDAS Section 9010, Part 2.02 shall be at the risk of the contractor to maintain.

SPECIAL PROVISIONS
FOR
WORK ON RAILROAD RIGHT-OF-WAY (BNSF RAILWAY)

1.01 General

1.01.01 The Contractor shall cooperate with the BNSF Railway Company, hereinafter referred to as "Railroad" where work is over, under, on, or adjacent to Railroad property, and/or right-of-way, hereafter referred to as Railroad property, during the work which shall not interfere with the movement of trains on Railroad property.

1.01.02 The Contractor's right to enter Railroad's property is subject to the absolute right of the Railroad to cause the Contractor's work on Railroad's property to cease if, in the opinion of Railroad, Contractor's activities create a hazard to Railroad's property, employees, and/or operations.

1.01.03 The Contractor shall notify the Engineer and also the Railroad's Manager Public Projects, Calvin Nutt, BNSF Railway Company, 80-44th Avenue NE, Minneapolis, MN 55421, telephone number: 763.782.3495; at least 10 calendar days before commencing work over, under, on, or adjacent to Railroad property. Contractor's notification to Railroad shall refer to Railroad's file numbers.

1.01.04 Falsework above tracks or excavations located, whichever is greater, within 25 feet of the nearest track or intersecting a slope from the plane of the top of rail on a 1.5 horizontal to 1 vertical slope beginning 11 feet from centerline of the nearest track, both measured perpendicular to center line of track, the Contractor shall furnish the Railroad five sets of working drawings showing details of construction affecting railroad tracks and property. The working drawings shall include the proposed method of installation and removal of falsework, shoring, or cribbing, not included in the contract plans and two sets of structural calculations of any, falsework, shoring, or cribbing. All calculations shall take into consideration railroad surcharge loading and shall be designed to meet American Railway Engineering and Maintenance-of-Way Association Coopers E-80 live loading standard. All drawings and calculations shall be stamped by a registered Professional Engineer licensed in the state of Iowa. The Contractor shall not begin work until notified by the Railroad that plans have been approved. The

Contractor shall use lifting devices such as, cranes and/or winches to place or to remove falsework over Railroad's tracks. The Contractor will not be relieved of responsibility for results obtained by the implementation of said approved plans.

1.01.05 The Railroad will cooperate with the Contractor such that the work may be handled and performed in an efficient manner.

1.02 Railroad Requirements

1.02.01 The Contractor shall comply with the rules and regulations of Railroad and the instructions of the Railroad's representatives in relation to the proper manner of protecting the tracks and property of Railroad and the traffic moving on such tracks, as well as the wires, signals, and other property of Railroad, its tenants or licensees, at and in the vicinity of the work area during construction.

1.02.02 The Contractor shall perform work in such manner and at such times that shall not endanger, delay, or interfere with the safe and timely operation of the tracks and property of Railroad and the traffic moving on such tracks, as well as the wires, signals, and other property of Railroad, its tenants, or licensees.

1.02.03 The Contractor shall take protective measures as are necessary to keep railroad facilities, including track ballast, free of sand, debris, and other foreign objects and materials resulting from the construction operations. Any damage to Railroad facilities resulting from Contractor's operations will be repaired or replaced by Railroad and the cost of such repairs or replacement shall be paid by the Contractor.

1.02.04 The Contractor shall notify the Railroad's Division Superintendent at Lincoln, NE, (telephone number: 402.458.7500), and provide blasting plans to the Railroad for review a minimum of 7 calendar days prior to conducting blasting operations adjacent to or on Railroad's property.

1.02.05 The Contractor shall abide by the following clearances during the course of construction:

- 25.0 feet horizontally from centerline of nearest track,
- 22.5 feet vertically above top of rail (Temporary Falsework Clearance may be reduced to 2l.5 feet subject to Railroad and Public Utilities Commission approval),
- 27.0 feet vertically above top of rail for electric wires carrying less than 750 V,
- 28.0 feet vertically above top of rail for electric wires carrying 750 V to 15 kV,
- 30.0 feet vertically above top of rail for electric wires carrying 15 kV to 20 kV, and
- 34.0 feet vertically above top of rail for electric wires carrying more than 20 kV.

1.02.06 Any desired infringement within clearances due to the Contractor's operations shall be submitted to the Railroad and Engineer and shall not be undertaken until approved in writing by the Railroad and Engineer. No extra compensation will be allowed in the event the Contractor's work is delayed pending approval.

1.02.07 In the case of impaired vertical clearance above top of rail, Railroad will have the option of installing tell-tales or other protective devices Railroad deems necessary for protection of Railroad employees or rail traffic. The cost of tell-tales or protective devices shall be borne by the Contractor.

1.02.08 The details of construction affecting the Railroad's tracks and property not included in the contract plans shall be submitted to the Railroad by the Engineer for approval before work is undertaken and this work shall not be undertaken until approved by the Railroad.

1.02.09 At other than public road crossings, the Contractor shall not move equipment or materials across Railroad's tracks until permission has been obtained from Railroad. Contractor shall obtain a temporary private crossing agreement from Railroad prior to moving equipment or materials across Railroad's tracks. Temporary private crossing shall be gated and locked at all times when not required

for use by the Contractor. Temporary private crossing for use of the Contractor shall be at the expense of the Contractor.

1.02.10 The Contractor, upon completion of the work, shall promptly remove from the premises of Railroad all of Contractor's tools, implements, and other materials, whether brought upon said premises by said Contractor or any subcontractor, employee, or agent of Contractor or of any subcontractor, and shall cause said premises to be left in a condition acceptable to the Railroad's representative.

1.03 Protection of Railroad Facilities and Railroad Flagger Services

The Railroad shall have the right to provide, at the expense of the Contractor, a flagman or flagmen or other protective services at any time during construction of that portion of the project on or near Railroad right-of-way when, in the opinion of the Railroad, it is necessary as a matter of protection and safety to track and train operations.

1.03.01 The Contractor shall give a minimum of 30 working days notice to the Railroad's Roadmaster, Jerrod Chapple (telephone number: 402.422.5249), in advance of when flagging services will be required.

1.03.02 Railroad flagger and protective services and devices will be required and furnished when Contractor’s work activities are located over, under, or within 25 feet measured horizontally from center line of the nearest track, and when cranes or similar equipment are positioned outside of 25 feet measured horizontally from the track center line that could foul the track in the event of tip over or other catastrophic occurrence, but not limited thereto, for the following conditions:

1.03.02a When in the opinion of the Railroad's Representative it is necessary to safeguard Railroad's employees, trains, engines, facilities, and property.

1.03.02b When any excavation is performed below the bottom of tie elevation, if, in the opinion of Railroad's representative, track or other Railroad facilities may be subject to movement or settlement.

1.03.02c When work, in any way interferes with the safe operation of trains at timetable speeds.

1.03.02d When any hazard is presented to Railroad track, communications, signal, electrical, or other facilities either due to persons, material, equipment, or blasting in the vicinity.

1.03.02e Special permission shall be requested from the Railroad before moving heavy or cumbersome objects or equipment which might result in making the track impassable.

1.03.03 Flagging services will be performed by qualified railroad flaggers. The cost per day for one flagger is approximately $800.00, which includes vacation allowance, paid holidays, Railroad and Unemployment Insurance, Public Liability and Property Damage Insurance, Health and Welfare Benefits, transportation, meals, lodging, and supervision, for an eight-hour basic day, with time and one-half or double time for overtime, rest days, and holidays. These rates are subject to increases which may result from Railroad Employees-Railroad Management negotiations or which may be authorized by Federal authorities. The Contractor will be billed on actual costs in effect at the time the work is performed.

1.03.03a Flagging crew generally consists of one employee. Additional personnel may be required to protect Railroad operations and property, if deemed necessary by the Railroad's Representative.

1.03.03b Each time a flagger is called the minimum period for billing will be the eight-hour basic day.

1.03.03c The cost of flagger services provided by the Railroad, as deemed necessary by the Railroad's representative, shall be borne by the Contractor.

1.03.03d Final payment to the Contractor will not be made by the Engineer until all flagging or other protective services and/or temporary grade crossing expenses have been billed and paid to the Railroad. Contractor shall provide to the Engineer monthly copies of invoices and evidence of payment to the Railroad.

1.03.04 Railroad will notify the Engineer and Contractor when non-compliance is reported by Railroad train crews or other Railroad employees. Contractor work performed without proper flagging services, when such flagging is required, will be subject to a $5,000.00 per day price adjustment to Contractor, and may result in the removal of Contractor by Railroad or Engineer from the project.

1.04 Contractor General Safety Requirements

1.04.01 Safety is of the utmost importance in performing work on the Railroad's property. The Railroad does not assume the control or responsibility of the Contractor to provide safe working conditions for the Contractor or subcontractors in requiring the Contractor to follow the Railroad's General Safety Requirements.

1.04.02 Work in the proximity of a railroad track is potentially dangerous. The Contractor, subcontractors, and invitees are governed by the following Safety Rules and General Safety Requirements while on Railroad property. The Contractor is responsible for enforcement of these Safety Rules and Requirements. The Railroad has the right to bar the Contractor, subcontractors, and invitees from working on Railroad property if the Railroad deems such persons are acting in an unsafe manner. If at any time the Engineer or Railroad are of the opinion that work of the Contractor is being or is about to be done or prosecuted without due regard and precaution for safety and security, the Engineer may suspend work until proper protective measures are adopted and provided.

