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The ***Standard Construction Specifications and Standard Details for City of Pueblo, Colorado,*** adopted March 28, 2005, are hereby included by reference and all provisions thereof shall be applicable. By submitting a bid, the Contractor acknowledges possession of a copy of said document.

MANDATORY SUBMITTALS

Deliver all submittals to: City of Pueblo
Purchasing Office
230 S. Mechanic Street
Pueblo, Colorado 81003

Clearly mark on the outside of the package:

Project No: **17-005 (CI1703)**
Project Name: **Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction**

Deadline: February 16, 2017 at 10:30:00am MST

Submittals	**Submitted**
NOTE: ALL submittals requiring a signature MUST be signed.	
1. Bid Bond	☐
2. Acknowledgement of Affirmative Action Plan Requirement (signed)	☐
3. P.E.R.A. Questionnaire (signed)	☐
4. Any Addenda acknowledgement sheets *	☐
5.	☐
6.	☐

***(Available on City's website, www.pueblo.us/purchasing or the Rocky Mountain E-Purchasing System (RMEPS) website. It is the proposers' responsibility to verify whether any Addenda were issued prior to submitting the proposal)

The undersigned having carefully read the contract documents for the above-referenced project, acknowledges that all required submittals are included in this bid proposal. **In addition to those items listed above, Bidders must turn in all of Article 1 (A, B, C, D, E, F, G, & H), all of Article 2 – Special Provisions, all of Article 2A-1 – Labor Provisions and all of Article 3 – General Provisions.** Failure to do so may result in rejection of the submittal.

Firm Name: _____

Business Address: _____

_____

Signature: _____

Printed Name: _____

Title: _____

E-mail Address: _____

Office Phone: _____ Fax: _____ Cell Phone: _____

ACKNOWLEDGEMENT OF
AFFIRMATIVE ACTION PLAN REQUIREMENT

Project No: 17-005 (CI1703)

Project Name: Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction

In accordance with Article 2A-1: Labor Provision, Section 3: Municipal Contract Provisions, the bidding company named below hereby acknowledges that it has a written affirmative action plan which declares that the Contractor and its Subcontractor(s) do not discriminate on the basis of race, color, religion, creed, national origin, sex or age. I further understand that the written program must be submitted to the City of Pueblo Director of Purchasing (and the applicable federal agency in the case of federally funded projects) within 10 days of the award of contract.

Neither the receipt by City of this completed form, nor of any Affirmative Action Plan submitted by any bidder, contractor or subcontractor, shall constitute any determination by City of the adequacy of any Affirmative Action Plan.

Signature:_____

Printed Name:_____

Title:_____

Company: _____

Date:_____

COLORADO PUBLIC EMPLOYEES RETIREMENT ASSOCIATION
SUPPLEMENTAL QUESTIONNAIRE TO BE ANSWERED BY
ANY BUSINESS PERFORMING SERVICES FOR THE CITY OF PUEBLO

Pursuant to section 24-51-1101(2), C.R.S., salary or other compensation from the employment, engagement, retention or other use of a person receiving retirement benefits (Retiree) through the Colorado Public Employees Retirement Association (PERA) in an individual capacity or of any entity owned or operated by a PERA Retiree or an affiliated party by the City of Pueblo to perform any service as an employee, contract employee, consultant, independent contractor, or through other arrangements, is subject to employer contributions to PERA by the City of Pueblo. Therefore, as a condition of contracting for services with the City of Pueblo, this document must be completed, signed and returned to the City of Pueblo:

(a) Are you, or do you employ or engage in any capacity, including an independent contractor, a PERA Retiree who will perform any services for the City of Pueblo? Yes____, No____. (If you answered "no" please proceed to signature section at bottom of this page.)

(b) If you answered "yes" to (a) above, please answer the following question: Are you an individual, sole proprietor or partnership, or a business or company owned or operated by a PERA Retiree or an affiliated party? For purposes of responding this question, an "affiliated party" includes (1) any person who is the named beneficiary or co- beneficiary on the PERA account of the PERA Retiree; (2) any person who is a relative of the PERA Retiree by blood or adoption to and including parents, siblings, half-siblings, children, and grandchildren; (3) any person who is a relative of the PERA Retiree by marriage to and including spouse, spouse's parents, stepparents, stepchildren, stepsiblings, and spouse's siblings; and (4) any person or entity with whom the PERA Retiree has an agreement to share or otherwise profit from the performance of services for the City of Pueblo by the PERA Retiree other than the PERA Retiree's regular salary or compensation. Yes____, No____.

If you answered "yes" please state which of the above entities best describes your business:
_____.

(c) If you answered "yes" to both (a) and (b), you agree to reimburse the City of Pueblo for any employer contribution required to be paid by the City of Pueblo to PERA for salary or other compensation paid to you as a PERA Retiree or paid to any employee or independent contractor of yours who is a PERA Retiree performing services for the City of Pueblo. You further authorize the City of Pueblo to deduct and withhold all such contributions from any moneys due or payable to you by the City of Pueblo under any current or future contract or other arrangement for services between you and the City of Pueblo.

Please provide the name, address and social security number of each such PERA Retiree. If more than two, please attach a supplemental list.

Name	Address	Social Security Number

Name	Address	Social Security Number

Failure to accurately complete, sign and return this document to the City of Pueblo may result in you being denied the privilege of doing business with the City of Pueblo.

Company Name: _____

Authorized Signature: _____ Title: _____

Printed Name: _____ Date: _____

Rev. Nov 2016

Pueblo Regional Building Department
830 N Main St. Suite 100
Pueblo CO 81003
719-543-0002 fax 719-543-0062

www.prbd.com

To Whom It May Concern:

The law requires that licensed contractors perform all construction work. It is a violation of the law to perform construction without a license and it is equally a violation to hire someone to perform construction unless the party hired is a licensed contractor or is on the payroll of the company hiring, as an employee.

Basic license categories are General Contractor A, B, and C; Electrical Contractor, Plumbing Contractor, and HVAC Contractor A and C. In addition, there are Contractor D single trade licenses, which are the type used by the majority of sub-contractors. Those trades requiring licenses include, but not limited:

Awning Installation
Demolition
Elevators
Framing
Masonry
Asphalt Paving
Utility Cont. Fire Main Systems
Utility Cont. Water
Sign Erection
Structural Steel
Mechanical A Unlimited
Mechanical Gas Work
Mechanical C Sheet Metal
Journeyman Refrigeration
Plumbing Swimming Pool
Plumbing Water Connected appliances
Concrete
Drywall
Excavation
House Moving
Ornamental Iron
Roofing
Plumbing Lawn Sprinkler
Utility Cont. Sewer
Siding
Stucco
U Occupancy (garages,sheds, etc.)
Mechanical C Limited (any 2 of 3)
Mechanical C Refrigeration
Journeyman Gas Fitter
Journeyman Sheet Metal
Utility Cont. Sewer & Water

If you have any question feel free to contact our office at 719-543-0002.

PLEASE NOTE

SALES AND/OR USE TAX INFORMATION

CITY OF PUEBLO SALES OR USE TAX -

The Contractor and any Subcontractors shall pay all applicable City of Pueblo Sales or Use taxes. All General Contractors and Subcontractors are mandated to be licensed with the City of Pueblo Sales Tax Office. Please refer any questions on City Sales or Use Taxes to the City of Pueblo, Department of Finance. Their telephone number is (719) 553-2659.

Please note, there are NO tax-exempt projects within the City of Pueblo.

STATE OF COLORADO SALES OR USE TAX -

The exemption of building materials from State Sales or Use Tax in Colorado Revised Statutes applies only to the State of Colorado Sales or Use Taxes. Please refer any questions on State Taxes to the State of Colorado, Department of Revenue.

PUEBLO COUNTY SALES OR USE TAX -

The State of Colorado collects all sales or use tax for the County of Pueblo; therefore any exemption allowed by the State applies to the County.

ARTICLE I

A. ADVERTISEMENT FOR BIDS

TOWHOM IT MAY CONCERN:

The City of Pueblo will receive sealed bids up to the hour of 10:30:00 AM (MST) on the 16th day of February, 2017, at the City's Purchasing Department, 230 South Mechanic Street, Pueblo, Colorado, 81003, 719-553-2350, for the following:

PROJECT NO.: **17-005 (CI1703)**

PROJECT NAME: **Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction**

PRE-BID MEETING: **February 9, 2017 at 1:30 PM in the Public Works Conference Room 211 E. "D" Street, Pueblo, CO 81003**

This project consists of the construction of portions of Outlook Blvd. & Wills Blvd., including the installation of reinforced concrete pipe and other incidental items as related to the construction detailed in the plans and the specifications for this project.

Proposers shall inform themselves of the conditions of the project site and the requirements of the project's scope of work before submitting their proposal. No allowances shall be made by reason of any matter or thing concerning which they might not have been fully informed prior to the bidding. No Proposer will be heard after the opening of proposals to assert that there was any misunderstanding as to the nature of the operation expected in this solicitation. If a pre-bid meeting is held, Proposers should make every effort to attend. If the pre-bid meeting is **mandatory** and the Proposers cannot attend, it is imperative that someone else attend as a representative of the company, otherwise, their bid will not be accepted at the time of bid opening.

IFB documents (including plans and specifications) can be obtained on the City website at www.pueblo.us/purchasing or via the Rocky Mountain E-Purchasing System (RMEPS) website. Please be advised that electronic submissions (i.e. emails, fax, etc.) will not be accepted. Proposers must follow the submittal procedures outlined in the documents Only bids that are made out upon the City-prepared forms will be considered The bid form must not be separated from the required proposal submittal packet as defined in the Mandatory Submittals checklist. Any corrections made to the bid must be crossed out and the corrected amount next to it and initialed by the Proposer.

Addenda will be posted only on the City Purchasing Department and RMEPS websites. It is the bidder's responsibility to verify whether any addenda were issued.

Each bid must be accompanied by a certified check, cashier's check, money order or bid bond in the amount of five (5) percent of the grand total bid, plus all alternates if applicable, payable to the City of Pueblo as a guarantee that if the bid is accepted, the bidder will execute and file the proposed contract and bond within ten (10) days from the date of the award of the contract by City Council.

All bids must be received at the Purchasing Department before the time specified and be enclosed in a sealed envelope plainly marked with the above referenced Project Number and Name.

The City reserves the right to reject any or all bids for any or all items covered in the Invitation for Bid, to waive informalities or defects in bids, or to accept such bids as it shall deem to be in its best interest.

Publish Date: February 1, 2017

_____

Naomi C. Hedden, CPPO
Director of Purchasing, City of Pueblo, Colorado

ARTICLE 1

B. REQUEST FOR QUOTATIONS

PROJECT NO. : **17-005 (CI1703)**

PROJECT NAME : **Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction**

All proposals are to be prepared on this form. All blank spaces must be correctly filled in where indicated for each and every item for which a quantity is given, and the bidder must state the prices (written in ink or typewritten) for which he proposes to do each item of the work contemplated or furnish each item of the materials required.

The undersigned, having become familiar with the local conditions affecting the cost of the work, and with the contract documents, including advertisement for bids, the form of proposal, the form of contract, form of bond, special provisions of the contract, general provisions of the contract, etc., plans, drawings and specifications, issued and attached to the contract documents on file in the office of the Purchasing Agent, hereby proposes to furnish all of the labor, materials, necessary tools and equipment and all utility and transportation service necessary to perform and complete in a workmanlike manner all of the work required in connection with the construction of **Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction** in accordance with the plans and specifications as prepared by or for the City of Pueblo, Colorado, for the sums set forth in the following bidding schedule:

BID ITEM	DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE	AMOUNT
BASE BID:					
WILLS BOULEVARD					
1.	Clearing and Grubbing	1	LS	$ _____	$ _____
2.	Construct 3” HMA over 12” ABC	3,800	SY	$ _____	$ _____
3.	Construct 3” HMA Surface Course	3,800	SY	$ _____	$ _____
4.	Construct Curb & Gutter	1,478	LF	$ _____	$ _____
5.	Construct 4” Concrete	3,700	SF	$ _____	$ _____
6.	Construct 6” Concrete	773	SF	$ _____	$ _____
7.	Construct 7” Reinforced Concrete	935	SF	$ _____	$ _____
8.	Construct 6” Curb Head	84	LF	$ _____	$ _____
9.	Install Tactile Band	4	Each	$ _____	$ _____
10.	Install City Centerline Monuments	2	Each	$ _____	$ _____
11.	Install Street Lights	4	Each	$ _____	$ _____
12.	Epoxy Pavement Marking	1,340	LF	$ _____	$ _____
13.	Inlaid Preformed Tape	730	LF	$ _____	$ _____

14.	Preformed Thermoplastic	300	SF	$ _____	$ _____
15.	Arrows	7	EA	$ _____	$ _____
16.	Traffic Control	1	LS	$ _____	$ _____
17.	Barricades	1	Each	$ _____	$ _____

OUTLOOK BOULEVARD

18.	Clearing and Grubbing	1	LS	$ _____	$ _____
19.	Construct 3” HMA over 12” ABC	13,915	SY	$ _____	$ _____
20.	Construct 3” HMA Surface Course	13,915	SY	$ _____	$ _____
21.	Construct Curb & Gutter	3,822	LF	$ _____	$ _____
22.	Construct 4” Concrete	4,585	SF	$ _____	$ _____
23.	Construct 6” Concrete	1,220	SF	$ _____	$ _____
24.	Construct 7” Reinforced Concrete	713	SF	$ _____	$ _____
25.	Construct 6” Curb Head	46	LF	$ _____	$ _____
26.	Install Tactile Band	10	Each	$ _____	$ _____
27.	Install City Centerline Monuments	3	Each	$ _____	$ _____
28.	Install Street Lights	8	Each	$ _____	$ _____
29.	Epoxy Pavement Marking	3,800	LF	$ _____	$ _____
30.	Inlaid Preformed Tape	1,900	LF	$ _____	$ _____
31.	Preformed Thermoplastic	156	SF	$ _____	$ _____
32.	Arrows	7	EA	$ _____	$ _____
33.	Traffic Control	1	LS	$ _____	$ _____
34.	Barricades	1	Each	$ _____	$ _____

Sanitary Sewer

35.	Construct 8” Service Line	1	Each	$ _____	$ _____

Storm Sewer

36.	Install Reinforced Concrete Pipe 15”	250	LF	$ _____	$ _____
37.	Install Reinforced Concrete Pipe 24”	54	LF	$ _____	$ _____
38.	Install Reinforced Concrete Pipe 30”	8	LF	$ _____	$ _____
39.	Install Reinforced Concrete Pipe 36”	560	LF	$ _____	$ _____
40.	Install Reinforced Concrete Pipe 42”	110	LF	$ _____	$ _____
41.	Install Reinforced Concrete Pipe 48”	1,000	LF	$ _____	$ _____
42.	Install Reinforced Concrete Pipe 54”	115	LF	$ _____	$ _____
43.	Construct Type 1B – 60” Standard Manhole	3	Each	$ _____	$ _____
44.	Construct Type 1C – 72” Standard Manhole	5	Each	$ _____	$ _____
45.	Construct Type III Manhole for 54” Pipe Size	2	Each	$ _____	$ _____

46.	Construct Type S Inlet – L=6’	2	Each	$ _____	$ _____
47.	Construct Type S Inlet – L=12’	2	Each	$ _____	$ _____
48.	Install 15” Flared End Section	2	Each	$ _____	$ _____

Stormwater Management Plan / Erosion & Sediment Control

49.	Erosion Control BMP’s	1	LS	$ _____	$ _____

Mobilization

50.	Mobilization	1	LS	$ _____	$ _____

TOTAL BASE BID $ _____

(_____ Dollars)

ADD ALTERNATE NO. 1:

51.	Meandering Drainage Swale w/Check Dams	1	LS	$ _____	$ _____

TOTAL ADD ALTERNATE NO. 1 $ _____

(_____ Dollars)

ADD ALTERNATE NO. 2:

52.	Install Reinforced Concrete Pipe 48”	867	LF	$ _____	$
53.	Construct Type 1C – 72” Standard Manhole	2	Each	$ _____	$ _____
54.	Specialty Catch Basin	1	LS	$ _____	$ _____
55.	Install Reinforced Concrete Pipe 30”	300	LF	$ _____	$ _____
56.	Construct Flowable Fill	500	CY	$ _____	$ _____
57.	Construct 4” HMA on 19” ABC – Patch	350	SY	$ _____	$ _____
58.	Water Main Lowering – 12”	1	LS	$ _____	$ _____
59.	Energy Dissipater	1	LS	$ _____	$ _____
60.	Concrete Headwall	1	LS	$ _____	$ _____
61.	Traffic Control	1	LS	$ _____	$ _____
62.	Erosion Control BMP’s	1	LS	$ _____	$ _____
63.	Mobilization	1	LS	$ _____	$ _____

TOTAL ADD ALTERNATE NO. 2 $ _____

(_____ Dollars)

The contract will be awarded on the basis of the Base Bid, plus those Bid Alternates, if any, selected at the sole discretion of the City to the responsible bidder submitting the lowest and best responsive bid.