1.04.03 Before beginning any task on Railroad property, a complete job safety briefing shall be conducted with all individuals involved with the task, and again if the task changes. If the task is within 25 feet of any track, the job briefing shall include the Railroad's flagger and include the procedures the Contractor will use to protect its employees, subcontractors, agents, or invitees from moving any equipment adjacent to or across any railroad tracks.

1.04.04 The Contractor shall ensure that prior to any employee entering Railroad property they have completed the safety orientation found on the following website: www.contractororientation.com. This course shall be completed annually for contracts exceeding one year.

1.04.04a Employees of the Contractor, subcontractors, agents, and invitees shall receive Safety Orientation from the Contractor's Safety Officer or a qualified Railroad representative prior to the start of any work. The Contractor's Safety Officer shall review the safety guidelines contained below to familiarize their employees with safety issues that exist when working in a railroad environment. This should be reviewed at least weekly, and with any new employee working on Railroad property. It is the responsibility of the Contractor's Supervisor and/or Safety Officer to instruct their employees on the Railroad's Safety guidelines and to require compliance with these guidelines.

1.04.05 Safety rules cannot be all-inclusive. Workers shall refrain from unsafe and improper practices, including the violation and/or disregard of written rules and regulations, and rules of common sense.

1.04.05a The use of alcoholic beverages, intoxicants, narcotics, marijuana, and other controlled substances by employees subject to duty or their possession or use while on duty or on Railroad's property is prohibited. Workers shall not report for duty under the influence of any alcoholic beverage, intoxicant, narcotic, marijuana, or other controlled substance, or medication, including

those prescribed by a doctor, that may in any way adversely affect their alertness, coordination, reaction, response, or safety.

1.04.05b Damage to Railroad property, or if a hazard is noticed on passing trains, shall be reported immediately to the Railroad's representative. A vehicle or machine which may come in contact with a track, signal equipment, or structure (bridge) could result in a train derailment and shall be reported by the quickest means possible to the Railroad representative and to the Railroad's Network Operations Center at (telephone number: 800.832.5452). Local emergency numbers shall be obtained from the Railroad representative prior to the start of any work and shall be posted at the job site.

1.04.05c All persons are prohibited from having firearms or other deadly weapons, including knives with a blade in excess of three inches, in their possession while working on Railroad's property, except those authorized to have them in the performance of their duties or those given special permission.

1.04.05d When working on Railroad's property, the Contractor's employees shall wear eye protection meeting ANSI 287.1, however additional eye protection shall be provided to meet specific job situations such as welding, grinding, burning, etc.; hearing protection which affords enough attenuation to give protection from noise levels that will be occurring on the job site; protective headgear meeting ANSI 289.1; and above-the-ankle, lace-up, hardened toe safety boots with a defined heel, all approved by OSHA. Only waist length shirts with sleeves and trousers covering the entire leg shall be worn. Flare-legged trouser bottoms shall be tied to prevent catching.

High visibility retroreflective orange vests are required in certain locations as specified by the Railroad's representative. Particular attention to footing and the use of proper footwear is essential when working in snow or other slippery conditions. Hearing protection, fall protection, and respirators shall be worn as required by State and Federal regulations.

1.04.05e Workers shall not work nearer than 25 feet to the centerline of any track without proper flag/work protection provided by the Railroad, unless the track is protected by track bulletin and work has been authorized by the Railroad. If flag/work protection is provided, every employee shall know: (1) who the Railroad flagger is, and how to contact the flagger, (2) limits of the flag/work protection, (3) the method of communication to stop and resume work, and (4) entry into flag/work limits when designated. Workers or equipment entering flag/work limits that were not previously job briefed shall notify the flagger immediately, and be given a job briefing if working at less than 25 feet from center line of track.

1.04.05f Contractor shall not pile or store any materials, or equipment closer than 25 feet to the centerline of the nearest Railroad track.

1.04.05g Machines or vehicles shall not be left unattended with the engine running. Parked machines or equipment shall be in gear with brakes set and if equipped with blade, pan, or bucket, they shall be lowered to the ground. All machinery and equipment left unattended on Railroad right-of-way shall be left inoperable and secured against movement. Heavy equipment operating within Railroad right-of-way shall be equipped with audible back-up warning devices. If in the opinion of the Railroad the Contractor's equipment is unsafe for use on Railroad right-of-way, Contractor shall remove such equipment from Railroad right-of-way.

1.04.05h Machinery or equipment shall not be stored or left temporarily near a highway/rail at-grade crossing in a manner to interfere with the sight distances of motorists approaching the crossing. Prior to beginning work, the Contractor shall establish a storage area with concurrence of the Railroad's representative.

1.04.05i Contaminates shall not be discharged on Railroad property. Should any discharge occur, the Contractor shall report by the quickest means possible to the Railroad's representative. (This includes oils, diesel fuel, gasoline, etc.).

1.04.05j Workers shall not create and leave any conditions at the work site that would interfere with water drainage.

1.04.05k Safeguards and safety signs shall be kept in place and in good condition. It is the responsibility of the Contractor to provide same.

1.04.05l Before excavating, it shall be ascertained by the Contractor if there are any underground pipe lines, electric wires, or cables, including fiber optic cable systems that either cross or run parallel with the track which are located within the project's work area. Excavating on right-of-way could result in damage to buried cables resulting in delay to railroad traffic, including disruption of service to users resulting in business interruptions involving loss of revenue and profits. Before any excavation commences, the Contractor shall provide written notification to the Railroad's Signal Supervisor and Roadmaster at least 10 working days. Underground and overhead wires shall be considered high voltage and dangerous until verified with the company having ownership of the line. The Contractor shall notify any other companies that have underground utilities in the area and arrange for the location of all underground utilities before excavating.

1.04.05m The Contractor shall cease work and the Railroad shall be notified immediately before continuing excavation in the area if obstructions are encountered that do not appear on drawings. If the obstruction is a utility, and the owner of the utility can be identified, then the owner should also be notified immediately. If there is any doubt about the location of underground cables or lines of any kind, no work shall be performed until the exact location has been determined. There will be no exceptions to these instructions.

1.04.05n Excavations, regardless of depth shall be shored where there is any danger to tracks, structures, or employees.

1.04.05o Excavations, holes, or trenches on the Railroad's property shall be covered, guarded, and/or protected when not being worked on. When leaving work site areas at night and over weekends, the areas shall be secured and left in a condition that will ensure that railroad employees who might be working in the area are protected from all hazards. All excavations shall be back filled as soon as possible.

1.04.05p All power line wires shall be considered dangerous and of high voltage unless informed to the contrary by proper authority. For lines rated 50 kV or below, minimum clearance between the lines and any part of the equipment or load shall be 10 feet. For lines rated over 50 kV, minimum clearance between the line and any part of equipment or load shall be 10 feet plus 0.4 inches for each 1 kV over 50 kV. If the capacity of the line is not known, minimum clearance of 20 feet shall be maintained. The Contractor shall designate a person to observe clearance of the equipment and give a timely warning for all operations where it is difficult for an operator to maintain the desired clearance by visual means.

1.04.05q When Contractor employees are required to work on the Railroad property after normal working hours or on weekends, the Railroad's representative shall be notified. A minimum of two employees shall be present at all times.

1.04.05r In all cases of doubt or uncertainty, the safest course shall be taken.

1.05 Personal Injury Reporting

1.05.01 The Railroad is required to report certain injuries as a part of compliance with Federal reporting requirements. Any personal injury sustained by an employee of the Contractor,

subcontractor, or invitees while on the Railroad's property shall be reported immediately (by phone, mail if unable to contact in person) to the Railroad's representative. The Injury Report Form contained herein shall be completed and sent by Fax to the Railroad (fax number: 817.352.7595), no later than the close of shift on the date of the injury.

1.06 Indemnification.
As used in this section, Railroad includes other railroad companies using the Railroad's property at or near the location of the Contractor's work and their officers, agents, and employees; "Loss" includes loss, damage, claims, demands, actions, causes of action, penalties, costs, and expenses of whatsoever nature, including court costs and attorneys' fees, which may result from the following:

- Injury to or death of persons whomsoever (including the Railroad's officers, agents, and employees, the Contractor's officers, agents, and employees, as well as any other person); and
- Damage to or loss or destruction of property whatsoever (including Contractor property, damage to the roadbed, tracks, equipment, or other property of the Railroad, or property in its care or custody)

1.06.01 To the fullest extent permitted by law, the Contractor shall release, indemnify, defend, and hold harmless the Railroad and its affiliated companies, partners, successors, assigns, legal representatives, officers, directors, shareholders, employees and agents (collectively, "indemnitees") for, from and against any and all claims, liabilities, fines, penalties, costs, damages, losses, liens, causes of action, suits, demands, judgments and expenses (including, without limitation, court costs, attorneys' fees and costs of investigation, removal and remediation and governmental oversight costs) environmental or otherwise (collectively, "liabilities") of any nature, kind or description of any person or entity directly or indirectly arising out of, resulting from or related to (in whole or in part):

(a) this specification, including, without limitation, its environmental provisions,

(b) any rights or interests granted pursuant to this specification,

(c) occupation and use of the premises by the Contractors, or anyone directly or indirectly employed by them, or anyone they control or exercise control over,

(d) the environmental condition and status of the premises caused by or contributed to by the Contractor, or

(e) any act or omission of the Contractor.

Even if such liabilities arise from or are attributed to, in whole or in part, any negligence of any indemnitee. The only liabilities with respect to which the Contractor's obligation to indemnify the indemnitees does not apply are liabilities to the extent proximately caused by the gross negligence, or willful misconduct of an indemnitee.

1.06.02 The Contractor shall now and forever waive any and all claims, regardless whether based on strict liability, negligence or otherwise, that the Railroad is an "owner", "operator", "arranger", or "transporter" with respect to the improvements for the purposes of CERCLA or other environmental laws.

1.06.03 The Contractor shall to the fullest extent permitted by law indemnify and hold harmless the indemnitees against and assume the defense of any liabilities asserted against or suffered by any indemnitee under or related to the Federal Employers' Liability Act (FELA) whenever employees of grantee or any of its agents, invitees, contractors claim or allege that they are employees of any indemnitee or otherwise. This indemnity shall also extend, on the same basis, to FELA claims based on actual or alleged violations of any federal, state or local laws or regulations, including but not limited to the safety appliance act, the boiler inspection act, the occupational health and safety act, the resource conservation and recovery act, and any similar state or federal statute.

1.07 Insurance Form and Submittal
Before the contract is awarded, Contractor shall submit to the Department a certificate of insurance evidencing the coverage. The certificate shall identify the insurance company firm name and address, Contractor firm name, policy period, type of policy, limits of coverage, and scope of work covered (including project number). Policies shall provide no less than 30 calendar days prior written notice to Contracting Authority and Railroad of cancellation or material change in policies. Following award of the Contract, the Contractor shall submit a certificate of insurance evidencing the foregoing coverage to the Railroad and Contracting Authority (if other than the Department), and a certified, true, and complete copy of policy or policies to the Contracting Authority and Railroad. Upon request from either the Contracting Authority or Railroad, a certified duplicate original of any required certificate or policy shall be furnished at no cost to the Contracting Authority or Railroad. The Contractor shall not begin work upon or over Railroad's ROW until the Railroad has notified the Engineer that such insurance provisions are in accordance with the contract documents. The insurance shall be kept in full force and effect during the performance of work and thereafter until the Contractor removes all tools, equipment, and material from Railroad's property and cleans the premises in a manner reasonably satisfactory to Railroad.

1.07.01 The Contractor shall procure and maintain, from beginning to end of construction work on or about Railroad property, the following insurance coverage types and limits:

1.07.01a Railroad Protective Insurance
The Contractor shall provide for and on behalf of the Railroad, Railroad Protective Insurance as stated in the Code of Federal Regulations, Title 23, Part 646, and any revisions thereto issued by the Federal Highway Administration for damages due to bodily injury or death of persons, and injury to or destruction of property resulting from the operations of the Contractor, subcontractors, or their agents, officers, or employees on this project.

Railroad Protective Liability Insurance is required if there is any construction or demolition activities. This insurance shall name only the Railway as the Insured with coverage of at least $5,000,000 per occurrence and $10,000,000 in the aggregate. The policy shall be issued on a standard ISO form CG 00 35 10 93 and include the following:

- Endorsed to include the Pollution Exclusion Amendment (ISO form CG 28 31 10 93) and on ISO form CG 28 31 10 93.
- Endorsed to include the Limited Seepage and Pollution Endorsement.
- Endorsed to include Evacuation Expense Coverage Endorsement.
- No other endorsements restricting coverage may be added.
- The original policy shall be provided to the Engineer and Railway prior to performing work.

If available and in lieu of providing a Railroad Protective Liability Policy, the Contractor may participate in the Railroad's Blanket Railroad Protective Liability Insurance Policy available to the Contractor. The limits of coverage are the same as above.

1.07.01b Commercial General Liability Insurance
This insurance shall contain broad form contractual liability with a combined single limit of a minimum of $5,000,000 each occurrence and an aggregate limit of at least $10,000,000. Coverage shall be purchased on ISO occurrence form CG 00 01 12 04 or a substitute form providing equivalent coverage. This policy shall also contain the following endorsements, which shall be indicated on the certificate of insurance:

- Contractual Liability Railroads ISO Form CG 24 17 10 01 (or a substitute form providing equivalent coverage) showing "BNSF Railway Property" as the designated job site.
- Designated Construction Project(s) General Aggregate Limit ISO Form CG 25 03 03 97 (or a substitute form providing equivalent coverage) showing the project on the form schedule.

1.07.01c Business Automobile Insurance
This insurance shall be written on ISO Form CA 00 01 (or a substitute form providing equivalent

coverage) and shall contain a combined single limit of at least $5,000,000 per occurrence. The policy shall contain the following endorsements, which shall be stated on the certificate of insurance:

- Coverage for Certain Operations in Connection with Railroads ISO Form CA 20 70 10 01 (or a substitute form providing equivalent coverage) showing “BNSF Railway Property” as the designated job site
- Motor Carrier Act Endorsement-Hazardous materials clean up (MCS-90), if required by law

1.07.01d Workers Compensation and Employers Liability Insurance
Workers Compensation and Employers Liability insurance including coverage for, but not limited to:

- Contractor’s statutory liability under the worker’s compensation laws of the state(s) in which the work is to be performed. If optional under State law, the insurance shall cover all employees anyway.
- Employers’ Liability (Part B) with limits of at least $500,000 each accident, $500,000 by disease policy limit, $500,000 by disease each employee.

1.07.01e Umbrella or Excess Insurance
If the Contractor utilizes umbrella or excess policies, these policies shall “follow form” and afford no less coverage than the primary policy.

1.07.01f Other Requirements
Where allowable by law, all policies (applying to coverage listed above) shall contain no exclusion for punitive damages and certificates of insurance shall reflect that no exclusion exists.

Any insurance policy shall be written by a reputable insurance company acceptable to Railroad or with a current Best's Guide Rating of A- and Class VII or better, and authorized to do business in the State of Iowa. If any portion of the operation is to be subcontracted by Contractor, Contractor shall require that the subcontractor shall provide and maintain insurance coverage as set forth herein, naming Railroad as an additional insured, and shall require that the subcontractor shall release, defend and indemnify Railroad to the same extent and under the same terms and conditions as Contractor is required to release, defend and indemnify Railroad herein. Failure to provide evidence as required by this section shall entitle, but not require, Railroad to remove contractor from or deny entry of Contractor to Railroad property immediately. Acceptance of a certificate that does not comply with this section shall not operate as a waiver of Contractor’s obligations hereunder. The fact that insurance (including, without limitation, self-insurance) is obtained by Contractor shall not be deemed to release or diminish the liability of Contractor including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by Railroad shall not be limited by the amount of the required insurance coverage.

Contractor agrees to waive its right of recovery against Railroad for all claims and suits against Railroad except in those instances of gross negligence or intentional misconduct. In addition, its insurers, through policy endorsement, to waive their right of subrogation against Railroad for all claims and suits. The certificate of insurance shall reflect waiver of subrogation endorsement. Contractor shall waive its right of recovery, and its insurers also waive their right of subrogation against Railroad for loss of its owned or leased property or property under its care, custody, or control. Contractor's insurance policies through policy endorsement, shall include wording which states that the policy shall be primary and non-contributing with respect to any insurance carried by Railroad. The certificate of insurance shall reflect that the above wording is included in evidenced policies.

All policy(ies) required above (excluding Workers Compensation and employers Liability), shall include a severability of interest endorsement and shall name Railroad as an additional insured using ISO Additional Insured Endorsements CG 20 26, and CA 20 48 (or substitute forms providing equivalent Coverage). The coverage provided to Railroad as additional insured shall, to

the extent provided under ISO Additional Insured Endorsement CG 20 26, and CA 20 48 provide coverage for the Railroad's negligence whether sole or partial, active or passive, and shall not be limited to Contractor's liability under the indemnity provisions contained above. Severability of interest and naming Railroad as an additional insured shall be indicated on the certificate of insurance.

Contractor will not be allowed to self-insure without the prior written consent of Railroad. If granted, any deductible, self-insured retention, or other financial responsibility for claims shall be covered directly by Contractor in lieu of insurance. All Railroad liabilities that would otherwise, in accordance with the provisions of this specification, be covered by Contractor's insurance shall be covered as if Contractor elected not to include a deductible, self-insured retention or other financial responsibility for claims.

Contractor represents that this specification has been thoroughly reviewed by Contractor's insurance agent(s)/broker(s), who have been instructed by Contractor to procure the insurance coverage required by the contract documents. Allocated Loss Expense shall be in addition to all policy limits for coverages referenced above.

For purposes of this section, Railroad shall mean "Burlington Northern Santa Fe Corporation", "BNSF Railway" and the subsidiaries, successors, assigns, and affiliates of each.

1.07.02 Insurance policy(ies) and a copy of the Certificate of Liability shall be sent to BNSF Risk Management, BNSF Railway Company, 2500 Lou Menk Drive, Building AOB-1, Ft. Worth, Texas 76131. Copy(ies) shall also be sent to the Iowa DOT, Office of Accounting, 800 Lincoln Way, Ames, IA 50010.