The total of the Base Bid plus all of the Bid Alternates shall be the basis for establishing the Bid Bond amount

The sum of the Base Bid, plus those Bid Alternates, if any, selected at the sole discretion of the City shall be the basis for establishing the amount of the performance and payment bonds for this contract. The total bid is based on quantities shown on the proposal form and on the dimensions shown on the plans, and is subject to additions or reductions according to the actual construction quantities as determined by the Engineer upon completion of the construction.

The City reserves the right to adjust the required quantities and the contractor shall furnish said quantities at the unit price quoted above. The time allowed for construction shall be adjusted in direct proportion of the adjusted quantities to the estimated quantities.

The undersigned has carefully checked the above quantities against the plans and specifications before preparing this proposal and accepts the said quantities as substantially correct, both as to classification and amount, and as correctly listing the work to be done in accordance with the plans and specifications.

The bidder must sign his proposal correctly and in ink; if the proposal is offered by an individual, his name, office and post office address must be shown. If made by a firm or partnership, the name, office and post office address of each member of the firm or partnership must be given; if offered by a corporation, the person signing the proposal must give the name of the state under the laws of which the corporation was chartered, and the name, title and business address of the President, Secretary and the Treasurer. Anyone signing a proposal as agent must file legal evidence of his authority to do so, and that the signature is binding upon the firm or corporation.

The undersigned, if awarded the contract, agrees to complete and file the complete contract and performance bond in quadruplicate within ten (10) days of the date of Notice of Award, and further agrees to complete the work within Ninety (90) calendar days of Notice to Proceed.

Liquidated damages will be assessed in accordance with Section 3.54 of ARTICLE 3 - GENERAL PROVISIONS, for every calendar day thereafter until the work is complete and accepted by the City of Pueblo.

NOTE: Bidders should not add any conditions or qualifying statements to this bid as otherwise the bid may be declared irregular as being not responsive to the advertisement for bids.

The contractor shall be subject to all applicable City, County, State and Federal Taxes in the performance of this contract.

Firm Name : _____

Business Address : _____

By : _____

Title : _____

Date : _____ Tele. No. : _____ Fax No. : _____

E-Mail No. : _____

Contractor's Federal I.D. Number : _____

ARTICLE 1

C. BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____ , of

_____ , as Principal,

and _____ , as Surety, are held and firmly bound unto the City of Pueblo, Colorado, as Obligee, in the full and just 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, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

WHEREAS, the said Principal is herewith submitting its proposal dated

_____ , 2017, for:

Project No: 17-005 (CI1703)
Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction

and said Obligee has required as a condition for receiving said proposal that the Principal deposit specified Proposal Guaranty in the amount of not less than five per cent (5%) of the amount of said proposal, conditioned that in event of failure of the Principal to execute the Contract Agreement for such construction and furnish required Performance Bond if the Contract is awarded him, that said sum be paid immediately to the Obligee as liquidated damages and not as penalty for the Principal's failure to perform.

The condition of this obligation is such that if the aforesaid Principal, shall within the period specified therefor, on the prescribed form presented to him for signature, enter into a written Contract Agreement with the Obligee in accordance with his bid as accepted, and give required Payment and Performance Bonds with good and sufficient surety or sureties, upon the form prescribed by the Obligee, for the faithful performance and the proper fulfillment of said Contract, or in the event of withdrawal of said bid within the time specified, or upon the payment to the Obligee of the sum determined upon herein as liquidated damages, and not as penalty in the event the Principal fails to enter into said Contract and give such Payment and Performance Bonds within the time specified, then the obligation shall be null and void, otherwise to remain in full force and effect.

(Bid Bond)

Signed, sealed and delivered this _____ day of _____ , 2017.

ATTEST:

By _____ , _____
Secretary Principal

(SEAL)

By _____

_____
Surety

ATTEST:

By _____ , By _____
Attorney-in-fact

(SEAL)

ARTICLE 1
D. NOTICE OF AWARD

City of Pueblo, Colorado

_____
(Date)

To: _____

_____

_____

The City of Pueblo, Colorado, having considered the Proposals submitted on the 6th day of October, 2016 for the construction of **Project No: 17-005 (CI1703), Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction,** Pueblo, Colorado, and it appearing that your proposal of $ *[Bid Amount, in numbers], [Bid Amount, in words]* Dollars is fair, equitable, and in the best interest of the City, and the City Council of Pueblo, having authorized the work to be performed, the said Proposal is hereby accepted at the bid prices contained therein. In accordance with the terms of the Contract Documents, you are required to execute the formal Contract Agreement and furnish the required Payment Bond and Performance Bond, within ten (10) consecutive calendar days from and including the date of this notice.

The Proposal Guaranty submitted with your proposal will be returned upon execution of the Contract Agreement and the furnishing of the Payment Bond and Performance Bond. In the event you should fail to execute the Contract Agreement and furnish the Bonds, within the time specified, said Proposal Guaranty will be retained by said City as liquidated damages and not as penalty, for the delay and extra work caused thereby.

CITY OF PUEBLO

_____
Purchasing Agent

ARTICLE I

E. CONTRACT AGREEMENT

THIS AGREEMENT made and entered into this _____ day of _____,

2017, by and between the City of Pueblo, a Municipal Corporation, hereinafter referred to in the

Contract Documents as the " City ", and _____,
referred to in the Contract Documents as " Contractor ".

WITNESSETH : In consideration of the sum to be paid by the City to the Contractor at the time and in the manner hereinafter provided, the said Contractor has agreed, and does hereby agree, to furnish all labor, tools, equipment and material and to pay for all such items, and to construct complete in every detail, To-Wit :

Project No: 17-005 (CI1703)
Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction

At the prices bid on the Proposal Form, in accordance with the drawings and specifications, and all Contract Documents for this project which are on file and available for inspection in the office of the Director of Public Works of Pueblo, all to the satisfaction of the Director of Public Works for the City of Pueblo, Colorado

AND FOR SAID CONSIDERATION IT IS FURTHER AGREED BY AND BETWEEN THE PARTIES TO THIS AGREEMENT AS FOLLOWS:

1. Construction and installation of the above enumerated work for the City shall be completed and ready for use in accordance with the time of completion described in the Proposal Form of this Contract. This time shall be extended only for those periods set forth in the Contract Documents and in accordance with the requirements of same.

2. The work and material for the project covered by the Contract Documents shall be completely installed and delivered to the City within the time above stated, clear and free from any and all liens, claims and demands of any kind.

3. The full compensation to be paid to the Contractor by the City, pursuant to the terms of this Contract, shall be payable as provided in the Contract Documents.

4. This Contract consists of the following component parts and documents, all of which taken together constitute and are referred to as the Contract Documents, and the same are incorporated as part of the Contract as if set out herein verbatim, whether the same have been attached hereto or not:

Article 1	A. Advertisement for Bids B. Proposal C. Bid Bond D. Notice of Award E. Contract (This Instrument) F. Performance Bond G. Payment Bond H. Notice to Proceed
Article 2	Special Provisions
Article 2A-1	Labor Provisions
Article 3	General Provisions
Technical Specifications	Kleinfelder Geotechnical Evaluation Report - July 19, 2016 Kleinfelder Addendum to Geotechnical Evaluation – January 23, 2017

The ***Standard Construction Specifications and Standard Details for City of Pueblo, Colorado,*** adopted March 28, 2005, are hereby included by reference and all provisions thereof shall be applicable. By submitting his bid, the Contractor acknowledges that he possesses a copy of said document.

Addenda No. _____, _____, _____.

Plans (Drawings and Specifications) - Sheets 1 thru 11

5. Title XII, Chapter 2, of the 1971 Code of Ordinances, City of Pueblo, adopted by Ordinance No. 3476, and amended by Ordinance No. 4476 and 5229, shall be considered a part of this contract.

6. Title I, Chapter 8, of the 1971 Code of Ordinances, City of Pueblo, adopted by Ordinance No. 4479, shall be considered a part of the contract.

7. All of the covenants and agreements set forth in the Contract Documents shall inure to the benefit of and be binding upon City and Contractor and their respective heirs, legal successors and assigns and shall be governed by the laws of the State of Colorado.

(Contract Agreement)

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in four (4) original counterparts as of the day and year first above written.

_____
Contractor

By _____

Title _____

PUEBLO, A MUNICIPAL CORPORATION

By _____
Purchasing Agent

ATTEST:

_____
City Clerk

BALANCE OF APPROPRIATION EXISTS FOR
THIS CONTRACT AND FUNDS ARE AVAILABLE:

_____
Director of Finance

APPROVED AS TO FORM:

_____
City Attorney

ARTICLE 1

F. PERFORMANCE BOND

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS:

That we _____ a _____
(Name of Contractor) (Corporation, Partnership, or Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____, hereinafter called the "Surety", are held and firmly bound unto the City of Pueblo, a Municipal Corporation,

hereinafter called "City", in the penal sum of _____ Dollars

($ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a

certain contract with the City, dated the _____ day of _____, 2017, a copy of which is hereto attached and made a part hereof for the construction of:

Project No: 17-005 (CI1703)
Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions and agreements of said contract during the original term thereof (including all warranty periods), and any extensions thereof which may be granted by the City, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the City from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the City all outlay and expense which the City may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or to the specifications accompanying the same shall in any way effect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the City and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counter-parts, each of which shall be deemed an original, this the _____ day of _____, 2017.

_____
Principal

ATTEST :

By _____ By _____
Principal Secretary

(SEAL) _____
(Address)

By _____
(Witness as to Principal)

_____
(Address)

_____
Surety

ATTEST :

By _____ By _____
(Surety) Attorney-In-Fact Attorney-In-Fact

(SEAL) _____
(Address)

By _____
(Witness as to Surety)

_____
(Address)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners shall execute bond.

ARTICLE 1

G. PAYMENT BOND

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS :

That we _____ a _____
(Name of Contractor) (Corporation, Partnership, or Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____, hereinafter

called the "Surety", are held and firmly bound unto the City of Pueblo, a Municipal Corporation, hereinafter

called "City", in the penal sum of _____ Dollars

($ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into

a certain contract with the City, dated the _____ day of _____, 2017,
a copy of which is hereto attached and made a part hereof for the construction of:

Project No: 17-005 (CI1703)
Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, supplies, lubricants, oil, gasoline, rental machinery, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractors or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or to the specifications accompanying the same shall in any way effect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the City and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

(Payment Bond)

IN WITNESS WHEREOF, this instrument is executed in four (4) counter-parts, each of which shall be deemed an original, this the _____ day of _____, 2017.

_____
Principal

ATTEST :

By _____
Principal Secretary

By _____

(SEAL)

_____
(Address)

By _____
(Witness as to Principal)

_____
(Address)

ATTEST :

_____
Surety

By _____
(Surety) Attorney-In-Fact

By _____
Attorney-In-Fact

(SEAL)

_____
Address)

By _____
(Witness as to Surety)

_____
(Address)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners shall execute bond.

ARTICLE 1

H. NOTICE TO PROCEED

Pueblo, Colorado

_____
(Date)

To: _____

_____

_____

You are hereby authorized to proceed on this date, _____,

2017, or within three (3) consecutive calendar days hereafter with construction of **Project No: 17-005 (CI1703) - Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction,** as set forth in detail in the Contract Documents for the City of Pueblo, Colorado.

The Proposal Guaranty submitted with your Proposal is herewith returned to you.

CITY OF PUEBLO

_____
Director of Public Works

ARTICLE 2
SPECIAL PROVISIONS

PROJECT NO.: 17-005 (CI1703)

PROJECT NAME : Outlook Blvd. & Wills Blvd. Street and Storm Sewer Construction

2.00 – GENERAL INSTRUCTIONS / SUBMITTAL PACKET

All specifications included in the Special Provisions shall have precedence over and will govern in the event of a conflict with other sections contained in this document.

In addition to those items listed on the "MANDATORY SUBMITTALS" sheet, Bidders must turn in all of Article 1 (A, B, C, D, E, F, G, & H), all of Article 2 – SPECIAL PROVISIONS, all of Article 2A-1 (Labor Provisions) and all of Article 3 – GENERAL PROVISIONS. Failure to do so may result in rejection of the submittal.

Contract Documents for this project (including plans and specifications) can be obtained on the City website at www.pueblo.us/purchasing or via the Rocky Mountain E-Purchasing System (RMEPS) website. Please be advised that electronic bid submissions (i.e. emails, fax, etc.) will not be accepted. Proposers must follow the submittal procedures outlined in the Contract Documents and specifically detailed in the Mandatory Submittals sheet. Only bids that are made out upon the City-prepared forms will be considered. The bid form must not be separated from the required proposal submittal packet as defined in the Mandatory Submittals checklist.

Addenda will be posted on the City Purchasing Department and RMEPS websites. It is the bidder's responsibility to verify whether any addenda were issued.

2.01 - STANDARD CONSTRUCTION SPECIFICATIONS AND STANDARD DETAILS

The ***Standard Construction Specifications and Standard Details for Pueblo, Colorado***, adopted March 28, 2005, shall control the construction and quality of materials for this project except where specifically modified by these Special Provisions. The ***Standard Construction Specifications and Standard Details*** are not included in this bid package but are available for purchase at the Public Works Office, 211 East "D" St.

2.02 – DEFINITION OF ENGINEER

The term "Engineer" as used in Sections 3.51(a) and (b) of Article 3, General Provisions, shall mean NorthStar Engineering and Surveying, the Consulting Engineer, with respect to all questions relating to the design of the work with the technical requirements of the plans and specifications, interpretation of the technical requirements of the plans and specifications.

The term "Engineer" as used in Sections 3.51(a) and (b) of Article 3, General Provisions, shall mean the City of Pueblo with respect to the rejection of work and materials which do not conform; and with respect to all other uses of the term in Section 3.51, the term shall mean the Director of Public Works. In Sections 3.75, 3.76, 3.77 and 3.85 of Article 3, General Provisions, all references to Engineer shall mean the Director of Public Works. All other references to Engineer in Article 3 not specifically addressed in this section shall mean the Consulting Engineer.

2.03 - INCONSISTENCIES

Any seeming inconsistencies between the Plans and Specifications or provisions of the Contract Documents, or any matter requiring explanation must be inquired into by bidders at least 72 hours (excluding Sundays and Holidays) prior to the time set for opening of bids.

Decisions of major importance will be issued in the form of an addendum by the Engineer. Addenda will NOT be sent directly to Contract Document holders – but will be posted on the City's website and the RMEPS website. It is the bidder's responsibility to verify whether any addenda were issued and posted. Bidders must follow the bid submittal procedures outlined in the contract document. These addenda shall become part of the Contract Documents.

2.04 – DESCRIPTION OF WORK

The work to be done by the Contractor shall consist of the work described in the Contract Documents and performing all operations necessary for the construction of this work as described in the plans and specifications, including restoration of all areas disturbed by the construction activities to a condition better than the pre-construction condition.

The Contractor shall obtain all permits and furnish all transportation, materials, tools, equipment, labor and supplies necessary to complete in a workmanlike manner the improvements as shown and specified in these documents.

The Contractor shall be responsible for verification and acceptance of the existing site conditions prior to proposing on the project. The Contractor shall notify the engineer 48 hours prior to the commencement of construction activities.

The Contractor shall be responsible for all work, including work by others under a subcontract agreement.

All work required to construct all items in this contract shall be performed in a safe, careful, and orderly manner with due consideration given to protection of adjoining property, the public, and workmen. Any damage to streets, utilities, public or private property, or the bench marks and construction staking due to the negligence of the Contractor, shall be repaired and restored to its original condition by the Contractor at his expense to the satisfaction of the Engineer. It will be the Contractor's responsibility to ensure that areas not in conflict with new work are not disturbed or damaged during the construction process

2.05 – PRE-CONSTRUCTION CONFERENCE

Within 10 calendar days after issuance of the Notice of Award, or as otherwise established by the Owner and Engineer, a preconstruction conference shall be held for review of the construction schedule, Contractors list of Subcontractors and suppliers, project contracts, Traffic Control Plan with Supervisor name and telephone number and certifications, procedures for handling shop drawings, processing Applications for Payment, and other pertinent items. Representatives of the affected utility companies and other interested parties shall attend the conference. The Contractor (and Subcontractor) should address any construction problems which may be foreseen in the execution of the project work at the preconstruction conference.

2.06 – PRE-PAYMENT OF CITY SALES AND USE TAX

The Contractor shall make application for, and prepayment of, City sales and use tax on the estimated percentage basis being forty percent (40%) of the total Project bid as awarded including Base Bid plus those Alternates selected. Application and prepayment shall be made

within fourteen (14) days of the date authorized to proceed with construction of the Project as set forth in the Notice to Proceed. All applications and prepayments shall be coordinated directly with City's Division of Sales and Use Tax, Attention: Tax Audit Manager, 1 City Hall Place, Pueblo, Colorado 81003.

Finance Department policy sets the threshold at $1,000,000. Any contractual obligations below this amount will not generally be required to make a pre-payment of Use Tax.

2.07 – POTENTIAL PERMITS AND SUBMITTALS

The table below is a list of potential permits or submittals required for the project. The contractor shall be responsible to verify this list and add any additional permits needed to construct the project. Copies of any permits that have already been obtained by the City of Pueblo are available for review by all proposers. Contractors are responsible for compliance with all permits obtained by others for this project.

Permit	**Permitting Agency**	**Responsibility to Obtain Permit**
Air Quality Permit	Pueblo County/ Colorado Department of Public Health and Environment	Contractor
CDPHE Stormwater Construction Permit	Colorado Department of Public Health and Environment	Contractor
Excavation Permit	City of Pueblo	Contractor
Concrete Permit	City of Pueblo	Contractor
Traffic Control Permit	City of Pueblo	Contractor
Pueblo MS4 Permit	Colorado Department of Public Health and Environment	City of Pueblo
Fugitive Particulate Emmissions Control Plan	Colorado Department of Public Health and Environment	Contractor

The contractor shall be responsible to investigate and assess the requirements for all necessary environmental/drainage/construction permits. The Contractor shall furnish in the proposal a written list of all permits required for the proper completion of the Contract. The list shall clearly identify the type of permit or permits that must be obtained before work on any particular phase or phases of work can be started. The contractor shall comply with all conditions of the permits during the course of the construction. The Contractor shall pay the fees for all permits. City and/or other agency fines are the sole responsibility of the Contractor.

2.08 - CONCRETE PERMITS

A permit for curb and gutter, sidewalk, curb ramps etc., shall be obtained from the City Engineering Division at 211 E. "D" Street. Any concrete work placed without benefit of both permit and inspection by Public Works will not be paid for.

2.09 – DRAINAGE AND EROSION CONTROL

Contractor shall provide for the drainage of storm water and such water as may be applied or discharged on the site in performance of the work. Drainage facilities shall be adequate to prevent damage to the work, the site and adjacent property.

The Contractor shall prevent the pollution of drains and watercourses by sanitary waste, sediment, debris or other substances resulting from this work. Contractor shall be required to clean up and isolate such materials on a continuing basis to prevent risk of washing into such drainage ways.

Contractor shall obtain a copy of and follow the language of the MS4 permit and all other state and local permits.

Contractor shall be responsible for maintaining and revising a Stormwater Management Plan (SWMP) and obtaining all state and local storm water discharge permits. The Stormwater Management Plan shown in the contract documents is provided as a guide for the completed condition of the project for the contractor to bid on the project and may be used by the contractor as a portion of the project SWMP or may elect to modify or prepare a new or phased SWMP. The approved SWMP must include a Stormwater Management Plan for all phases throughout construction. When a modified or new SWMP is prepared, it must be prepared by a licensed engineer in the State of Colorado and submitted to the
Engineer for review and approval prior to applying for permits. The SWMP used to obtain the permits, and any modifications to the SWMP as directed by the permitting agencies, shall be considered the approved SWMP. An approved SWMP shall be submitted to the Engineer with a copy of permit notice prior to beginning construction.

Contractor shall be responsible for maintaining erosion control for all phases of the project.

2.10 - STORMWATER MANAGEMENT PLAN / EROSION & SEDIMENT CONTROL

This bid item shall include all costs to provide erosion and sediment control and an Erosion Control Supervisor in conformance with the Stormwater Management Plan and City of Pueblo Standard Construction Specification Article 9.3.03.

Stormwater management plan / erosion and sediment control shall be paid as “Erosion Control BMP’s.” Periodic payments for this item shall be based upon the percentage of work completed compared to the original contract amount.

2.11 - HOURS OF WORK

The workweek of the Engineering and Inspection Division is 7:00 a.m. to 12:00 noon, and 1:00 p.m. to 4:00 p.m. daily, Monday through Friday, holidays excepted. Any work done outside of normal work hours must be approved by the Engineer.

2.12 – WORK SITE RESTRICTIONS

The Contractor shall confine the work activities to the area shown in the construction drawings. The Engineer will furnish the contractor with copies of all executed ROW and easement documents for the project. Approved temporary fences are required at all locations that require removal of an existing fence or privacy wall. The fence type shall be preapproved by the Engineer based on discussions with individual property owners/tenants. Temporary fences are to be considered incidental to the work and will not be paid for separately. Temporary easements on private property are not to be used for stockpiling or storage of materials or equipment. Any additional work area required within adjoining private properties must be acquired by the Contractor by written permission from the property owner. The Contractor shall restore any damage or disruption to other properties utilized in the performance of this project to an equal or better than pre-construction condition at no cost to the City. The Contractor shall hold the City harmless from any claims to damage or disruption of private property.

The Contractor shall minimize construction traffic along residential areas where practical.

Contractor personnel shall not unnecessarily enter upon private property without the express written consent of the landowner. The Contractor shall provide the Engineer with a copy of the written permission. The City will be held harmless of Contractor negligence in matters of trespassing

2.13 - COORDINATION OF CONSTRUCTION ACTIVITIES

The Contractor and subcontractors shall coordinate their work with the work of all other construction activities and contractors and cooperate with them so as to facilitate general progress of the work. Each trade shall afford other trades every reasonable opportunity for installation of their work and for storage of their materials.

2.14 – COORDINATION WITH ADJACENT PROJECTS

The contractor shall coordinate with all concurrent projects in the vicinity of this project, including but not limited to projects managed by the City of Pueblo. Coordination shall include traffic control to minimize conflict and confusion between overlapping temporary traffic control zones. This coordination is incidental.

2.15 – COORDINATION WITH PROPERTY OWNERS

The Contractor shall maintain safe and clear access to all businesses throughout the project corridor. Any access restriction or modification to or from adjacent property shall be submitted to the Engineer and approved prior to implementation. The Contractor shall provide at a minimum 48 hours written notice to each business or residence prior to any work on or partial closure of access drives. Access may be limited to half the existing driveway width for limited periods of 48 hours or less during concrete driveway and street construction. Access must at all times accommodate emergency services vehicles. Additional coordination with emergency services is required if the access location to the property is relocated from the existing location. An additional verbal notice shall be provided to each business or residence 30 minutes prior to the actual access drive partial closure. The Contractor shall at no time impede delivery truck access to businesses or public access to any adjacent properties.

2.16 – WORK BY OTHERS

The Contractor shall coordinate his work on the project with all work shown on the plans which is to be done by “others”. It is the Contractors responsibility to coordinate the work with each entity and incorporate into the Contractors work schedule.

The work to relocate fire hydrants as shown on the plans will be done by the Pueblo Board of Water Works.

The work to relocate light poles as shown on the plans will be done by Black Hills Energy.

2.17 - REPRESENTATIVE AVAILABLE FOR EMERGENCY CALLS

The Contractor shall provide the name, address and phone number of his representative who may be reached at any time during the life of the contract regarding repairs, detours, barricading, etc. This information shall be furnished in writing to the Department of Public Works, Transportation Department and the Engineer.

2.18 - SAFETY REGULATIONS

The Contractor shall be aware of and shall comply with all State and Federal Safety regulations, which are applicable to the work included under this contract. Enforcement will be by the proper

State and Federal regulatory agencies.

If any construction activity is deemed to be unsafe to inspect, the Contractor shall be notified that the work shall be discontinued until the deficiencies are corrected so the job can be properly inspected.

2.19 – CONSTRUCTION STAKING AND LAYING OUT WORK

The Contractor shall lay out his own work and be responsible for all lines, elevations and measurements of grading, utilities and other work executed by him under this contract except as otherwise indicated herein. The Contractor shall exercise proper precaution to verify figures shown on the drawing before laying out work and will be responsible for any error resulting from his failure to exercise such precautions. Contractor is wholly responsible for the correct horizontal and vertical location of all project items. Items not constructed in the proper location will be removed and replaced in the correct location without additional cost to the project or time to the schedule.

The Engineer will provide a network of control points from which the Contractor's surveyor must establish horizontal and vertical project control. The Contractor shall protect all control points from damage during construction. Any Engineer provided control points that require replacing due to negligence by the Contractor shall be replaced by the Engineer at $2000.00 per control point. The cost of replacing the stakes will be deducted from the contract final payment.

2.20 – SOIL CONDITIONS

The Contractor assumes all risks connected with the surface and subsurface conditions actually encountered by him in performing the work; even though such actual conditions may result in the Contractor performing more or less work than he originally estimated. The Contractor shall perform whatever exploratory excavations and tests he deems necessary to determine the site conditions.

The Contractor shall utilize all suitable excavated material as approved by the Engineer for raising grades and backfilling the new construction. Additional imported material shall be a well graded nonexpansive inorganic soil or as herein after specified.

2.21 – CONTRACTOR EVALUATION

Pursuant to Ordinance No. 6510, dated February 14, 2000, the Department of Public Works will be evaluating the performance of the Contractor using the form included at the end of this Article. The purpose of this is; to evaluate the performance of Contractors and Consultants who provide service to the City of Pueblo, increase communication and foster positive relationships. It will also establish written documentation of the Contractor's overall performance. Material failure to perform in accordance with the terms of one or more contracts or materially unsatisfactory performance of one or more contracts may be justification for disqualifying future bids by the Contractor.

2.22 – SPECIFICATION LANGUAGE

Parts of the Specifications are written in abbreviated style with incomplete sentences. Omissions of words as "The General Contractor shall", "Conforming to", "shall be", etc., are intentional. Omitted words shall be supplied by inference. Where words "approved", "satisfactory", "directed", "submitted", etc., are used, it shall be assumed that the word "Engineer", "Consulting Engineer" or "Architect" follows, such as "approved by the Engineer".

2.23 – STATE IMPOSED MANDATES PROHIBITING ILLEGAL ALIENS FROM PERFORMING WORK UNDER THIS CONTRACT (ARTICLE 3, SECTION 3.69)

Contractors shall familiarize themselves with the provisions of Section 3.69 of Article 3 – GENERAL PROVISIONS and shall be aware of the consequences associated with violation of said section. Contractor shall after award but prior to the time for execution of contract documents, provide a written certification that they do not knowingly employ or contract with an illegal alien who will perform work under this contract and that they will participate in either the "E-Verify Program" or the "Department Program". Said certification shall be submitted to the Purchasing Agent.

2.24 - PERA LIABILITY

The Contractor shall reimburse the City for the full amount of any employer contribution required to be paid by the City of Pueblo to the Public Employees' Retirement Association ("PERA") for salary or other compensation paid to a PERA retiree performing contracted services for the City under this Agreement. The Contractor shall fill out the questionnaire attached in the Mandatory Submittals section, at the front of these contract documents and submit the completed form to City as part of the signed Agreement.

2.25 – COMPLETE WORK ON TIME

Failure to complete the work by the allotted ninety (90) calendar days shall result in the assessing of liquidated damages according to ARTICLE 3 - GENERAL PROVISIONS. The total amount of liquidated damages for this project shall be in accordance with Article 3.54 for each day the contractor exceeds the allotted contract time including adjustments if any. The contract time is stated in Commencement and Completion of Work special provision. The contract time will be used to determine the Contract Completion Date.

The Contractor will be charged for every calendar day with the following exceptions.

1. Weather: Any weather event or ground conditions that prevent prosecution of critical path item, contractor will be allotted extra time as determined by the City's Project Manager.
2. Holidays: Any commonly observed holiday (including Saturday, Sunday of a 3 day Holiday) those days will not be charged against contract time, providing Contractor observes holidays.