1.08 Company Operations.

Contractor shall be advised that trains or equipment are expected on any track, at any time, in either direction. Contractor shall become familiar with train schedules in this location and times when truck traffic increases due to intermodal transfers and structure its bid assuming intermittent track windows in this period, as defined below. All railroad tracks within and adjacent to the work are active and rail traffic over these tracks shall be maintained throughout the contract. Activities may include intermodal transfers, through moves and switching moves to local customers. Railroad traffic and operations may occur continuously throughout the day and night on these tracks and shall be maintained at all times. The Contractor shall coordinate and schedule the work so construction activities do not interfere with Railroad operations. Work windows for this contract shall be coordinated with the Engineer. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1.08.01 Conditional Work Window

A period of time that Railroad operations have priority over construction activities. When construction activities may occur on or adjacent to railroad tracks within 25 feet of the nearest track, a Railroad flagger will be required. At the direction of the Railroad flagger, upon approach of a train, and when trains are present, tracks shall be cleared (i.e., no construction equipment, materials, or personnel within 25 feet, or as directed by the Railroad, from the tracks). Conditional Work Windows are available for the contract.

1.08.02 Absolute Work Window

A period of time that construction activities are given priority over Railroad operations. During this time frame the designated tracks will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window the tracks or signals shall be completely operational for train operations and all Railroad and Federal Railroad Administration requirements, codes, and regulations for operational tracks shall be met. In the situation where the operating tracks or signals have been affected, the Railroad will perform inspections of the work prior to placing back into service. Railroad flaggers will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

1.08.03 Requests

Contractor shall make requests in writing for both Absolute and Conditional Work Windows, at least two weeks in advance of the work for which the request is being made. The request shall include:

- Exactly what the work entails.
- Days and hours the work will be performed.
- Exact location of work, and proximity to the tracks.
- Type of window requested and amount of time requested.
- The Contractor's designated contact person.

Contractor shall provide written notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work will be performed within 25 feet of any track center line.

1.09 Method of Measurement and Basis of Payment

Railroad Protective Liability Insurance for BNSF Railway Company will be paid for as a Lump Sum bid item. The Contractor will be paid the Lump Sum bid item price within 30 calendar days after receipt of a signed contract, provided that all necessary certificates of insurance have been submitted

NON-EMPLOYEE PERSONAL INJURY DATA COLLECTION

INFORMATION REQUIRED TO BE COLLECTED PURSUANT TO FEDERAL REGULATION. IT SHOULD BE USED FOR COMPLIANCE WITH FEDERAL REGULATIONS ONLY AND IS NOT INTENDED TO PRESUME ACCEPTANCE OF RESPONSIBILITY OR LIABILITY.

1. Accident City/St: _____ 2. Date: _____ Time: _____.

County: _____3. Temperature: _____4. Weather: _____.
(if non-BNSF location)

5. Social Security #: _____.

6. Name (last, first, mi):_____.

7. Address: Street: _____ City: _____ St: ____ Zip: _____.

8. Date of Birth: _____ and/or Age: _____ Gender: ____.
(if available)

9. (a) Injury: _____ (b) Body Part: _____.
(i.e. (a) Laceration (b) Hand)

10. Description of accident (To include location, action, result, etc.):

11. Treatment:
   - ☐ First Aid Only
   - ☐ Required Medical Treatment
   - ☐ Other Medical Treatment

12. Dr. Name: _____ 13. Date: _____.

14. Dr. Address:
Street: _____ City: _____ St: ____ Zip: _____.

15. Hospital Name:

16. Hospital Address:
Street: _____ City: _____ St: ___ Zip: _____.

17. Diagnosis:

APPENDIX A

TEAM *Services*

Geotechnical and Construction Material Consultants

September 10, 2015

Snyder & Associates
2727 SW Snyder Blvd.
P.O. Box 1159
Ankeny, IA 50023

Attn: Andy Burke, PE

Re: Subsurface Exploration
Knoxville 2016 Pavement Improvements
Knoxville, Iowa
TEAM No. 1-3797

Dear Mr. Burke:

We have completed the subsurface exploration for the Knoxville 2016 Pavement Improvements project in Knoxville, Iowa. The accompanying geotechnical report presents the findings of the subsurface exploration and our geotechnical recommendations concerning the design and construction of the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service to you in any way, please do not hesitate to contact us.

Sincerely yours,
TEAM Services

Stacy G. Brocka, PE
Sr. Geotechnical Engineer

Robert E. Doss, PE
Principal 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. Stacy G. Brocka, P.E. License Number 14203 Date: 9/10/15 My license renewal date is December 31, 2015. Pages covered by this seal: All Pages.

717 SE 6th Street • Des Moines, IA 50309 • ph: 515-282-8818 • fax: 515-282-8741 • email: staff@teamservices.com
Des Moines ▪ Fort Dodge ▪ Cedar Rapids ▪ Mason City ▪ Davenport ▪ Spirit Lake ▪ Dubuque ▪ Sioux Falls ▪ Council Bluffs ▪ Waterloo

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PROJECT INFORMATION

Project information has been provided by Mr. Andy Burke, PE of Snyder & Associates through email correspondence with our Mr. Bob Doss, P.E. The project will consist of mitigation of segments of certain streets in Knoxville, Iowa. Street mitigation will be in the form of full-depth reconstruction or HMA overlay.

SITE CONDITIONS

The project will be located on the following streets consisting of Gebhardt Street, West Jackson Street, South 1st Street, East Main Street, West and East Robinson Street, West Jefferson Street, and West and East Washington Street in Knoxville, Iowa. The streets were either surfaced with Portland cement concrete or hot mixed asphalt.

FIELD EXPLORATION

A total of 26 borings and cores were conducted at this site to depths of 2.4 to 7.3 feet below existing grades on August 19 and 25 through 28, 2015. The approximate core locations were provided on a site plan by Snyder and Associates and were staked in the field by TEAM Services referencing the provided site plan. The approximate locations of the borings/cores are shown on the attached Core Location Plan as well as on the Photo Logs in the Appendix. The locations of the borings/cores should be considered accurate only to the degree implied by the means and methods used to define them.

Cores of the existing pavement were obtained all locations. The cores were obtained by diamond bit coring procedures. The cores were labeled and the thicknesses of the pavement sections were measured in the laboratory.

In order to gain additional information on subsurface conditions beneath the pavement sections, hand auger borings were performed. The borings were advanced by manually twisting a sharpened steel auger into the ground. The soils encountered were identified, in the field, from cuttings brought to the surface by the augers.

The strength of the soils was estimated with a static cone penetrometer in some of the borings within about 2 feet of the bottom of the pavement sections. The static cone penetrometer is a dual rod system which enables direct measurement of the cone stress (tip resistance) of the cone located at the end of the penetrometer. As the static cone is pushed into the ground, the tip resistance readings are recorded per 6 to 12 inch increments. The tip resistance reading can then be converted into a shear strength of the soil which is then converted into an estimated bearing capacity of the materials encountered.

The soil consistency was also measured with a cone penetrometer at some locations. The conical point was first seated to penetrate any loose cuttings, then driven additional increments of 1¾ inches with blows from a 15-pound hammer falling 20 inches. The number of hammer blows required to achieve this penetration was recorded, and is an index to the soil strength and consistency.

Field logs of the borings were prepared by the drill crew. These logs included visual classifications of the materials encountered during drilling, as well as the driller's interpretation of the subsurface conditions between samples. Final Boring Logs included with this report represent an interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

LABORATORY TESTING

Based on the driller's field records and examination of the samples in the laboratory, a soil testing program was developed to collect more information about the soil conditions at the site. The following is a brief description of the specific tasks completed for this project.

Natural Moisture Content -- The natural moisture content of selected samples was determined in general accordance with ASTM D 2216. The moisture content of the soil is the ratio, expressed as a percentage, of the weight of water in a given mass of soil to the weight of the soil particles. The results are presented on the Boring Logs at the depths from which the samples were obtained.

SUBSURFACE CONDITIONS

Subsurface conditions encountered during this exploration are indicated on the individual Boring Logs. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows.

Pavement sections were encountered at the ground surface in all boring locations. The pavement sections consisted of just Portland cement concrete or hot mixed asphalt overlying Portland cement concrete. The Portland cement concrete thicknesses ranged from about 4.5 to 10 inches while the hot mixed asphalt ranged from about 1 to 3.5 inches thick. Photos of the pavement sections are provided on the Photo Logs in the Appendix.

Crushed rock with fines was encountered beneath the pavement sections in Borings 2, 7 and 9. The thickness of the crushed rock ranged from 6.5 inches to 4.5 feet.

Fill and possible fill consisting of lean clay, sandy lean clay, and fine to medium sand was encountered beneath the pavement sections or crushed rock in Borings 3, 5, 6, 9, 10, 16, 18, 20, 21, 22, and 23. The lower boundary of the fill and possible fill was encountered near depths of 1.5 to 1.8 feet below existing grades. Most of the above borings terminated in the fill or possible fill near depths of 2.4 to 2.9 feet below existing grades.

Possible local alluvium consisting of lean clay was encountered beneath the pavement sections or possible fill in Borings 4 and 9. These two borings terminated in the possible local alluvium near depths of about 2.5 to 2.8 feet below existing grades.

Loess (wind-blown) soils were encountered beneath the pavement sections, crushed rock or fill in 15 of the borings. The loess consisted of lean clay and lean to fat clay soils. These 15 borings terminated in the loess near depths ranging from about 2.5 to 7.3 feet below existing grades.

Residual soils consisting of lean clay and lean to fat clay was encountered beneath the crushed rock or possible fill in Borings 11 and 23. These two borings terminated on the residual soil near depths of 2.5 to 5.5 feet below existing grades.