2.26 – SITE RESTORATION AND CLEANUP

Contractor shall maintain and/or repair any damage done to all existing properties, public or private, **adjacent to site improvements**, including but not limited to, asphalt, base course, utilities, sod, irrigation systems and landscaped areas. In general disturbed areas shall be replaced to the lines, grades and thickness and like materials of the existing conditions unless otherwise stated on the plans. Restoration shall be consistent with that of areas adjacent to the limits of construction. Grass and other plant areas shall be restored, maintained, and irrigated until the project is accepted by the Engineer. Fabric shall be installed under all rock landscape areas. Any landscape material salvaged by the Contractor for reuse will not be acceptable if contaminated by dirt or different landscape material. Slopes to match from the new improvements to existing improvements shall not exceed a 4:1 slope.

All work to relocate existing irrigation sprinklers which are in conflict with the new construction will be considered as site restoration. The accuracy of information furnished in regard to irrigation systems is not guaranteed. The locations are approximate and may not include all irrigation system components. The Contractor shall determine the exact location of all irrigation systems before commencing work. He shall be fully responsible for any damage, which might occur, due to his failure to locate and protect all irrigation systems.

Site restoration and cleanup will not be measured or paid separately but shall be included in the unit prices bid for each bid item. Partial payments will not be made on any unit price item until the restoration and cleanup associated with that item is satisfactorily complete and acceptable to the property owner.

2.27 – LANDS TO BE USED FOR WORK

The storage of materials shall not at any time disrupt or impact area businesses. Locations of storage, heights of storage, and length of time materials will be stockpiled near businesses shall be approved in writing by the Engineer prior to use.

2.28 – PROTECTION OF CONCRETE FROM TRAFFIC AND VANDALISM

All concrete shall be protected from traffic for a period of fourteen (14) days, or as directed by the Engineer. The Contractor shall provide necessary supervision and/or barriers to protect all concrete from traffic or vandalism. Any concrete damaged by traffic and/or vandalism will be rejected. Replacement of damaged concrete will be paid for entirely by the Contractor.

2.29 – EMERGENCY REPAIR OR PROTECTIVE WORK BY THE CITY OF PUEBLO

As indicated more specifically in Sections 3.64 and 3.65 of the General Provisions, it is the Contractor's responsibility to provide adequate barricades, protective devices and safety measures, and to employ other precautionary means, for the adequate protection of the public, the work, and public and private property, from injury or loss. Notwithstanding this duty, should the City become aware of any condition or circumstance arising from the work or with respect to any excavation or area disturbed by the Contractor which, in the opinion of the Director of Public Works, creates or results in any imminent or unreasonable risk to the health or safety of the public or to private or public property, the City may undertake emergency work or repairs. Such work may include, by way of illustration, provision of barricades, traffic control devices or flagmen, deployment or warning signs, repair of lines under construction, repair of collapsed excavations or sinkholes, placement of sandbags or dams, and other emergency efforts. The determination of the necessity during the construction and warranty periods for the City to do any such emergency work or repairs shall rest entirely with the Director of Public Works. The cost of emergency work done by the City, including the actual cost of labor, equipment, and materials, plus 100 percent, shall be deducted from any amounts otherwise owed to Contractor, or may be invoiced to the Contractor, or the same amount shall be recovered from the Contractor's performance bond.

2.30 – UTILITY LOCATIONS

The accuracy of information furnished in regard to underground utilities is not guaranteed. The utility locations are approximate and may not include all utilities. The Contractor shall determine the exact location of all utilities before commencing work. He shall be fully responsible for any damage, which might occur, due to his failure to locate and protect all utilities. He shall repair or have repaired, at no cost to the City, any damage to utilities.

Existing utilities include gas mains, water mains, service lines, meters, meter cans, buried telephone cables, buried power lines, pedestals, utility poles, sanitary sewer mains, manholes and services, and any other existing utility.

2.31 – ABANDONED UTILITIES

If during construction operations, an abandoned utility is encountered, the Contractor shall contact and coordinate with the Engineer to arrange for the removal of the utility. If the Contractor elects to remove the utility without contacting the engineer, he shall do so at no cost to the City.

2.32 – SHOP DRAWINGS AND SUBMITTALS

All documents submitted by the contractor shall be submitted in electronic format. Hard copies are required only if requested by the City. One electronic (scanned) copy of all shop drawings, and schedules shall be submitted to the Engineer, who after checking will return an electronic (scanned) copy of the submittal to the Contractor.

The Contractor shall submit to the Engineer all shop drawings, working drawings, and submittals in a timely manner, considering the 14-day review period for shop drawings. At no time shall shop drawings be submitted less than 30 days prior to anticipated construction of that element. The Contractor shall submit to the Engineer all project schedules within 21 calendar days of Notice of Award for review. The Contractor shall include Engineer review time in the work schedule. Failure of the Contractor to deliver submittals in sufficient time for the Engineer's review shall not constitute a delay on the part of the City. Submittals which may require a review beyond the first submittal shall not constitute a delay on the part of the City. Shop drawings and submittals shall be at a minimum of those items listed in Table 105-1 and any other additional submittals which may be required by the Engineer. The submittals shown in the tables are not all inclusive. Other submittals may be required.

2.33 – DUST PREVENTION

During construction and until final acceptance by the Engineer, the Contractor shall be responsible for controlling dust emissions in the construction area. No earthwork activities shall be performed when the wind speed exceeds thirty (30) miles per hour. All fill areas shall be compacted on a daily basis to 95% minimum compaction. Any mud or dirt carry out onto paved surfaces shall be cleaned up on a daily basis. The Contractor shall promptly comply with all directives from the Engineer relating to dust control. If the Contractor fails to comply or provide adequate means to control dust, a stop-work order will be issued until the problems are corrected.

2.34 – TRAFFIC CONTROL DEVICES - SIGNS

The Contractor shall be responsible for all permanent traffic control devices (signs) within the construction area. If permanent devices are in conflict with construction activities the Contractor shall be responsible for the placement of temporary traffic control devices, the removal of the permanent devices and the reinstallation of the permanent devices.

All work shall be in accordance with the Manual of Uniform Traffic Control Devices. All regulatory signs (Stop, Yield, One Way, Do Not Enter, etc.) shall be maintained in either a temporary or permanent manner. The temporary devices shall be in place prior to the removal of the permanent devices. Should there be any claims resulting from his negligence in failing to act or maintain any traffic control device, the Contractor shall be held fully responsible.

The Contractor shall be responsible for maintaining the condition of any sign that is removed temporarily. Should there be any damage to devices (sign(s), pole, base and hardware) the Contractor shall be financially responsible to the City of Pueblo for the replacement of said devices.

Contractor shall contact Traffic Maintenance at 553-2300 for approval of the specific location in which the devices are to be reinstalled. Contractor shall obtain underground utility locates prior to reinstalling devices.

The Traffic Engineer or designee will evaluate existing signage for replacement with new materials. If required, the City will provide all replacement materials to the Contractor prior to reinstallation. Where new devices are required per the construction drawings all signs, posts,

bases and hardware will be supplied by the City. Contact the Traffic Engineer at 553-2722 to order signs, providing the City at least two weeks notification to provide the necessary material.

2.35 – ASPHALT MIX DESIGN

The Contractor shall furnish to the Engineer at the Pre-Construction meeting, a mix design formula from a certified AASHTO testing laboratory, for the hot mix bituminous pavement he proposes to use. The Grading S and SX mix designs shall conform to the applicable Colorado Department of Transportation (CDOT), Standard Specifications for Road and Bridge Construction, 2011 Edition, Section 702 and Section 703, unless otherwise noted in these Special Provisions. The City will allow up to a maximum of twenty percent (20%) of Reclaimed Asphalt Pavement (RAP) in the asphalt mix design. All aggregate (RAP & Virgin) shall conform to the gradation standards of CDOT's Standard Specifications for Road and Bridge Construction, 2011 Edition, Section 703.04, unless otherwise noted in these Special Provisions. (Note an approved quality control plan for RAP is required prior to mix design approval). Asphalt cement binder shall be PG 58-28, PG 64 -28 or as determined by the JMF for optimum performance with RAP. The Contractor shall submit a Job Mix Formula (JMF) for all types of HMA asphalt to be used on this project. After the JMF has been established, all mixtures furnished for respective projects shall conform thereto within the range tolerances of CDOT's Standard Specifications for Road and Bridge Construction, 2011 Edition, Section 401.

2.36 – CONSTRUCT 3" HMA on 12" ABC (CLASS 6)

This item shall include all costs to construct 3" Hot Mix Asphalt, Grading C (75) PG 58-28 with up to 20% Recycled Asphalt Payment on 6" of Aggregate Base Course (Class 6).

2.37 – CONSTRUCT 3" HMA SURFACE COURSE

This item shall include all costs to construct 3" Hot Mix Asphalt, Grading CX (75) PG 64-28 with up to 20% Recycled Asphalt Payment.

2.38 - SITE INVESTIGATION

By submitting his bid, the Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, uncertainties of weather, physical conditions at the site, the character, quality of surface and subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this contract. Failure by the Contractor to acquaint himself with all the available information concerning these conditions will not relieve him from responsibility for properly estimating the difficulty of cost of successfully performing the work.

2.39 – CONTRACTOR EVALUATION

Pursuant to Ordinance No. 6510, dated February 14, 2000, the Department of Public Works will be evaluating the performance of the Contractor using the form included at the end of this Article. The purpose of this is; to evaluate the performance of Contractors and Consultants who provide service to the City of Pueblo, increase communication and foster positive relationships. It will also establish written documentation of the Contractor's overall performance. Material failure to perform in accordance with the terms of one or more contracts or materially unsatisfactory performance of one or more contracts may be justification for disqualifying future bids by the Contractor.

2.40 - CONSTRUCTION TRAFFIC CONTROL

The Contractor shall submit a traffic control plan prepared by a Certified Traffic Control Supervisor, at the preconstruction conference for approval by the Traffic Engineer.

Where possible, crosspans may be constructed full width with proper street closures; however, the time of closure must be kept to a minimum.

All traffic control procedures, signing, lighting and barricades shall conform to the latest edition of the ***Manual on Uniform Traffic Control Devices***, and shall be set up and maintained by a Certified Traffic Control Supervisor.

Construction traffic control shall be paid as "Traffic Control." Periodic payments for this item shall be based upon the percentage of work completed compared to the original contract amount.

2.41 - TRAFFIC CONTROL SUPERVISOR

The Traffic Control Supervisor shall be certified as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA) or Colorado Contractors Association (CCA). A copy of the Traffic Control Supervisor's Certification shall be provided to the Engineer at the project pre-construction conference.

2.42 – MOBILIZATION

This item shall consist of mobilization of personnel, equipment and supplies at the project site in preparation for work on the project. The item shall include all costs incurred or labor and operations, which must be performed prior to beginning the other items under Contract.

Partial payments for mobilization made will be made each month as the work progresses. These payments will be made as follows:

(1) When 10 percent of the original contract amount is earned, 50 percent of the amount bid for mobilization will be paid.

(2) When 50 percent of the original contract amount is earned, 100 percent of the amount bid for mobilization will be paid.

(3) The total sum of all payments shall not exceed the original contract amount bid for the item, regardless of the fact the Contractor may have, for any reason, shut down the work on the project or moved equipment away from the project and then back again.

For the purpose of this section, the term "original contract amount" as used above shall mean the amount bid for the construction items in the Contract not including the amount bid for mobilization. Payments for materials on hand will be included as a percent of original contract amount earned until said materials on hand have been incorporated into the work and accepted and paid for as contract items.

2.43 – TACTILE BAND FOR CURB RAMPS

The base of the curb ramp area (only) shall include a Tactile Band. The Tactile Band shall be cast iron castings containing truncated domes. Castings shall meet the requirements of Americans with Disabilities Act Accessibility Guidelines (ADAAG) for Accessible Public Rights-of-way. Castings shall be cast-in-place truncated dome tactile system, Neenah R-4984, East Jordan Iron Works 7005, or approved equal at the sizes shown on the plans. All work associated with this item shall be paid for under the "Install Tactile Band" bid item.

2.44 – CONSTRUCTION PHASING

Phase 1 construction will be all items within the Wills Boulevard portion of the project. Phase 2 will be Outlook Boulevard and all of the Stormwater items within the project.

CITY of

PUEBLO

CONTRACTOR/CONSULTANT SATISFACTION PROGRAM

PURPOSE:

To evaluate the performance of contractors and consultants who provide service to the City of Pueblo and increase communication and foster positive relationships. The instrument utilized in this program will also provide an avenue to communicate our expectations as it relates to providing timely, cost-effective, and quality service to the citizens of the City of Pueblo.

PROGRAM:

This program and evaluation instrument will be included in the bid packet or request for proposal on all bids. The program will also be discussed at each pre-bid meeting and pre-construction meeting. Within 30 days after completion of the project/program, the employee who was directly responsible for overseeing the contract will complete the evaluation form; then set up a post-contract meeting with the consultant or contractor to review the evaluation with them. Files on every contractor/consultant will be maintained by each Division as well as being placed on a database in the public fileserver on the City network for use by all Divisions. The information will also be utilized as part of the review process for awarding future bids by the City Pueblo.

Effective Date: 10/09/2012

CITY OF PUEBLO

CONTRACTOR/CONSULTANT SATISFACTION FORM

Contractor/Consultant: _____

Project Name: _____

Time Period of Contract: _____

Post Contract Meeting Date with Contractor/Consultant: _____

Type of Contract: _____ Project No. _____
(Construction or Consulting)

Amount of Contract: _____

Instructions: Please rate all areas applicable to the contract just completed. For areas rated less than 10, please attach back-up documentation (i.e., inspector reports, etc.) to support the rating or provide information in comment section, as necessary. Be sure to adjust the final score based on the number of criteria being rated.

A. ORGANIZATION AND MANAGEMENT

1. To what degree are management personnel available with full authority to execute the directions of the engineer?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

2. To what degree are management personnel competent and effective in scheduling the work and organizing construction operations, including being punctual in starting and completing the work on the project and meeting critical intermediate phases in accordance with the approved progress schedule?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

3. To what degree did management personnel have the knowledge necessary regarding specifications, plans and special provisions?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

4. **How adequately was the project staffed with competent workers and were they monitored?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

5. **To what degree did the contractor/consultant furnish the required documentation and reports in a timely manner (i.e., certification of materials, delivery tickets, progress schedule, shop drawings, material sampling, potential claims, etc.)?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

6. **Did the contractor/consultant inform project personnel in advance of scheduled day-to-day items of work?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

7. **To what degree was the chain of authority in the City of Pueblo respected by the contractor/consultant?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

8. **To what degree did the contractor/consultant treat the Project Personnel with respect and maintain a positive attitude with them.**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

9. **Did the contractor/consultant comply with the direction of project personnel without delay?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

10. **To what degree did the contractor/consultant cooperate with other contractors/consultants/agencies performing work on adjacent or related projects?**

_____ 9-10 Excellent

_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

11. Did the contractor/consultant comply with all wage rates and labor regulations/provisions and submit accurate payrolls?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

12. To what degree did the contractor inform the adjacent residents/business owners of the different phases of construction?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

13. Did the contractor/consultant effectively handle situations involving problem employees that were brought to their attention by the City of Pueblo?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

B. EQUIPMENT

1. Did the contractor provide the appropriate number and type of equipment necessary for performance for the work?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

2. Did the contractor provide reliable equipment so as not to impede the progress of the project?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

C. WORK PERFORMANCE

1. To what degree was the work site maintained in a safe, clean and orderly condition?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

2. To what degree did the contractor maintain adequate signs, lights, barricades and properly trained flag persons in accordance with the latest edition of the Manual on Uniform Traffic Control Devices, traffic control plan and approved revisions?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

3. To what degree did the contractor/consultant meet contract requirements including standard specifications, technical specifications, general provisions, special provisions, plans and supplementary documents with minimal instruction from the City of Pueblo?

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

4. **To what degree was the overall quality of work performed by the contractor/consultant?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

5. **To what degree did the contractor/consultant properly notify and coordinate work with other agencies/utility companies in protection of existing facilities?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

6. **To what degree did the contractor/consultant minimize urgencies of construction or consultations that required the City of Pueblo to compromise the quality of work or abandon good construction/engineering practices in order to complete the project?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

7. **Did the contractor/consultant finish the work by the contract end date? (The contractor/consultant should not be penalized for delays caused by the City.)**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor.

Comments:

_____
_____
_____
_____
_____

8. **Did the contractor/consultant finish the work on budget? (the contractor/consultant should not be penalized for cost overruns as a result of a change in project scope requested by the City.)**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

9. **To what degree was final clean up and punch list items complete?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

D. SUBCONTRACTOR MANAGEMENT

1. **To what degree did the contractor/consultant coordinate work with subcontractors' work?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

2. **To what degree did the contractor/consultant exercise authority over subcontractors and provide notice of subcontractor work schedule?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

3. **To what degree did the contractor monitor subcontractor activities to ensure approved materials were supplied and incorporated into the project?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

4. **To what degree did the contractor/consultant ensure that subcontractors submitted all paperwork required for approvals, materials and payrolls?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

5. **To what degree did the contractor/consultant meet the level of Disadvantaged Business Enterprise utilization which they indicated they would use at the time of contract award?**

_____ 9-10 Excellent
_____ 7-8 Very Good
_____ 5-6 Average
_____ 3-4 Fair
_____ 1-2 Poor

Comments:

_____
_____
_____
_____
_____

CONTRACTOR/CONSULTANT SATISFACTION PROGRAM

SCORESHEET

A. Organization and Management

Question Number	Issue	Score (10 max. ea.)	Weighting Factor	Total Score
1	Are management personnel available		1	
2	Are management personnel organized		1	
3	Are management personnel knowledgeable		1	
4	Was project adequately staffed		1	
5	Documents furnished timely		1	
6	Was schedule known in advance		2	
7	Did the contractor/consultant respect the City's chain of authority		1	
8	Did the contractor/consultant comply with City direction		2	
9	Cooperation with other project contractors/consultants		1	
10	Comply with wage rates, labor regulations, accurate payrolls		1	
11	Communication with residents/businesses		1	
12	Ability to handle problem employees		1	
	TOTAL (140 max)			

B. Equipment

1	Appropriate number and type of equipment used		1	
2	Was equipment reliable		1	
	TOTAL (20 max)			

CONTRACTOR/CONSULTANT SATISFACTION PROGRAM

SCORESHEET

C. Work Performance

Question Number	Issue	Score (10 max. ea.)	Weighting Factor	Total Score
1	Work site maintained		1	
2	Maintained traffic control		1	
3	Meet contract requirements		1	
4	Quality of work		2	
5	Coordinate work with other utilities		1	
6	Was the quality of work compromised		2	
7	Complete by contract end date		3	
8	Complete on budget		3	
9	Clean-up and punch list items		2	
	TOTAL (160 max)			

D. Subcontractor Management

Question Number	Issue	Score (10 max. ea.)	Weighting Factor	Total Score
1	Coordination with subcontractors		1	
2	Exercise authority and provide schedules		2	
3	Subcontractor materials oversight		1	
4	All paperwork properly submitted by contractor		1	
5	DBE utilization		1	
	TOTAL (50 max)			

TOTAL POINTS (ALL SECTIONS) _____

POSSIBLE POINTS _____

PERCENTAGE OF POSSIBLE _____

ARTICLE 2A-1

LABOR PROVISIONS

1. CONTRACTOR'S BONDS:

Payment and performance bonds are required to be filed prior to issuance of the notice to proceed. The specific requirements for such bonds are set forth in Section 3.124 of the General Provisions.

2. EQUAL EMPLOYMENT OPPORTUNITIES:

It is the policy of the City of Pueblo to provide equal opportunity in employment without regard to race, color, religion, sex, sexual orientation, ancestry, disability, age or national origin. It is hereby deemed and declared to be for the public welfare and in the best interests of the City of Pueblo to require bidders and contractors furnishing and providing work, services, supplies and materials to the City of Pueblo under Municipal Contracts not to discriminate in the hiring and promotion of employees in order to further equal employment opportunities for members of minority groups and women. Failure to subscribe to and accept the non-discrimination and equal employment requirements shall render a bidder ineligible for a Municipal Contract award and ineligible to participate in the work for which a Municipal Contract award is made.

3. MUNICIPAL CONTRACT PROVISIONS:

During the performance of this contract, the Contractor agrees as follows:

a. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, ancestry, disability, age or national origin. The Contractor will take affirmative action in all areas of employment to insure that applicants for employment are employed, and that employees are treated during employment, without regard to race, color, religion, sex, sexual orientation, ancestry, disability, age or national origin. Areas of employment shall mean and include, but shall not be limited to the following: initial employment, up-grading, demotion, transfer, recruitment, recruitment advertising, lay-offs, terminations, rates of pay, terms of compensation, and selection for training, including apprenticeship. The Contractor will post in conspicuous places, available to employees and applicants for employment, notices to be provided by the City of Pueblo setting forth the provisions of this non-discrimination and equal opportunity paragraph.

b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, ancestry, disability, age or national origin.

c. The Contractor will meet and comply with the letter and spirit of Chapter 8, Title I of the Pueblo Municipal Code, as amended, and applicable State Statutes. If this Municipal Contract involves construction work or the providing of supplies or materials in excess of ten thousand dollars ($10,000.00) in the building and construction trades industry, the Contractor

shall have adopted and file with the City a copy of the Contractor's Complying Affirmative Action Program. A Complying Affirmative Action Program shall be a written affirmative action program meeting all the requirements of Chapter 60 of Title 41, Code of Federal Regulations (41 CFR, Chapter 60), including all parts and subparts thereof. This requirement for having adopted and filing a Complying Affirmative Action Program applies to this contract, regardless of whether federal financial assistance has been provided for this Project.

d. In the event of the contractor's non-compliance with the non-discrimination and equal employment requirements of Chapter 8, Title I of the Pueblo Municipal Code, as amended, the contract may be cancelled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further contracts with the City of Pueblo.

e. The Contractor will include the provisions of the above listed paragraphs (a) through (d) in every sub-contract entered into by contractor to provide and furnish work, services, supplies or materials under a Municipal Contract.

4. COMPLIANCE REVIEW:

a. The City of Pueblo's Personnel Specialist shall have the power to review, upon not less than five (5) days notice, and during normal business hours, the employment practices of contractors during the performance of every such Municipal Contract, and of sub- contractors during the performance of every sub-contract awarded thereunder, in order to obtain information relating to compliance or non-compliance with the non-discrimination and equal employment opportunity requirements of this Chapter.

b. When a written complaint is filed and an investigation by the Personnel Specialist indicates that there has been a violation of this Chapter or when a compliance review by the Personnel Specialist indicates that a contractor or sub-contractor has violated this Chapter, he shall issue and cause to be served on said contractor or sub-contractor, a Notice of Violation. Such Notice shall specify the violations and shall direct the contractor or sub-contractor to respond in writing within ten (10) days to show cause why the sanctions of this Chapter should not be imposed. The Personnel Specialist shall forward a copy of the Notice of Violation and the response of the contractor or sub- contractor to the City Manager within thirty (30) days from the date of the Notice of Violation.

c. The City Manager or his authorized representative shall review the Notice of Violation and the contractor or sub-contractor's response and shall determine whether any violations have occurred. If the City Manager or his authorized representative has determined that a violation has occurred, he may impose such sanctions as he deems appropriate, including but not limited to, suspending or terminating the contract involved or any portion or portions thereof, or causing to be removed from the list of eligible pre-qualified contractors the names of contractors and sub-contractors found to be in non-compliance with the non-discrimination or equal employment opportunity requirements of this Chapter and the provision of any such contract or sub-contract awarded thereunder until such time as the City Manager is satisfied that such contractors or sub- contractors are in compliance with the non-discrimination and equal employment opportunity requirements of this Chapter.

5. FEDERAL REQUIREMENTS GOVERN:

Whenever the provisions and requirements of this Chapter, or of the bidding specifications, conflict in any way or to any degree with the non-discrimination and equal employment opportunity requirements of the United States of America and any such contract under consideration is funded in whole or in part by the United States of America, or is otherwise subject to requirements having the force of law of the United States of America, then such requirements of the United States of America shall govern and control.

By submitting a bid for subject project the Contractor agrees that he will abide by the provisions herein set forth and that he will require any and all sub-contractors to also comply with said provisions.

ARTICLE 3

GENERAL PROVISIONS

INDEX

GENERAL	3.0
BIDDING AND CONTRACT EXECUTION	3.1
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PLANS AND SPECIFICATIONS	3.4
ENGINEER, INSPECTION AND TESTING	3.5
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ARTICLE 3

GENERAL PROVISIONS

3.00 - GENERAL

The provisions of this Article are of a general nature and are intended to apply to contract work of all types. Whenever any of these provisions do not apply to a specific contract, the exceptions are noted in the Special Provisions (Article 2).

3.1 - BIDDING AND CONTRACT EXECUTION

3.101 - DEFINITIONS

The following terms, as used in these contract documents are respectively defined as follows:

(a) "City" City of Pueblo, Colorado.

(b) "Closing Time" The scheduled closing time for the receipt of bids, and the opening thereof.

(c) "Contractor" The person, persons, firm, or corporation to whom the within contract is awarded by the City and who is subject to the terms of said contract. Also the agents, employees, workmen, or assignees of said Contractor.

(d) "Engineer" Unless otherwise stated in Article 2, Engineer shall mean the Director of Public Works of Pueblo, Colorado, or his authorized agents.

(e) "Work" All work contemplated by the Contract Documents and Specifications including materials, labor, supervision, and use of tools necessary to complete the project in full compliance with the terms of the contract.

(f) "Notice" Where in any section of the Contract Document there is any provision in respect to the giving of any notice, such notice shall be deemed to have been given (as to the City) when written notice shall be delivered to the Engineer or shall have been placed in the United States Mails addressed to the City Manager at the place where the bids, or proposals for the contract were opened; (as to the Contractor) when a written notice shall be delivered to the chief representative of the Contractor at the site of the project to be constructed under the contract or when such written notice shall have been placed in the United States mails addressed to the Contractor at the place stated in the papers prepared by him to accompany his proposal as the address of his permanent place of business; (as to the Surety) on the performance and payment bonds when a written notice is placed in the United States mails addressed to the Surety at either the home office of such Surety or when such notice is placed in the United States mails addressed to the Commissioner of Insurance of the State of Colorado.

(g) "Project" The entire improvement proposed by the City to be constructed in whole or in part pursuant to the within contract.

(h) "Subcontractor" A person, firm, or corporation, other than the Contractor, supplying labor and materials, or labor only, on work at the site of the project, having a direct

contract with the Contractor and including one who furnishes material worked to a special design according to the plans and specifications of this work, but not including one who merely furnishes material not so worked.

(i) "Surety" The person, firm, or corporation that has executed, as surety, the Contractor's Performance and Payment Bonds.

3.102 - SITE EXAMINATION

(a) Bidders shall inform themselves of the conditions under which the work is to be performed, concerning the site of the work, the structure of the ground, obstacles which may be encountered, availability of labor and all other relevant matters concerning the work to be performed. Where soil reports or test boring logs indicating underground conditions are provided or shown on the plans, such information shall be considered only as indicative of conditions as observed at the time and place indicated, and the City in no way warrants the accuracy or reliability of said reports or boring logs and is not responsible for any deduction, interpretation or conclusion drawn therefrom by the Contractor. Contractor acknowledges that the City shall not be held responsible for any variance in conditions or unforeseen conditions encountered at the time of actual construction. It shall be the responsibility of the Contractor to satisfy himself by such methods as he deems necessary prior to the letting as to underground conditions, structures and obstacles to be encountered.

(b) The Contractor to whom a contract is awarded will not be allowed any extra compensation by reason of any matter or thing concerning which he might fully have informed himself, prior to the bidding. Misunderstanding as to the amount of work, availability of materials or labor shall be no cause for failure to enter into the contract or to perform the same.

(c) The successful Contractor will be required to employ, so far as possible, such methods and means in the carrying out of his work as will not cause any interruption or interference with any other Contractor.

3.103 - SPECIFICATION REQUIREMENTS

(a) The bidder is expected to base his bid on materials and equipment complying fully with the plans and specifications, and in the event he names in his bid, materials or equipment which do not conform, he will be responsible for furnishing materials and equipment which fully conform at no change in his bid price.

(b) Before submitting a proposal, each Contractor should read the complete specifications and plans, including all related documents contained herein, all of which contain provisions applicable not only to the successful bidder, but also to his subcontractors.

3.104 - STATEMENT OF BIDDER'S PLANT AND FINANCIAL CONDITION

(a) Each bidder shall be prepared to submit the following data within seven (7) days upon demand of the Purchasing Agent:

(1) A statement that the bidder maintains a permanent place of business and address thereof;

(2) A statement of the equipment which the bidder proposes to use on the project, together with a statement identifying that equipment previously mentioned which the bidder owns and that which he does not own, but is certain he will be able to rent or otherwise procure for use on the project;

(3) A financial statement, duly sworn to and in form approved by the City, listing assets and liabilities;

(4) Statement listing projects of similar nature which the bidder has constructed or in the construction of which the bidder was actively engaged in a responsible capacity.

(5) A statement that the bidder: (i) is not presently debarred or suspended by the Colorado State purchasing director or the head of any Colorado purchasing agency, (ii) is not listed on any federal government list of debarments, suspensions or voluntary exclusions, including but not limited to, the List of Parties Excluded From Federal Procurement or Nonprocurement Programs maintained by the General Services Administration, and (iii) neither bidder nor any person or firm who has an interest in bidder's firm is a person or firm ineligible to be awarded a federal government contract by virtue of any provision of federal law. In the event bidder cannot truthfully make the required statement, bidder shall furnish a detailed statement indicating the reasons therefore.

(b) By submitting a bid, bidder authorizes the City to obtain information concerning bidder's performance on other projects it has performed during the prior five (5) years, including those listed by bidder and those not listed which City may become aware of. By submitting its bid, the bidder also waives and releases all claims against owners, architects, and engineers, and their agents and representatives, relating to or arising from the furnishing of such information to the City concerning bidder's performance on prior projects. In order to effectuate the intent of this clause, bidder may be required by City to execute information release authorization forms.

(c) Any bidder may be required by the City to submit additional data to satisfy the City that such bidder is prepared to fulfill the contract if it is awarded to him.

(d) The failure of bidder to furnish any information which is or may be required to be furnished under this section shall be grounds for determining bidder not responsible.

3.105 - CONDITIONS IN A BIDDER'S PROPOSAL

A bidder shall not stipulate in his proposal any conditions not contained in the Form of Proposal contained in the Contract Documents.