The above descriptions provide a general summary of the subsurface conditions encountered. The attached Boring Logs contain detailed information recorded at each boring location. These Boring Logs represent our interpretation of the field logs based on engineering examination of the field samples. The lines designating the interfaces between various strata represent approximate boundaries, and the transition between strata may be gradual. It should be noted that the soil conditions will vary between the boring locations.

GROUNDWATER CONDITIONS

The borings were monitored while drilling for the presence and level of groundwater accumulation. Groundwater levels observed in the borings are noted on the Boring Logs.

During drilling operations no groundwater seepage was observed in any of the borings. These groundwater level observations provide an approximate indication of the groundwater conditions existing on this site at the time of drilling operations. Longer-term observations may be necessary for a groundwater level to develop and stabilize in the borehole. Longer-term monitoring in cased holes or piezometers would be required for a more accurate evaluation of the groundwater conditions at this site.

Fluctuation of groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, surface drainage, subsurface drainage, site topography, irrigation practices, ground cover (pavement or vegetation), and other factors not evident at the time the borings were conducted.

Normally, the highest groundwater levels occur in late winter and spring time while the lowest levels occur in late summer and fall time. The fluctuation of the groundwater levels should be considered when developing the design and construction plans for this project.

CONCLUSIONS AND RECOMMENDATIONS

Site Preparation

Site preparation should begin with removal of the pavement sections and any loose, soft, or otherwise unsuitable materials where full reconstruction of the street will be performed. Any site strippings and any near surface soils with organics could be used for landscaping purposes in non-critical areas where support for pavements is not required.

After stripping and pavement removal, the exposed grade should be proofrolled and inspected by TEAM Services personnel. Proofrolling should be performed at the lowest cut grade. Proofrolling should be conducted with a fully loaded tandem axle dump truck having a minimum gross weight of 25 tons. Any unsuitable soils identified during this process should be removed and replaced with suitable engineered compacted and tested fill which meets or exceeds the Class 1 Construction Application requirement in Table A in the following **Fill Placement** report section.

It should be noted that initial subgrade preparation for some soil types, such as very moist or softer soils, may not be suitable under repeated heavy construction vehicle loads and may require stabilization to greater depths or stabilization with fly ash, cement or lime. The use of crushed rock with or without geogrid could also be considered in-lieu of the additional stabilization methods. Contract allowances should be made for some remedial work at the site related to subgrade preparation. The amount of such work cannot be defined at this time; therefore, the owner should be informed of these cost variables.

Fill Placement

Fill and backfill placed for support of the proposed pavement sections should consist of approved materials which are free of organic matter and debris. Brick, concrete, rocks or other solid pieces with a maximum dimension of 3 inches or larger should not be placed in the newly placed fill sections. We recommend that low-plasticity cohesive soil or granular soil be used for general fill placement. By our definition, low-plasticity cohesive soil would have a liquid limit of 45 or less and a plasticity index of 25 or less. In our opinion, most of the on-site soils appear to meet these criteria and can be used as newly placed engineered compacted and tested fill. Any off site potential borrow materials should be evaluated by TEAM Services prior to their use as engineered compacted and tested fill.

The following Table A lists recommended minimum compaction requirements for cohesive and cohesionless fill materials for specific applications. For low-plasticity (CL and ML) cohesive soils, moisture contents within a range of -2 to +3 percent of the material's optimum moisture content (as determined by Standard Proctor ASTM D 698) are necessary to achieve the desired fill qualities for general grading and utility backfill while granular soils should be placed within 3 percent of the material’s optimum moisture content.

TABLE A
RECOMMENDED DEGREE OF COMPACTION GUIDELINES

Construction Application		Standard Proctor (ASTM D698) Cohesive Soil	Standard Proctor (ASTM D698) Cohesionless Soil	Relative Density (ASTM D4253 & D4254) Cohesionless Soil [1]
Class 1	Subgrade preparation for foundations, pavements and other critical backfill areas	95%	98%	70%
Class 2	Backfill adjacent to structures not supporting other structures or pavements. Minor subsidence possible.	90%	93%	45%
Class 3	Backfill in non-critical areas. Moderate subsidence possible.	85%	88%	20%

1. 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. Proper compaction of cohesive soils can be achieved with sheepsfoot or pneumatic type compactors within the above moisture content ranges. The soils should be placed in a maximum loose thickness of 12 inches or at a thickness compatible with the equipment being utilized. Sufficient density tests should be performed on each lift of engineered compacted fill placed to verify that adequate compaction is achieved. Care should be taken to prevent unnecessary disturbance of subgrade soils. Disturbed areas should be removed and replaced with engineered compacted and tested fill in accordance with the recommendations of this report.

Upon completion of the grading operations, care should be taken to maintain the subgrade moisture content prior to construction of pavement sections. If the subgrade should become desiccated, frozen or otherwise disturbed, the affected material should be removed or these materials should be scarified, moistened, recompacted and retested prior to concrete placement. As a general guideline, fills which dry to a moisture content less than 2/3 of their optimum moisture content as determined by the Standard Proctor Test (ASTM D 698) in their upper 2 inches are candidates for reconditioning as described above.

Temporary Excavation Support

All excavations should comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches" and other applicable codes. This document states that excavation safety is the responsibility of the contractor. Reference to this OSHA requirement should be included in the job specifications.

Construction Dewatering

During construction activities, care should be taken to maintain positive drainage at the site to ensure that drainage is directed away from any excavations. Where construction is performed during wet weather periods or where groundwater is anticipated to be high during construction, we recommend that construction groundwater control be established prior to excavating the final 2 feet of soils. 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.

If groundwater control is lost during construction, disturbance of the upper few inches to few feet below grade is possible in the soils at the site. In these circumstances, it will be necessary to reestablish groundwater control and remove the disturbed soils. TEAM Services should be consulted regarding the extent of remedial action which is necessary.

Pavement Subdrains Considerations

Based on the drainage characteristics of the on-site soils, higher moisture content of some of the soils and potential seasonal high groundwater levels, subsurface drainage would be beneficial along the streets. Depending upon irrigation practices, a shallow subsurface drainage system directly behind the curb may be necessary to intercept this surface water prior to saturating the pavement subgrade. Subsurface drainage may be accomplished with installation of drain lines as discussed in the following paragraphs. We are available to field evaluate the necessity for subsurface drainage as suspect areas become evident during construction.

An acceptable subsurface drainage system should consist of a 4-inch-diameter, perforated, high-density polyethylene (HDPE), corrugated pipe placed in a trench with a minimum width of 10 inches. The pipe should be centered horizontally within the trenches and the perforations should be sized to prevent infiltration of fine grained soils. The trenches should be backfilled with free draining granular material meeting the criteria of IDOT Specification No. 4131 (Gradation No. 29) or IDOT Spec No. 4115. Cleanouts should be provided on approximate 300 to 400 feet intervals to allow periodic flushing of the drain lines.

Subdrains should be placed at either side of the street. The subdrains should be placed approximately 42 inches below the bottom of the pavement section and sloped to drain to a suitable gravity outfall, such as a storm sewer.

Constructing flexible or rigid pavement sections on a drainable granular subbase can improve long-term performance and lower maintenance costs of the pavement sections. Therefore, consideration may be given to implementing the granular subbase connected to subdrains.

If utilized, the granular base should be relatively free-draining meeting the requirements of IDOT Specification No. 4121 (Gradation No. 12) or IDOT Specification No. 4123 (Gradation No. 14). The granular subbase should be compacted in accordance to Class I Construction Application requirement given in Table A in the **Fill Placement** section of the report. The free-draining granular subbase should be at least 6 inches thick and be hydraulically connected to subdrains.

Pavement Subgrade Preparation

We expect the soils which will be encountered to support the pavement sections will consist of fill, possible fill, local alluvium, and loess soils. In order to provide satisfactory pavement performance, it is important that the subgrade support be relatively uniform with no abrupt changes in the subgrade support. Therefore, we recommend that the prepared subgrade depth be at least 12 inches deep after fine grading or trimming and extend 2 feet beyond the edge of the pavements.

It is recommended that the pavement subgrade area be cut to design subgrade level and that the exposed subgrade be scarified to a minimum depth of 12 inches, moisture conditioned (if needed), and compacted. We recommend that reworked existing soils and newly placed engineered compacted non-expansive cohesive soils be placed and compacted in accordance with the **Fill Placement** section of this report. Suitable engineered compacted cohesive subgrade would provide a design support capability equivalent to a CBR value of 3 or a modulus of subgrade reaction value of 100 pounds per cubic inch.

Where construction traffic is required on the proposed subgrade, the subgrade should be proofrolled immediately prior to pavement placement with a fully loaded, tandem axle dump truck. Areas that yield should be removed and replaced with engineered compacted and tested fill.

Surface drainage around the pavement sections is important to long-term pavement performance. Curbs should be backfilled as soon as possible, once adequate pavement strength is achieved. The backfill should be compacted and sloped to prevent water from ponding and infiltrating under the pavement. Water allowed to pond adjacent to the pavement could saturate the subgrade and contribute to premature pavement deterioration.

It should be noted that initial subgrade preparation for some soil types, such as very moist or softer soils, may not be suitable under repeated heavy construction vehicle loads and may require stabilization to greater depths or stabilization with fly ash, cement or lime. The use of crushed rock with or without geogrid could also be considered in-lieu of the additional stabilization methods. Contract allowances should be made for some remedial work at the site related to subgrade preparation. The amount of such work cannot be defined at this time; therefore, the owner should be informed of these cost variables.