3.106 - QUANTITIES

Bidders must satisfy themselves by personal examination of the locations of the proposed work and by such other means as they may prefer as to the correctness of any quantities listed in the proposal and shall not after submission of their proposal, dispute or complain of such estimate, nor assert that there was any misunderstanding in regard to the nature or amount of work to be done.

3.107 - COPIES OF DOCUMENTS

Each bidder will be furnished with one copy of the specifications and related documents upon deposit as stated in the Advertisement for Bid. All proposals must be made in the complete copy of specifications and related documents.

3.11 - BIDS

3.111 - DATA SHEETS

Where data sheets concerning equipment to be furnished are included in the Specification Documents as a part of the proposal, the bidder shall furnish the required information by filling in the data sheets complete in every detail. In the event that such data sheets are insufficient, or do not readily lend themselves to the correct description of the equipment, the bidder shall file with the bid additional statements setting out the necessary information. Failure to furnish such information as is required on the data sheets will be considered

as grounds for rejecting the bid.

3.112 - SUBMISSION AND CONSIDERATION OF BIDS

(a) Each proposal shall be firmly sealed in an envelope labeled as designated in the Advertisement for Bids and delivered to the office of the Purchasing Agent, City of Pueblo.

(b) All bids are to be made only on forms of proposal furnished by the City and included in this volume. Total bid prices are to be written both by words and by figures; in case of conflict, former will apply. Unit bids may be made by figures only. No bid will be accepted which does not contain an adequate or reasonable price for each and every item named in the bidding schedule on the contract bid form.

(c) Only proposals which are made out upon the regular proposal forms attached hereto will be considered. The proposal forms must not be separated from the attached volume. Any correction on the proposal form must be initialed by the same person signing the bid.

(d) The City reserves the right to waive any informality in bids.

(e) The City reserves the right to reject any or all bids, or any or all parts of bids

(f) A Colorado resident bidder shall be allowed a preference against a nonresident bidder to the extent authorized by, and subject to the limitations of, Articles 18 and 19 of Title 8, Colorado Revised Statutes; provided however, that this paragraph (f) shall be suspended to the extent any such preference is inconsistent with a requirement of federal law or the terms and conditions of any grant or cooperative agreement to which the City is a party which relates to the Project.

3.113 - BID SECURITY

(a) No proposal will be received unless accompanied by a certified check, cashier's check, postal money order, bid bond or other suitable collateral, as set forth in the Request for Bids, payable to the City as a guarantee that if the bid is accepted, the bidder will execute and file the proposed contract and bonds within ten (10) days from the date of the award of the contract. On failure of the successful bidder to execute the contract and furnish bonds, he shall forfeit the deposit as agreed as liquidated damages, and the acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

(b) The bid security of the three lowest formal bidders for each contract may be held until the contract is executed and approved and then returned to the bidders. The balance of bid securities submitted will be returned within seven (7) days after the opening of bids.

3.114 - SIGNING OF BIDS

(a) Bids which are not signed by individuals making them should have attached thereto a power of attorney evidencing authority to sign the bid in the name of the person for whom it is signed.

(b) Bids which are signed for a co-partnership should be signed by all of the co-partners or by an attorney-in-fact. If signed by an attorney-in-fact, there should be attached to the bid a power of attorney evidencing authority to sign the bid.

(c) Bids which are signed for a corporation should have the correct corporate name thereof signed in handwriting or in typewriting and the signature of the president or other authorized officer of the corporation should be manually written below the written or typewritten corporate name following the words "by _____".

_____
Title

(d) If bids are signed for any other legal entity, the authority of the person signing for such legal entity should be attached to the bid.

3.115 - MODIFICATION OF BIDS

Modification of bids already submitted will be permitted, provided such modification be in writing and transmitted to the Purchasing Agent of the City prior to closing time. Such modification shall not reveal the total amount of the original or revised bid.

3.116 - WITHDRAWAL OF BIDS

Any bidder may withdraw his bid any time prior to the closing time, but no bid shall be withdrawn for a period of sixty (60) days after closing time. Negligence or mistake on the part of the bidder shall not constitute a right to withdraw after closing time. Any bid received after closing time will be returned unopened.

3.117 - DUPLICATION OF BIDS

If more than one bid be offered by one party, all such bids shall be returned unopened. If duplicate bids are not discovered until after opening, such duplication shall be cause for immediate rejection of such bids. A party who has quoted prices to a bidder is not thereby disqualified from quoting prices to other bidders, or from submitting a direct bid on his own behalf.

3.118 - ALTERNATES

(a) If the proposal forms include alternates, each bidder shall bid on each alternate unless otherwise directed in the Special Conditions or other Contract Documents.

(b) Each bidder must submit such special data, if any, in respect to such alternate which any section of the Contract Documents require to be submitted with each bid.

3.119 - SUPPLEMENTAL UNIT PRICES

(a) On a lump sum contract, or partial lump sum contract, the City reserves the right to reject any or all supplemental unit prices which it deems to be excessive or unreasonable.

(b) In cases where any part or all of the bidding is to be received on a unit price basis, the quantities stated are not intended to govern. The quantities stated, on which unit prices are to be invited are approximate only, and each bidder will be required to make his own estimates of amounts, and to calculate his unit price bid accordingly. Bids will be compared on the basis of the stated number of units in the proposal form. Such estimated quantities, while made from the best information available, are approximate only. Payment on the contract will be based on actual number of units installed on the completed work. In the event of an error in the extension of prices, the unit price bid shall govern.

3.12 - CONTRACTS

3.121 - AWARD OF CONTRACT

(a) The contract may be awarded to the lowest and best, reliable and responsible bidder submitting a responsive bid within sixty (60) days from the date of opening of said bids.

(b) Subject to execution of the Contract Agreement by the Director of Finance certifying that a balance of appropriation exists and funds are available, the amount of money appropriated is equal to or in excess of the Contract price; provided, however, that if construction is phased and subject to annual

appropriation, funds only in the amount of initial appropriation are available and contractor shall confirm availability of funds before proceeding with work exceeding initial and subsequent annual appropriations.

3.122 - DEFINITION OF AWARD

The contract shall be deemed to have been awarded when formal notice of award shall have been duly served upon the intended awardee (i.e., the bidder to whom the City contemplates awarding the contract) by the Purchasing Agent of the City.

3.123 - EXECUTION OF CONTRACTS AND BONDS

(a) The successful bidder shall enter into a written contract agreement with the City on the form attached hereto. The bidder must comply with all State and Federal Laws as to provision of Workers' Compensation. Such contract agreement shall be subject to the Charter of Pueblo, the Code of Ordinances, City of Pueblo, and the Ordinance, if any, creating any Special Improvement District formed to carry out this project.

(b) Each contract must be executed in not less than four (4) original counterparts, and there shall be executed original counterparts of the Contractor's performance bond and payment bond in equal number to the executed original counterparts of the contract. Not less than two (2) copies of such executed documents will be retained by the City and two (2) copies will be delivered to the Contractor. The successful contractor must provide workers' compensation insurance and public liability and property damage insurance as outlined in the General Conditions of the Contract. The costs of executing the bonds and contract and insurance, including all notarial fees and expense, are to be paid by the Contractor to whom the contract is awarded.

3.124 - CONTRACT SECURITY

The Contractor shall furnish a good and sufficient Performance Bond and a Payment Bond on the forms attached hereto each in an amount not less than the full amount of the Contract price, as security for the faithful performance of the contract and for the payment of all persons performing labor and furnishing material in connection with the work. Said bonds shall be executed by a corporate surety duly authorized to issue bonds in the state of Colorado. Said bonds shall also be complete surety for all guarantees of materials and workmanship required by any provision of the Contract Documents or the specifications. If at any time during the continuance of the contract a Surety on either of the Contractor's bonds becomes irresponsible or insolvent the City shall have the right to require additional and sufficient sureties which the Contractor shall furnish within ten (10) days after written notice to do so.

3.125 - VERBAL AGREEMENTS

No verbal agreements or conversations with any agent or employee of the City, either before or after execution of the Contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising said contract.

3.126 - SCHEDULE OF UNIT PRICES

(a) Promptly following the execution of the contract documents for all lump sum contracts, the Contractor shall prepare and transmit to the Engineer two copies of an itemized breakdown showing the unit quantities of each major construction item and the corresponding unit prices. Such unit prices shall contain all costs including profit, of each item complete in place. The total cost of all the items shall equal the contract price for the project. This breakdown when approved by the Engineer, will be used primarily in determining payment due the Contractor on periodical estimates. If, in the opinion of the Engineer, any unit price submitted by the Contractor is unbalanced, a detailed breakdown of the items contained in the unit will be required.

(b) For contracts bid on a unit price basis, unit bid prices for substantially completed work will be used in determining payment due the Contractor on periodical estimates. Partially completed units may be paid for in periodical estimates.

3.13 - SUBCONTRACTS

3.131 - SUBCONTRACTORS

(a) The Contractor shall as soon as possible after the execution of the Contract, notify the City in writing of the names of the subcontractors proposed on the Contract, and shall not employ any subcontractor that the City objects to as incompetent or unfit. Additionally, Contractor shall not employ in the work any subcontractor, nor obtain materials from any supplier, who is (1) debarred or suspended by the Colorado state purchasing director or head of any Colorado purchasing agency or (2) listed on any federal government list of debarments, suspensions or voluntary exclusions, including but not limited to, the List of Parties Excluded from Federal Procurement or Nonprocurement Programs maintained by the General Services Administration.

(b) The Contractor agrees to be fully responsible to the City for the acts or omissions of his subcontractors and of any one employed directly or indirectly by him or them and this contract obligation shall be in addition to the liability imposed by law upon the contractor.

(c) Nothing contained in the contract documents shall create any contractual relationship between any subcontractor and the City.

(d) The Contractor agrees to bind every subcontractor (and every subcontractor of a subcontractor) by the terms of the General Provisions and the Special Provisions of the Contract, Plans and Specifications as far as applicable to his work, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the City.

3.132 - ASSIGNMENT OF CONTRACT

No assignment by the contractor of any principal construction contract or any part thereof or of the funds to be received thereunder by the contractor, will be recognized unless such assignment has had the written approval of the City and the Surety has been given due notice of such assignment and has furnished written consent thereto. Such written approval by the city shall not relieve the contractor of the obligations incurred by him under the terms of this contract. In addition to the usual recitals in assignment contracts, the following language must be set forth:

> "It is agreed that the funds to be paid to the assignee under this assignment are subject to a prior lien for services rendered or materials supplied for the performance of the work called for in said contract in favor of all persons, firms or corporations."

3.133 - OTHER CONTRACTS

The City may award other contracts for additional work, at the site of the project (or other locations) and the Contractor shall fully cooperate with such other contractors and carefully fit his own work to that provided under other contracts as may be directed by the City. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor.

3.2 - INDEMNITY AND INSURANCE

3.21 - INDEMNITY

The contractor and his sureties shall indemnify, defend and save harmless the City of Pueblo and all of its

officers, agents and employees from all suits, actions or claims of any character, name and description brought for or on account of any injuries or damage received or sustained by any person or persons or property, on account of any negligent act or fault of the Contractor, his agents or employees, in performance of said contract; or on account of the failure of the Contractor to provide necessary barricades, warning lights or signs; and shall forthwith pay any judgment, with costs, which may be obtained against the City, its officers, agents or employees, growing out of such injury or damage.

3.22 - CONTRACTORS INSURANCE

The Contractor shall not commence work under this contract until he has obtained at his own expense and without cost to the City all insurance required under this paragraph and such insurance has been approved by the City Attorney, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved. The Contractor shall maintain such insurance until the final acceptance by the City of all construction covered by the contract.

(a) Commercial General Liability Insurance

The Contractor shall secure and maintain during the period of this contract and for such additional time as work on the project is being performed, Commercial General Liability Insurance issued to and covering the liability of the contractor with respect to all work performed by him and all his subcontractors under the contract, to be written on a Commercial General Liability policy form CG 00 01. This insurance shall be written in amounts not less than $1,000,000 for each occurrence and aggregate for personal injury including death and bodily injury and $1,000,000 for each occurrence and aggregate for property damage. This policy of insurance shall be endorsed naming the City of Pueblo, its agents, officers and employees as additional insureds. To the extent that Contractor's work, or work under his direction, may require blasting, explosive conditions, or underground operations, the commercial general liability coverage shall contain no exclusion relative to blasting, explosion, collapse of building, or damage to underground property. The policy shall also provide coverage for contractual liability assumed by Contractor under the provisions of the Contract, and "Completed Operations and Projects Liability" coverage.

(b) Comprehensive Automobile Liability Insurance

The Contractor shall procure and maintain during the period of the contract and for such additional time as work on the project is being performed, Comprehensive Automobile Liability Insurance. This insurance shall be written with limits of liability for and injury to one person in any single occurrence of not less than $350,000 and for any injury to two or more persons in any single occurrence of not less than $1,000,000. This insurance shall include uninsured/underinsured motorist coverage and shall protect the Contractor from any and all claims arising from the use both on and off the site of the project of automobiles, trucks, tractors, backhoes and similar equipment whether owned, leased, hired or used by Contractor.

(c) Workers' Compensation Insurance

The Contractor shall procure and maintain during the period of this contract and for such additional time as work on this project is being performed, Workers' Compensation Insurance, including Occupational Disease Provisions, fully complying with the provisions of the Workers' Compensation Act, as amended, of the State of Colorado. Such insurance shall be obtained notwithstanding that Contractor may have no employees as defined under said Act or that Contractor might otherwise avail itself of an exemption under the Act from any legal requirement to obtain such coverage. Such insurance shall cover all employees of Contractor performing work on the project irrespective of whether such employees may be shareholders, managers, partners or owners of Contractor or exempt employees under the Act.

If any class of employees engaged in hazardous work under this contract at the site of the project is not protected by the Workers' Compensation statute, the Contractor shall provide, and similarly

shall cause each subcontractor to provide, special insurance for the protection of such employees not otherwise protected. Workers' compensation policy shall contain an endorsement waiving subrogation against the City.

(d) Builder's Risk Insurance

When specified in Article 2, Special Provisions, the Contractor shall secure and maintain during the period of this Contract, Builder's Risk "All-Risk" Completed Value Insurance coverage (including vandalism) upon 100% of the cost of the entire project which is the subject of this Contract and including completed work, work in progress, and materials delivered to the site for incorporation therein. Such insurance shall include as additional named insureds, the City, its officers, agents and employees, and any other person with an insurable interest designated by the City as an Additional Named Insured. Such insurance may have a $2,000 maximum deductible clause, which deductible amount shall be the responsibility of the Contractor. In the event the project site is located within the floodway or floodplain, or located within 500 feet of any lake, stream, river or other natural watercourse, the policy shall contain a flood endorsement.

(e) Any Subcontractor Performing Work for the Contractor

Any subcontractor performing work for the Contractor under the contract shall provide certificates of insurance protection to the Contractor and to the City of Pueblo, Colorado, of the same type and in the same amounts as required by the Contractor.

(f) The Insurance Coverage

The insurance coverage enumerated in the above subparagraphs constitutes the minimum requirements and said enumeration shall in no way lessen or limit the liability of the Contractor under the terms of the contract. The Contractor shall procure and maintain, at his own cost and expense, any additional kinds and amounts of insurance that, in his own judgement, may be necessary for his proper protection in the prosecution of the work.

(g) Certificates of Insurance

Certificates of Insurance for Workers' Compensation Insurance, Commercial General Liability Insurance and Comprehensive Automobile Liability Insurance shall be filed with the City prior to the execution of the contract. Certificates for Builder's Risk Insurance shall also be filed with the City when such insurance is required for the project. Said insurance shall not thereafter be canceled, permitted to expire, or be changed without 30 days advance written notice to the City.

3.3 - GUARANTEES, PATENTS, PERMITS

3.31 - GUARANTEES

(a) All work shall be constructed in compliance with applicable building and construction codes, and must be guaranteed for a period of two (2) years from the date of final acceptance, or for such other period as may be required in the Special Provisions.

(b) In placing orders for equipment the Contractor shall purchase same only under a written guarantee from the respective manufacturer that the equipment supplied will function satisfactorily as an integral part of the completed project in accordance with the plans and specifications. Furthermore, the Contractor shall require that the manufacturer agree in writing at the time the order for equipment is placed that he will be responsible for the proper functioning of the equipment in cooperation with the Contractor, and that whenever necessary during the installation period or tuning up period following construction period the manufacturer will supply, without additional cost to the City, such superintendence and mechanical labor and any additional parts and labor needed

to make the equipment function satisfactorily, even if same was not shown on approved shop drawings.

(c) The provisions of this section concerning guarantee by Contractor shall be construed in a manner consistent with the requirements and limitations of 23 CFR § 635.413.

3.32 - PERMITS, SURVEYS AND COMPLIANCE WITH LAWS

(a) Except as may otherwise be indicated in the contract documents, the Contractor shall procure at his own expense all permits, licenses and bonds necessary for the prosecution of his work, and/or required by Municipal, State, and Federal regulations and laws, including, but not limited to, permits for transportation of materials and equipment, blasting, environmental permits, and any other permit required for the project or contractor's operations, regardless of whether the necessity for such permit is disclosed in the plans and specifications.

(b) The City will furnish all site surveys, easements and rights of way necessary for construction of any permanent works required in the specifications, where such work is to be done on property other than the City's.

(c) The Contractor shall give all notices, pay all fees and taxes, including City Sales and Use Taxes, and comply with all Federal, State and Municipal laws, ordinances, rules and regulations and building and construction codes bearing on the conduct of the work. This contract as to all matters not particularly referred to and defined herein shall notwithstanding be subject to the provisions of all pertinent ordinances of the Municipality within whose limits the work is constructed, which ordinances are hereby made part hereof with the same force and effect as if specifically set out herein.

(d) This contract is specifically subject to the provisions of the Charter of Pueblo, all applicable portions of the 1971 Code of Ordinances of Pueblo, Colorado, and of the ordinance, resolution or order of the City Council authorizing this improvement. The aggregate payment on this contract may not exceed the estimates of the Engineer nor the amount budgeted for the project. If the cost of the improvement to be constructed under this contract is to be assessed upon the owners of land benefited by such improvements, upon complaint of any such landowner that the improvement in not being constructed in accordance with the contract, the Council may consider the complaint and make such order in the premises as shall be just, and such order shall be final and conclusive.

3.33 - DEFENSE OF CLAIMS OR SUITS BY REASON OF PATENT INFRINGEMENT

The Contractor shall pay for all royalties and patents for any patented product used by him or incorporated in the work, and shall defend all claims or suits for infringement of any patent right brought against himself thereof; except such claims or suits arising by reason of patent infringements or unauthorized use of patented processes where such is the direct result of specification requirements (as distinguished from patented articles, apparatus or equipment).

3.34 - LICENSE OR ROYALTY FEES

If the project is designed so as to require or permit the use of a process or processes (as distinguished from articles, apparatus or equipment) for which license or royalty fees will be charged, such fees for the use of such processes will be paid by the Contractor to the Patentee, Licensee or owner of such process, and bidder shall include shall fees in their bid.

3.4 - PLANS AND SPECIFICATIONS

3.41 - PLANS AND SPECIFICATIONS

(a) All work shall be executed in strict conformity with the plans and specifications, and the Contractor

shall do no work without proper drawings and instructions.

(b) The City will furnish to the Contractor three (3) complete sets of contract documents, including drawings. Additional copies of same or any part thereof shall be furnished at the expense of the Contractor.

(c) Figured dimensions on the plans shall be taken as correct but shall be checked by the Contractor before starting construction. Any errors, omissions, or discrepancies shall be brought to the attention of the Engineer and his decision thereon shall be final. All notes on the plans shall be followed. Corrections of errors, or omissions on the drawings or specifications may be made by the Engineer when such correction is necessary for the proper execution of the work.

3.42 - INTENT OF CONTRACT DOCUMENTS

(a) The sections of the contract documents and the contract plans are complementary, and what is called for by any one shall be binding as if called for by all. The intention of the contract documents is to include in the contract price the cost of all labor and materials, water, fuel, tools, plant, equipment, light, transportation and all other expense as may be necessary for the proper execution of the work.

(b) Any work shown on the plans and not covered in the specifications, or included in the specifications and not shown on the plans shall be executed by the Contractor as though shown both on the plans and included in the specifications. If the plans and specifications should be contradictory in any part, the specifications shall govern.

(c) If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical layout, or any errors or omissions in plans or layout, he shall immediately so inform the Engineer, and the Engineer shall promptly verify them. Any work done after such discovery without written consent of the Engineer authorizing same shall be done at the Contractor's risk.

(d) Any minor items not specifically called for in the plans and specifications, but which are necessary to complete the work ready for use in accordance with the requirements of good practice, as determined by the Engineer, shall be included as a part of the Contractor's bid price and furnished at no additional cost to the City.

(e) In interpreting the contract documents, words describing materials or work which have a well-known technical or trade meaning, unless otherwise specifically defined in the contract documents, shall be constructed in accordance with such well-known meaning recognized by architects, engineers and the trade.

3.43 - INTERPRETATION OF CONTRACT DOCUMENTS

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the plans, specifications, or other contract documents, he may submit to the Engineer a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the documents will be made only prior to closing time and by written addendum duly issued or delivered to each person receiving a set of such documents. The City will not be responsible for any other explanations or interpretations of the documents.

3.44 - STANDARD MANUFACTURER

Wherever the terms "standard", "recognized" or "reputable" manufacturer are used, they shall be construed as meaning manufacturers who have been engaged in the business of fabricating materials, equipment, or supplies of the nature called for by the specifications for a reasonable period of time prior to the date set for opening of bids, and who can demonstrate to the satisfaction of the City that said manufacturer has successfully installed equipment, materials, or supplies of the type proposed to be

furnished in at least three instances and that the performance of such materials, equipment, or supplies for a period of over twelve months prior to the date fixed for opening bids shall, prima facie, be deemed to have been engaged in such business for a reasonable length of time.

3.45 - "OR EQUAL" CLAUSE

Whenever in any section of the contract documents, plans or specifications, any article, material, or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or equal" if not inserted, shall be implied. The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality desired and shall not be construed in such a manner as to exclude manufacturer's products of comparable equality, design and efficiency.

3.46 - MATERIALS AND WORKMANSHIP

(a) The Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, heat, transportation, and other facilities necessary for the execution and completion of the contract. Unless otherwise stipulated in the specifications, all workmanship, equipment, materials and articles incorporated in the work covered by this Contract are to be new and of the best grade of their respective kinds for their purpose. The Contractor shall furnish to the Engineer, for his approval, the name of the manufacturer of machinery, mechanical and other equipment, which he contemplates installing, together with their performance capacities and other pertinent information.

(b) If not otherwise provided, material or work called for in this contract shall be furnished and performed in accordance with well-known established practice and standards recognized by architects, engineers and the trade insofar as possible.

(c) When required by the specifications, or when called for by the Engineer, the Contractor shall furnish for approval full information concerning the materials or articles which he contemplates incorporating in the work. Samples of materials shall be submitted for approval when so directed. Machinery, equipment, materials and articles installed or used without such approval shall be at the risk of subsequent rejection. All materials and workmanship shall be guaranteed by the Contractor and Surety for a period of two (2) years from date of final acceptance, or for such period as may be required in the Special Provisions.

(d) No material of any kind shall be installed in the project until it has been inspected and approved by the Engineer. All material rejected shall be immediately removed from the site of the work and not again offered for inspection. Any materials or workmanship found at any time to be defective shall be remedied at once regardless of previous inspections.

(e) At any time during the course of construction of this project when in opinion of the Engineer, provisions of the plans, specifications, or contract provisions are being violated by the Contractor or his employees, the Engineer shall have the right and authority to order all construction to cease or material to be removed, until arrangements satisfactory to the Engineer are made by the Contractor for resumption of the work in compliance with the provisions of the contract.

3.47 - SHOP DRAWINGS

(a) The Contractor, as soon as possible after approval of the source and the purchase of items of materials and equipment, shall submit to the Engineer all shop or setting drawings and schedules required for the work, including those pertaining to structural and reinforcing steel. The Contractor shall make any corrections in the drawings required by the Engineer, and resubmit same without delay.

(b) Three final copies of all shop or setting drawings shall be submitted to the Engineer, who after checking will retain two copies and return one copy to the Contractor. The Engineer's approval of

shop drawings of equipment and material shall extend only to determining the conformity of such equipment and materials with the general features of the design drawings prepared by the Engineer. Shop drawings are not part of the Contract Documents and do not modify the Contract Specifications. It shall be the responsibility of the Contractor to determine the correctness of all dimensions and minor details of such equipment and materials so that when incorporated in the work correct operations will result.

3.5 - ENGINEER, INSPECTION AND TESTING

3.51 - AUTHORITY OF ENGINEER

(a) The Engineer shall decide all questions which may arise as to the fulfillment of the contract on the part of the Contractor and his decision thereon shall be final and conclusive. He shall have authority to reject all work and materials which do not conform to the contract and to decide questions which arise in the execution of the work.

(b) If, in the opinion of the Engineer, the work being done by the Contractor is in violation in any way with the terms of the contract, he shall forthwith notify the Contractor to cease said violation.

(c) The Engineer shall, upon presentation to him, make prompt decisions in writing on all claims of the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the Contract documents. All such decisions of the Engineer shall be final and conclusive.

(d) The Contractor shall submit schedules which shall show the order in which the Contractor proposes to carry on the work, but the right to stipulate the order in which the contract shall be carried out is reserved to the Engineer.

(e) In the event either City or Contractor remains dissatisfied with the final decision of the Engineer hereunder, the City or Contractor may seek judicial review thereof pursuant to Rule 106, C.R.C.P. In no event shall the Contractor slow or stop the work while a determination is pending under this section 3.51, and the City will continue to make payment in accordance with the contract documents except as to any amount in dispute.

3.52 - TESTING OF MATERIALS

(a) Attention of the Contractor is directed to the materials tests required on this contract. All laboratory tests shall be approved by an approved testing laboratory. The specific test requirements are set forth in the sections of these specifications which describe the materials or apparatus to be tested. The Contractor shall furnish the materials to be tested and shall pay transportation charges and costs of testing on any samples required to be submitted to the laboratory.

(b) Where certified test reports are required to be furnished by the manufacturer, the Contractor shall furnish duplicate copies of the reports before the material will be approved for use.

3.53 - STAKING WORK

(a) The Engineer will set control stakes for general layout and all necessary grade stakes for construction work. The protection and care of such stakes shall be the responsibility of the Contractor. The Contractor may, at the discretion of the Engineer, be required to pay the cost of replacing stakes which are lost or destroyed. The detail layout of structures and staking of individual items shall be done by the Contractor subject to verification by the Engineer as to compliance with the contract plans and specifications. In any case, the Contractor shall be responsible for the correctness and accuracy of the detail layout of finished structures.

(b) Any personnel engaged in the surveying work on the project by the Contractor or his subcontractors, who is judged by the Engineer to be incompetent shall be removed from the work and replaced by competent personnel.

3.54 - FAILURE TO COMPLETE WORK ON TIME

(a) In case the Contractor shall fail to fully perform and complete the work in conformity with the provisions and conditions of the contract within the specified time limit set forth in the Proposal Form or within such further time as, in accordance with the provisions of this agreement shall be fixed or allowed for such performance and completion, the Contractor shall and will pay to the City of Pueblo for each and every day of the additional time in excess of the contract time and any granted extensions thereof, the sum given in the following schedule which said sum per calendar day is agreed upon, fixed and determined by the parties hereto. The amounts shown are considered to be liquidated damages to reimburse the City for the additional costs caused by delayed completion and in no case constitute a penalty. The amounts set forth below may be reduced or supplemented for project specific considerations as provided for in Article 2 – Special Provisions.

ORIGINAL CONTRACT AMOUNT	AMOUNT OF LIQUIDATED DAMAGES PER DAY
Less than $49,999	$200.00
$50,000 to $99,999	$250.00
$100,000 to 249,999	$300.00
$250,000 to $499,999	$400.00
$500,000 to $999,999	$500.00
$1,000,000 and above	$1,000.00 plus any additional amount specified in Article 2

3.55 - INSPECTION

(a) The Engineer and his authorized representatives shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper and safe facilities for such access and for inspection.

(b) The Engineer shall have the right to reject materials and workmanship which are defective, or require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the City. If the Contractor does not correct such condemned work and remove rejected materials within a reasonable time fixed by written notice, the City may remove them and charge the expense to the Contractor.

(c) Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any material respect due to fault of the Contractor or his subcontractors he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent, will be allowed the Contractor.

(d) All materials to be incorporated in the work, all labor performed, all tools, appliances, and methods used shall be subject to the inspection and approval or rejection of the Engineer.

(e) If the Engineer shall point out to the Contractor, his foreman or agent any neglect or disregard of the contract provisions, such neglect or disregard shall be remedied and further defective work shall be at once discontinued.

(f) The Contractor shall execute the work only in the presence of the Engineer or authorized inspectors, unless provision has been made for the work to proceed without complete engineering supervision or inspection. The presence of the Engineer or Inspector shall in no way relieve the Contractor of the responsibility of this contract, or be any warrant for the furnishing of bad material or poor workmanship.

(g) The inspection and supervision of the work by the Engineer is intended to aid the Contractor in applying labor, materials and workmanship in compliance with the contract provisions. Such inspection and supervision, however, shall not operate to release the Contractor from any of his contract obligations.

3.6 - CONTRACTOR'S WORKING CONDITIONS

3.61 - SUPERINTENDENCE

(a) The Contractor shall give his personal superintendence to the work or have at the site of the work at all times a competent foreman, superintendent, or other representative satisfactory to the Engineer and having authority to act for the Contractor. All directions given to him shall be as binding as if delivered to the Contractor. Such directions shall be confirmed upon written request to the Engineer by the Contractor or his superintendent.

(b) Insofar as it is practicable and except in the event of discharge by the Contractor or in the event of proven incompetence, the individual who has been designated to represent the Contractor shall so act, and shall follow without delay instructions of the Engineer in the prosecution of the work in conformity with the contract.