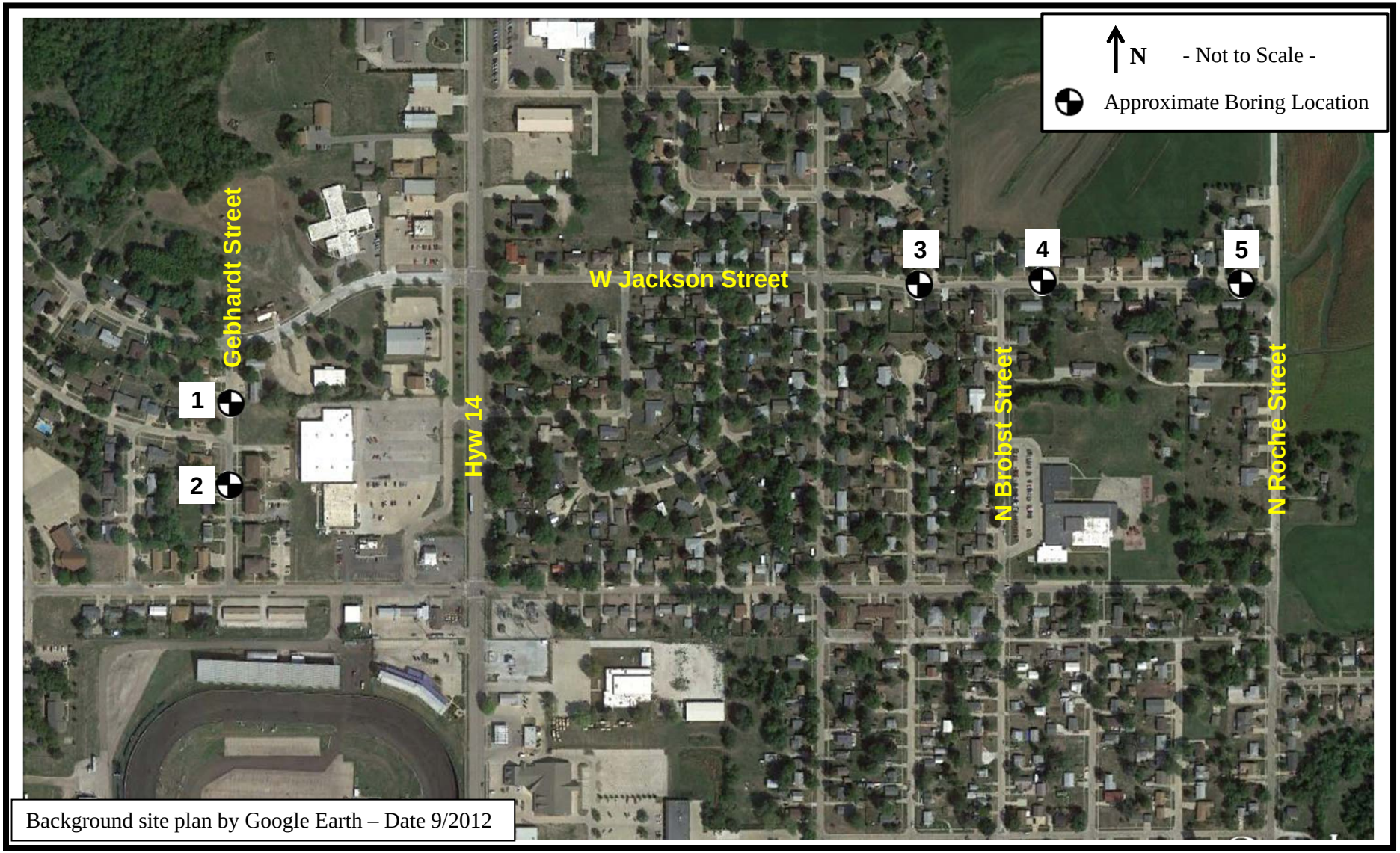
QUALIFICATION OF REPORT

Our evaluation of subsurface conditions has been based on our understanding of the site and project information and the data obtained in our exploration. The general subsurface conditions

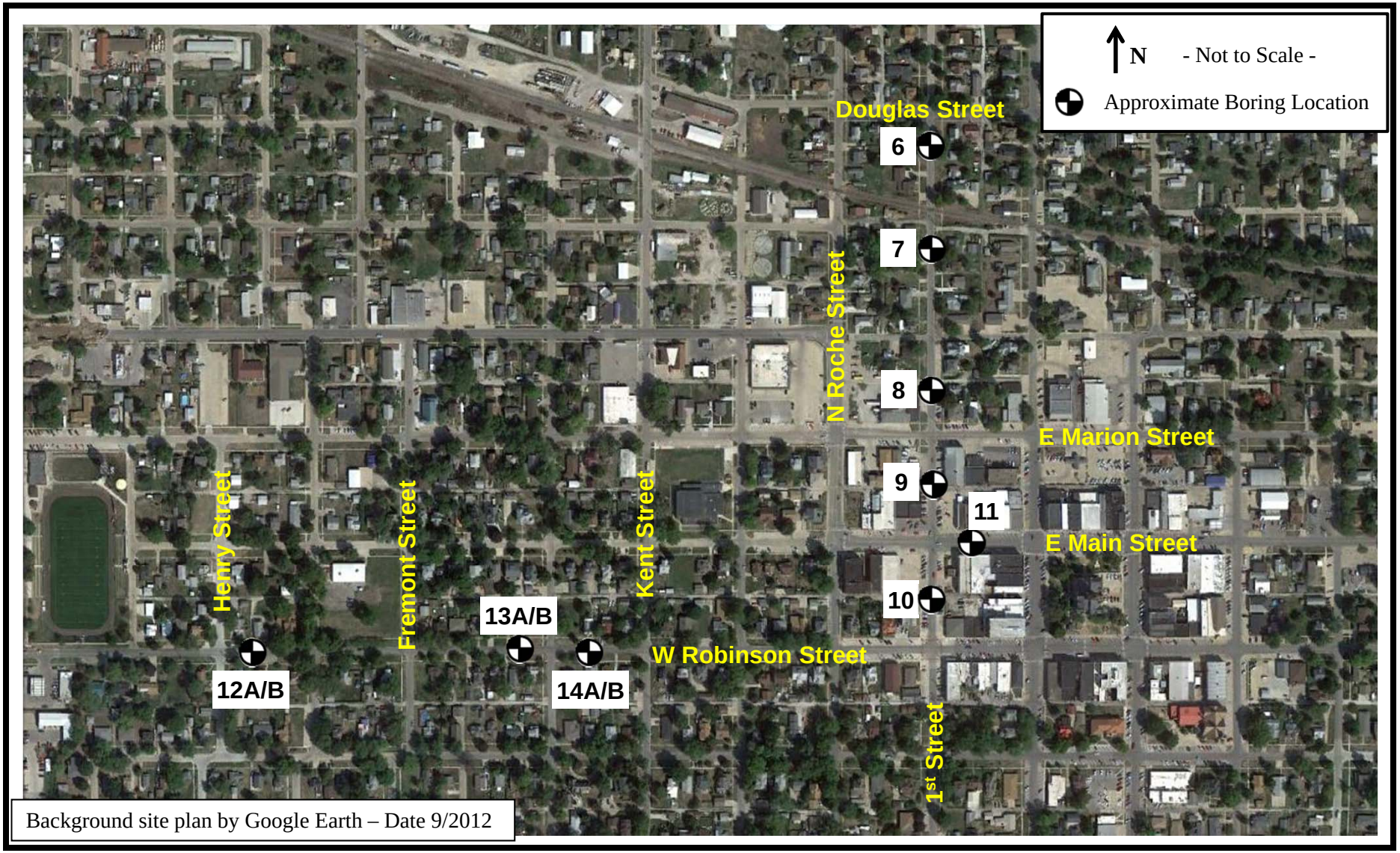
utilized in our evaluation have been based on interpolation of subsurface data between the borings. In evaluating the boring data, we have examined previous correlations between soil properties and bearing pressures observed in soil conditions similar to those at your site. The discovery of any site or subsurface conditions during construction which deviate from the data outlined in this exploration should be reported to us for our evaluation. The assessment of site environmental conditions or the presence of pollutants in the soil, rock, and groundwater of the site was beyond the scope of this exploration.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so that comments can be provided regarding the interpretation and implementation of the geotechnical recommendations in the design and specifications.

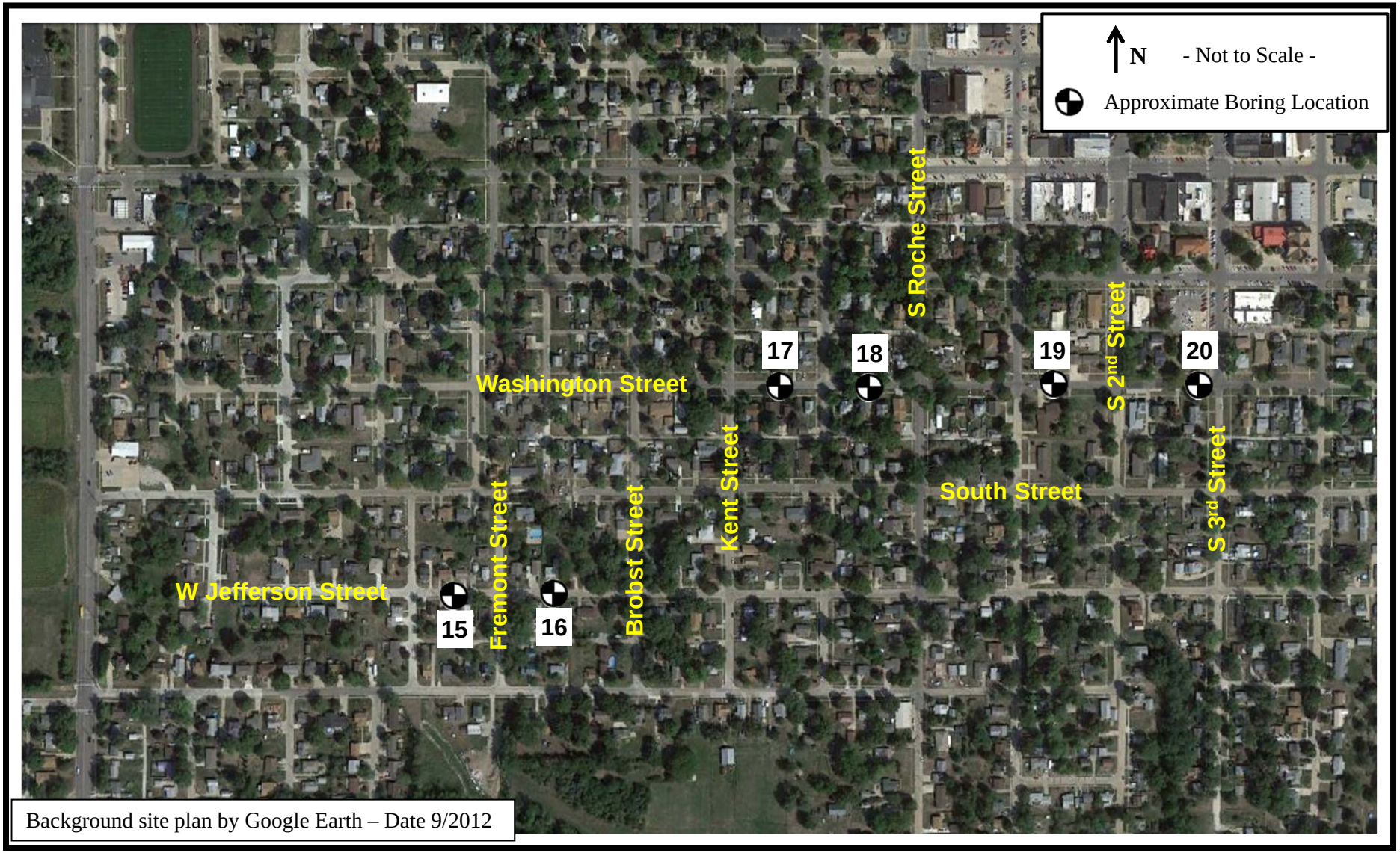
This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty is provided. In the event that any changes in the nature, design, or location 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.



TEAM *Services*, Inc. **717 SE 6th Street** **Des Moines, IA 50309**	**2016 Pavement Improvements** Knoxville, Iowa BORING PLAN	Project No. 1-3797 September 10, 2015

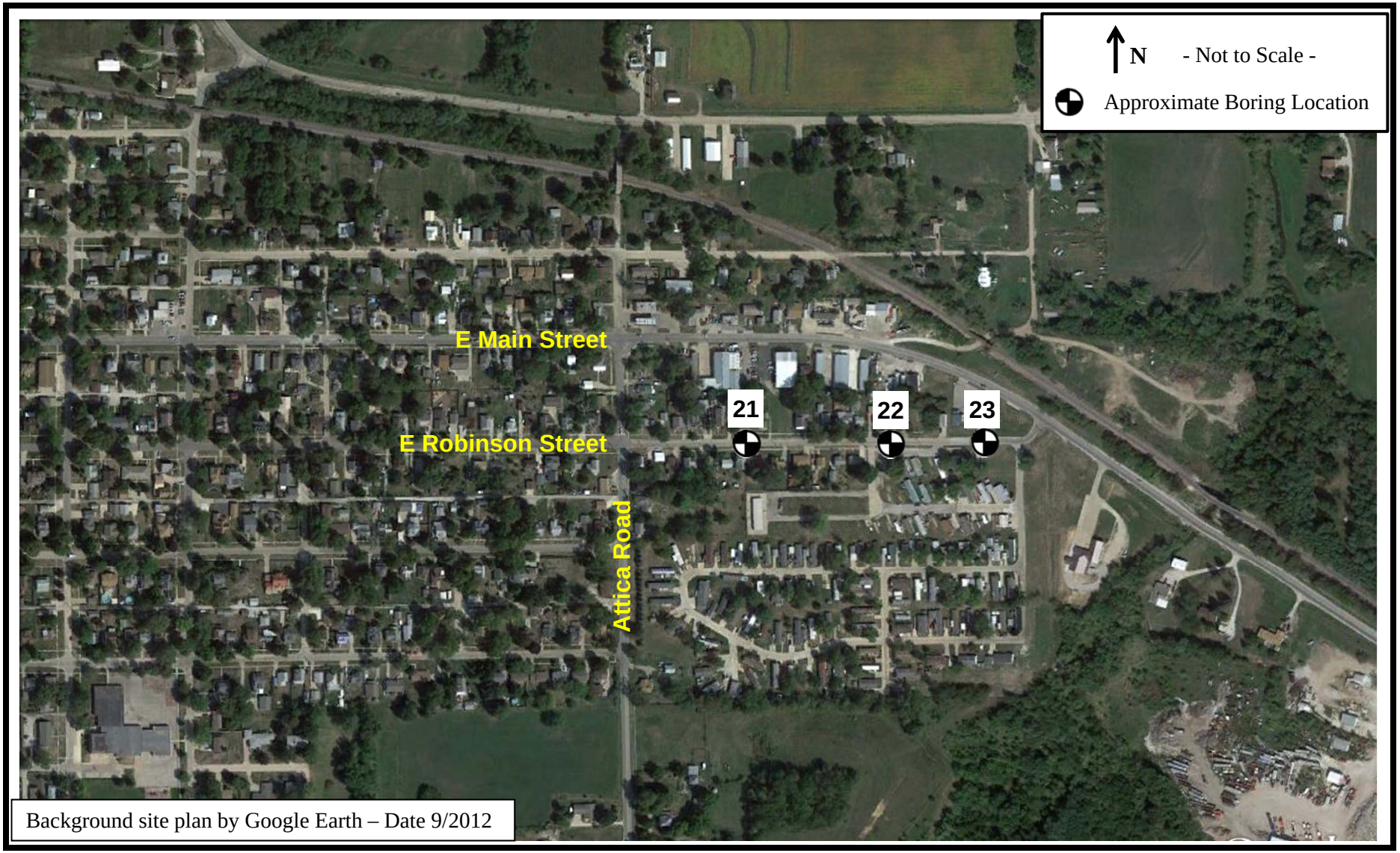


TEAM *Services*, Inc. **717 SE 6th Street** **Des Moines, IA 50309**	**2016 Pavement Improvements** Knoxville, Iowa BORING PLAN	Project No. 1-3797 September 10, 2015



Background site plan by Google Earth – Date 9/2012

TEAM *Services*, Inc. **717 SE 6th Street** **Des Moines, IA 50309**	**2016 Pavement Improvements** Knoxville, Iowa BORING PLAN	Project No. 1-3797 September 10, 2015



TEAM *Services*, Inc. **717 SE 6th Street** **Des Moines, IA 50309**	**2016 Pavement Improvements** Knoxville, Iowa BORING PLAN	Project No. 1-3797 September 10, 2015

PHOTO LOG

Core 1 Looking North

Core 2 Looking South

PHOTO LOG

Core 3 Looking East

Core 4 Looking East

PHOTO LOG

Core 5 Looking East

Core 6 Looking South

PHOTO LOG

Core 7 Looking South

Core 8 Looking South

PHOTO LOG

Core 9 Looking South

Core 9 (Log) Looking South

PHOTO LOG

Core 10 Looking South

Core 11 Looking East

PHOTO LOG

Core 12 Looking East

Core 13 Looking West

PHOTO LOG

Core 14 Looking East

Core 15 Looking East

PHOTO LOG

Core 16 Looking West

Core 17 Looking West

PHOTO LOG

Core 18 Looking East

Core 19 Looking East

PHOTO LOG

Core 20 Looking East

Core 21 Looking East

PHOTO LOG

Core 22 Looking East

Core 23 Looking East

LOG OF BORING NO. 1

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (6.5"+/-) 0.5								
	Loess -- Lean CLAY, olive brown and gray		CL	1	HA - SC	6	29.8		
			CL	2	HA - SC	7	29.2		
	2.5 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-19-15**		
BORING COMPLETED	**8-19-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 2

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (8.25"+/-) 0.7								
	Crushed rock with fines, gray 1.7			1	HA - SC	6	13.0		
	Loess -- Lean to Fat CLAY, gray 2.7		CL-CH	2	HA - SC	8	25.4		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-19-15**		
BORING COMPLETED	**8-19-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 3

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (5.25"+/-) 0.4								
	Fill -- Lean CLAY, dark olive brown and yellowish brown		CL	1	HA - SC	11			
	-- becomes very dark brown, gray and olive after 1.438' 2.4		CL	2	HA - SC	16	25.3		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 4

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (5.5"+/-) 0.5								
	Possible Local Alluvium -- Lean CLAY, trace organic matter, very dark gray and yellowish brown		CL	1	HA - SC	11	32.1		
	-- becomes very dark brown after 1.458' 2.5		CL	2	HA - SC	12	32.9		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 5

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (6.25"+/-) 0.5								
	Fill -- Sandy Lean CLAY, trace organic matter, olive brown and gray		CL	1	HA - SC	13	19.0		
	-- becomes olive brown, very dark brown and yellowish brown after 1' 2.5		CL	2	HA - SC	15	24.4		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 6

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.25"+/-)								
	PCC (4.75"+/-) 0.6								
	Possible Fill -- Lean CLAY, trace organic matter, dark olive brown and olive brown 1.6		CL	1	HA - SC	7	33.3		
	Possible Fill -- Lean CLAY, trace sand and gravel, dark olive brown and olive brown 2.6		CL	2	HA - SC	14	28.4		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-26-15**		
BORING COMPLETED	**8-26-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 7

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (3"+/-) PCC (6.75"+/-)								
	0.8 Crushed rock with fines, gray			1	HA		5.8		
				2	HA		6.5		
	5.3 **Loess** -- Lean CLAY, light olive brown								
			CL	3	HA		28.0		
	7.3 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-28-15**		
BORING COMPLETED	**8-28-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 8

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.1 HMA (1.25"+/-) PCC (6.5"+/-) 0.6								
	Loess -- Lean CLAY, very dark gray		CL	1	HA - DC	4 4 5			
	-- becomes dark olive brown after 1.625'		CL	2	HA - DC	4 4 5	39.4		
	2.6								
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-28-15**		
BORING COMPLETED	**8-28-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 9

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.3 HMA (3.5"+/-)								
	Crushed rock with fines (6.5"+) 0.8								
	Possible Fill -- Sandy Lean CLAY, trace gravel, very dark gray 1.8		CL	1	HA - DC	2 4 7	21.7		
	Local Alluvium -- Lean CLAY, very dark gray 2.8		CL	2	HA - DC	4 4 5	32.8		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-28-15**		
BORING COMPLETED	**8-28-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 10

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.3 HMA (3"+/-)								
	PCC (4.5"+/-) 0.6								
	Possible Fill -- Lean CLAY, dark brown, trace organic matter 1.6		CL	1	HA - DC	3 5 7	29.9		
	Possible Fill -- Lean CLAY, trace sand, dark olive brown 2.6		CL	2	HA - DC	4 5 6	34.3		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-28-15**		
BORING COMPLETED	**8-28-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 11

OWNER	ARCHITECT/ENGINEER
SITE: **Knoxville, Iowa**	PROJECT: **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.1 HMA (1.5"+/-) PCC (10"+/-) 1.0								
	Crushed gravel with fines, reddish brown 4.5			1	HA		9.0		
	Residual Soil -- Lean CLAY, trace sand and gravel, reddish brown and light olive brown 5.5	5	CL	2	HA		28.7		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-28-15**		
BORING COMPLETED	**8-28-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 12A

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2"+/-) PCC (7"+/-) 0.8								
	Loess -- Lean CLAY, light olive brown		CL	1	HA - DC	3 6 6	34.4		
			CL	2	HA - DC	3 4 5			
	2.8 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-27-15**		
BORING COMPLETED	**8-27-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 12B

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.25"+/-) PCC (6.5"+/-) 0.7								
	Loess -- Lean CLAY, light olive brown		CL	1	HA - DC	3 3 4	28.7		
			CL	2	HA - DC	3 4 4	33.1		
	2.7 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-27-15**		
BORING COMPLETED	**8-27-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 13A

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.75"+/-)								
	PCC (6.75"+/-) 0.8								
	Loess -- Lean CLAY, olive brown		CL	1	HA - DC	3 7 7	32.4		
			CL	2	HA - DC	6 6 6	27.8		
	2.8 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	8-27-15		
BORING COMPLETED	8-27-15		
RIG		FOREMAN	TEAM
APPROVED	SGB	JOB #	1-3797

LOG OF BORING NO. 13B

OWNER	ARCHITECT/ENGINEER
SITE: **Knoxville, Iowa**	PROJECT: **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.1 HMA (1"+/-) 0.6 PCC (5.75"+/-)								
	Loess -- Lean CLAY, olive brown		CL	1	HA - DC	3 5 5	29.3		
	-- becomes olive brown and yellowish brown after 1.562'		CL	2	HA - DC	4 4 4	25.7		
	2.6 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-27-15**		
BORING COMPLETED	**8-27-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 14A

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.5"+/-)								
	PCC (7"+/-) 0.8								
	Loess -- lean CLAY, trace sand and gravel, olive brown		CL	1	HA - DC	3 3 4	29.7		
			CL	2	HA - DC	4 5 5	32.8		
	2.8 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	8-27-15		
BORING COMPLETED	8-27-15		
RIG		FOREMAN	TEAM
APPROVED	SGB	JOB #	1-3797

LOG OF BORING NO. 14B

OWNER	ARCHITECT/ENGINEER
SITE: **Knoxville, Iowa**	PROJECT: **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES AVG BLOWS / INCREMENT *	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.1 HMA (1"+/-)								
	0.6 PCC (5.75"+/-)								
	Loess -- Lean CLAY, light olive brown and olive brown		CL	1	HA - DC	3 5 4	28.8		
			CL	2	HA - DC	3 4 4	32.3		
	2.6 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Dynacone Standard Penetration*

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-28-15**		
BORING COMPLETED	**8-28-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 15

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (6.5"+/-) 0.5								
	Loess -- Lean CLAY, light olive brown and yellowish brown		CL	1	HA - SC	13	23.0		
			CL	2	HA - SC	12	26.2		
	2.5 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 16

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (6"+/-) 0.5								
	Possible Fill -- Lean CLAY, with gravel and sand, very dark brown and dark olive brown		CL	1	HA - SC	25+	27.3		
			CL	2	HA - SC	25+	23.2		
	2.5 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 17

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.25"+/-) PCC (6.75"+/-) 0.8								
	Loess -- Lean CLAY, light olive brown		CL	1	HA - SC	18	32.1		
			CL	2	HA - SC	18	35.4		
	2.8 Bottom of boring	5							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-26-15**		
BORING COMPLETED	**8-26-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 18

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.3 HMA (3.25"+/-)								
	PCC (7.5"+/-) 0.9								
	Possible Fill -- Fine to medium SAND, light olive brown		SP	1	HA - SC	25+	7.0		
			SP	2	HA - SC	25+	5.3		
	2.9 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-26-15**		
BORING COMPLETED	**8-26-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 19

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.5"+/-)								
	PCC (5.5"+/-)								
	0.7 **Loess** -- Lean CLAY, light olive brown and yellowish brown		CL	1	HA - SC	7	29.8		
			CL	2	HA - SC	7	33.5		
	2.7 Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-26-15**		
BORING COMPLETED	**8-26-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 20

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	0.2 HMA (2.25"+/-)								
	PCC (5"+/-) 0.6								
	Possible Fill -- Lean CLAY, trace sand, dark olive brown 1.6		CL	1	HA - SC	17	34.2		
	Loess -- Lean CLAY, light olive brown 2.6		CL	2	HA - SC	17	27.7		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	8-26-15		
BORING COMPLETED	8-26-15		
RIG		FOREMAN	TEAM
APPROVED	SGB	JOB #	1-3797

LOG OF BORING NO. 21

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (6"+/-) 0.5								
	Possible Fill -- Sandy Lean CLAY, trace gravel, very dark brown		CL	1	HA - SC	23	20.3		
	-- becomes dark olive brown after 1.5' 2.5		CL	2	HA - SC	20	26.0		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	8-25-15		
BORING COMPLETED	8-25-15		
RIG		FOREMAN	TEAM
APPROVED	SGB	JOB #	1-3797

LOG OF BORING NO. 22

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (5.75"+/-) 0.5								
	Possible Fill -- Lean CLAY, trace sand and gravel, very dark brown 1.5			1	HA - SC	12	33.6		
	Loess -- Lean CLAY, light olive brown 2.5		CL	2	HA - SC	14	40.0		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-58**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**

LOG OF BORING NO. 23

OWNER	ARCHITECT/ENGINEER
SITE **Knoxville, Iowa**	PROJECT **Knoxville 2016 Pavement Improvements**

GRAPHIC LOG	DESCRIPTION	DEPTH (FT.)	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES STATIC CONE READING	TESTS MOISTURE, %	TESTS DRY DENSITY PCF	TESTS UNCONFINED STRENGTH PSF
	PCC (6"+/-) 0.5								
	Possible Fill -- Lean CLAY, trace organic matter, olive brown and gray 1.5		CL	1	HA - SC	15	27.6		
	Residual Soil -- Lean to Fat CLAY, olive brown 2.5		CL-CH	2	HA - SC	17	27.6		
	Bottom of boring								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES: IN-SITU, THE TRANSITION MAY BE GRADUAL.

Calibrated Hand Penetrometer *

WATER LEVEL OBSERVATIONS		
WL	▽	▼
WL		
WL		

TEAM Services, Inc.

BORING STARTED	**8-25-15**		
BORING COMPLETED	**8-25-15**		
RIG		FOREMAN	**TEAM**
APPROVED	**SGB**	JOB #	**1-3797**