3.62 - LABOR

(a) The Contractor shall employ none but competent and skilled workmen and foremen in the conduct of work on this contract. The Contractor shall at all times enforce strict discipline and good order among his employees. The Engineer shall have the authority to order removal from the work of any Contractor's employee who refuses or neglects to observe any of the provisions of these plans or specifications, or who is incompetent, unfaithful, abusive, threatening, or disorderly in his conduct, and any such person shall not again be employed on this project without permission of the Engineer.

(b) Colorado labor shall be employed to perform the work to the extent of not less than eighty percent (80%) of each type of class of labor in the several classifications of skilled and common labor employed on this project, as required and defined in Article 17 of Title 8 of C.R.S.; provided, however that this subsection (b) shall be suspended and of no effect to the extent prohibited or inconsistent with a requirement of federal law or regulation or the terms and conditions of any grant or cooperative agreement to which the City is a party and which concerns the Project.

3.63 - USE OF JOB SITE AND PRIVATE LAND

(a) The Contractor shall confine his equipment, apparatus, the storage of materials and operations of his workmen to limits indicated by law, ordinances, permits or directions of the City and shall not encumber the premises with his materials.

(b) The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety. The Contractor shall enforce the Engineer's instructions regarding signs, advertisements, fires and smoke.

(c) The Contractor shall not use any vacant lot or private land as a plant site, depository for materials, or as a spoil site without the written authorization of the owner (or his agent) of the land, a copy of which authorization shall be filed with the City. The Contractor shall not interrupt, constrict, or alter established drainage ways on vacant lots or private land without first obtaining permission from the Engineer and the property owner.

3.64 - PROTECTION OF THE PUBLIC, WORKS AND PROPERTY

(a) The Contractor shall provide and maintain all necessary watchmen, barricades, warning lights and warning signs and take all necessary precautions for the protection of the public. He shall continuously maintain adequate protection of all work from damage, and shall take all reasonable precautions to protect the City's property from injury or loss arising in connection with the contract. He shall make good any damage, injury, or loss to his work and to the property of the city, except such as may be due to errors in the contract documents, or caused by agents or employees of the city.

(b) The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the City's and adjacent property from injury arising from or in connection with this contract.

(c) The Contractor will be responsible for any and all damage to property, public or private, that may be caused by his operations in the performance of this contract, and the Contractor shall defend any suit that may be brought against himself or the City on account of damage inflicted by his operations, and shall pay any judgements awarded to cover such damage; provided, however, that if either party to this contract should suffer injury or damages in any manner because of any wrongful act or neglect of the other party or of anyone employed by him, then he shall be reimbursed by the other party for such damage. Notice of pending claim for such reimbursement shall be made in writing to the party responsible within a reasonable time of the first observance of such damage, and the claim shall be filed and adjusted prior to the time of final payment.

3.65 - ACCIDENT PREVENTION

Precaution shall be exercised at all times for the protection of persons (including employees) and property. The safety provisions of applicable local ordinances, State and Federal laws, and building and construction codes shall be observed. Machinery, equipment, and all hazards shall be guarded or eliminated in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.

3.66 - INTERFERENCE WITH TRAFFIC

In executing the work on this project the Contractor shall not unnecessarily impede or interfere with traffic on public highways or streets. Any question as to what constitutes unnecessary interference with traffic or a hazard to traffic shall be determined by the Engineer and the Traffic Engineer of the City. The Contractor shall confer with and keep Police and Fire Departments of the City fully informed as to street or alleys which are to be closed to traffic for construction purposes. The Contractor shall be responsible for coordination of his work with all affected utilities.

3.67 - SANITARY CONVENIENCES

The Contractor shall provide and maintain at the site of the construction work at all times, suitable sanitary facilities for use of those employed on this contract without committing any public nuisance. Pit type toilets shall be of proper design and fly tight. All toilet facilities shall be subject to the approval of the Pueblo City-County Health Department.

3.68 - WORK IN BAD WEATHER

No construction work shall be done during stormy, freezing or inclement weather, except such as can be done satisfactorily, and in a manner to secure first class construction throughout, and then only subject to the permission of the Engineer.

3.69 – STATE-IMPOSED MANDATES PROHIBITING ILLEGAL ALIENS FROM PERFORMING WORK UNDER THIS CONTRACT

(a) At or prior to the time for execution of this Contract, Contractor shall submit to the Purchasing Agent of the City its certification that it does not knowingly employ or contract with an illegal alien who will perform work under this Contract and that the Contractor will participate in either the "E-Verify Program" created in Public Law 208, 104th Congress, as amended and expanded in Public law 156, 108th Congress, as amended, that is administered by the United States Department of Homeland Security or the "Department Program" established pursuant to section 8-17.5-102(5)(c), C.R.S. that is administered by the Colorado Department of Labor and Employment in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Contract.

(b) Contractor shall not:

(i) Knowingly employ or contract with an illegal alien to perform work under this Contract;

(ii) Enter into a contract with a subcontractor that fails to certify to Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract.

(c) The following state-imposed requirements apply to this Contract:

(i) The Contractor shall have confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Contract through participation in either the E-Verify Program or Department Program.

(ii) The Contractor is prohibited from using either the E-Verify Program or Department Program procedures to undertake pre-employment screening of job applicants while this Contract is being performed.

(iii) If the Contractor obtains actual knowledge that a subcontractor performing work under this contract knowingly employs or contracts with an illegal alien to perform work under this Contract, the Contractor shall be required to:

A. Notify the subcontractor and the Purchasing Agent of the City within three (3) days that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and

B. Terminate the subcontract with the subcontractor if within three (3) days of receiving the notice required pursuant to subparagraph (c)(iii)A. above, the subcontractor does not stop employing or contracting with the illegal alien; except that the Contractor shall not terminate the contract with the subcontractor if, during such three (3) days, the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

(iv) The Contractor is required to comply with any reasonable request by the Colorado Department of Labor and Employment (hereinafter referred to as "CDLE") made in the course of an investigation that CDLE is undertaking pursuant to its authority under §8-17.5-102(5), C.R.S.

(d) Violation of this Section by the Contractor shall constitute a breach of contract and grounds for termination. In the event of such termination, the Contractor shall be liable for City's actual and consequential damages.

(e) Nothing in this Section shall be construed as requiring the Contractor to violate any terms of participation in the E-Verify Program.

3.7 - CLEANUP AND FINAL COMPLETION

3.71 - CLEANING UP AND FINAL INSPECTION

(a) The Contractor shall at all times keep the site of the work free from accumulations of waste materials or rubbish caused by his employees or work and at the completion of the work he shall remove all his rubbish from and about the work and all his tools, equipment, scaffolding and surplus materials and shall leave his work clean and ready to use. In case of dispute, the City may remove the rubbish and surplus materials and charge the cost to the Contractor. This requirement shall not apply to property used for permanent disposal of rubbish or waste materials in accordance with permission of such disposal granted to the Contractor by the City therefor.

(b) All sewers, conduits, pipes and appurtenances and all tanks, pump wells, chambers, buildings and other structures shall be kept clean during construction; and as the work or any part thereof approaches completion, the Contractor shall systematically and thoroughly clean and make any needed repairs to them. He shall furnish at his own expense, suitable tools and labor for removing all water and cleaning out all dirt, mortar and foreign substances. Any undue leakage of water into the structures such as to make the work, in the opinion of the Engineer, fall short of first class work, shall be promptly corrected by the Contractor at his own expense. Cleaning and repairs shall be arranged, so far as practical, to be completed upon finishing the construction work. Notice to begin the final cleaning, and repairing, if such is needed, will be given by the Engineer, who at the same time will make his final inspection of the work. The Engineer will not approve the final estimate of any portion of the work until after the final inspection is made and the work found satisfactory.

3.72 - CUTTING AND PATCHING

(a) The Contractor shall do all cutting, fitting or patching of his work that may be required to make its several parts fit together or to receive the work of other contractors shown upon, or reasonably implied by, the plans and specifications of the completed project.

(b) Any cost caused by defective or ill-timed work shall be borne by the party responsible therefor.

(c) The Contractor shall not endanger any work by cutting, digging or otherwise, and shall not cut or alter the work of any other contractor without the consent of the Engineer.

3.73 - FINAL TESTS

After completion of the work the Contractor shall make any and all tests required by the specifications or by municipal or state regulations, and where so provided in said regulations shall furnish the City with certificates of inspection by the municipal or state regulatory bodies. The Contractor shall also make all tests required by the National Board of Fire Underwriters for the purpose of determining insurance rates or other protection of City or the Public.

3.74 - CORRECTION OF WORK AFTER FINAL PAYMENT

Neither the final payment nor any provision in the contract documents shall relieve the Contractor of the responsibility for negligence or faulty materials or workmanship, whether latent or patent, within the extent and period provided by law.

3.75 - TERMINATION FOR CAUSE

(a) In the event the Contractor shall be adjudged a bankrupt, or shall make a general assignment for the benefit of his creditors, or a receiver shall be appointed on account of his insolvency, or if he shall persistently or repeatedly refuse or should fail to supply enough properly skilled workmen or proper materials, or shall fail to maintain required insurance, or shall fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, or ordinances or the instructions of the Engineer, or otherwise be guilty of a substantial violation of any provisions of the contract, the City may serve written notice upon the Contractor and the Surety of its intention to terminate the contract, and unless within ten days after the serving of such notice upon the Contractor, such violation shall cease and satisfactory arrangement for correction be made, the contract shall, upon the expiration of said ten days cease and terminate. In the event of any such termination, the City shall immediately serve notice thereof upon the Surety and the Contractor, and the Surety shall have the right to take over and perform the contract; provided, however, that if the Surety does not commence performance thereof within thirty days from the date of the mailing to such Surety of a notice of termination, the City may take over the work and prosecute the same to completion for the account and at the expense of the Contractor, and the Contractor and his Surety shall be liable to the City for any excess cost thereby occasioned the City. If the unpaid balance of the contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. The expense incurred by the City herein provided, and the damages incurred through the Contractor's default, shall be determined by the Engineer whose decision thereon shall be final and conclusive.

(b) Where the contract has been terminated by the City, said termination shall not affect or terminate any of the rights of the City as against the Contractor and his Surety then existing or which may thereafter accrue because of such default. Any retention by the City of the moneys due the Contractor under the terms of the contract shall not release the Contractor or his Surety from liability for his default.

3.76 - FINAL ACCEPTANCE OF THE WORK

(a) The contract shall be deemed as having been finally accepted by the City upon authorization of final payment issued by the Engineer.

(b) Use of part of the improvement by the City before completion of the entire project is not to be construed by the Contractor as an acceptance by the City of that part so used.

3.77 - COMMENCEMENT AND COMPLETION OF WORK

(a) The Contractor shall commence work within three (3) calendar days of the date of execution of the contract (unless otherwise stated in the Proposal Form), and complete the contract within the number of calendar days from the date of the Notice of Award as stated in the Proposal Form.

(b) The dates fixed for commencement and completion of the work shall be extended for a period equivalent to the time lost because of severe and unusual weather, non-delivery of properly ordered materials, or other cause over which the Contractor is not responsible. The Contractor shall document reasons for requesting any such extensions in a letter to the Engineer, and the Engineer shall fix the period of extensions, if any, his decision being binding upon both parties. If satisfactory execution and completion of the Contract shall require work or materials in substantially greater amounts or quantities than those set forth in the contract, then the contract time shall automatically be increased in the same proportions as the cost of the additional work bears to the original contracted for. No allowance will be made for delays or suspension of the prosecution of the work due to the fault of the Contractor or his subcontractors or suppliers.

3.78 - LIQUIDATED DAMAGES

(a) In the event that the contract has not been completed within the specified time (including any approved time extensions as described in Paragraph 3.77) the amounts set forth in Paragraph 3.54 will be deducted from the amount paid the Contractor, as liquidated damages.

(b) No other liquidated damages will be charged for noncompletion within the specified time unless specifically stated in the Special Provisions.

3.79 – WAIVER OF STATUTORY LIMITATIONS AND CONDITIONS

The rights and remedies available to City under the Contract Documents, including the City's right to recover liquidated damages, are in addition to, and not limited by, any rights, remedies and limitations provided under law. By bidding upon and entering into this Contract, the Contractor specifically waives any and all of the provisions of Chapter 8 of Article 20 of Title 13, Colorado Revised Statues including, without limitations, those relating to defects in the work under the Contract, limitation of damages and notice of claim process.

3.8 - MEASUREMENT AND PAYMENT

3.81 - MEASUREMENT OF WORK

(a) If the proposal for the work under this contract is on a unit price basis, the actual number of units of each item of work to be constructed may be more or less than the corresponding number given in the proposal sheet or plans, but no variation will be made in the contract unit prices on the account. No extra measurement of any kind will be allowed in measuring the units of work under this contract, but the actual units of work shall be considered and all lengths will be measured on the centerline of the work, whether straight or curved. The Contractor will be paid the contract price for each unit of work done, which price will include the cost of all work described in the unit specifications.

(b) The method of measurement shall be as described in that part of the specifications covering the particular units of work or materials furnished.

3.82 - PAYMENTS

(a) The Contractor shall prepare and submit to the Engineer a detailed estimate of the work performed during the preceding calendar month, and at the time of completion of the work under the Contract, the Contractor shall prepare and submit to the Engineer a detailed estimate of the work performed since the last calendar month for which he has submitted as estimate, such estimates to be used after approval as a basis for periodical and final payments. When approved, one copy of such estimate will be returned to the Contractor.

(b) Not later than the 21st day after approval of periodic estimate and receipt of all other required payment submittals as detailed in Article 2 – Special Provisions, the City will make partial payment to the Contractor on the basis of a duly certified and approved estimate of the work performed by the Contractor during the preceding calendar month. The City at its discretion may include in such monthly estimates, payment for materials that will eventually be incorporated in the project, provided that such material is suitably stored on the site of the project at the time of submission of the estimate for payment. Payment for materials on hand but not in place, unless otherwise provided in the Special Provisions, shall be based on the Contractor's cost of such materials stored at the job site, as evidenced by material bills and freight bills. No additional allowances will be made for handling or drayage by the Contractor's forces, nor overhead, insurance, profit or other incidental costs. The Contractor shall, if required by the Engineer, present certified copies of receipted bills and freight bills for such materials. Such material when so paid for by the City shall become the property of the City, and in case of default on the part of the Contractor, the City may use or cause

to be used by others these materials in construction of the project.

(c) The City will retain a percentage of the amount of each periodical estimate until the final completion and acceptance by the City of all work included in this contract. Unless otherwise specified in Article 2 - Special Provisions, the percentage retained shall be 10%, except that the retainage on the periodic estimate considered to be the final estimate may be reduced by the Engineer to an amount deemed by him sufficient to complete minor work, effect minor repairs or perform minor cleanup, provided, however, that in no event may retainage be reduced to less than five percent (5%) of the original contract amount. Nothing in this section shall be construed to limit or restrict the City's right to withhold additional amounts pursuant to Section 3.84 of these General Provisions.

(d) Final payment of the percentage retained by the City on the monthly periodical estimates and on the final estimate will be paid to the Contractor not more than thirty (30) days after final acceptance by the City of the work on this contract and publication of the statutorily required Notice of Final Settlement.

3.83 – WAIVER OF STATUTORY RETENTION LIMITS

Contractor acknowledges that the City will retain up to 10% of each periodical estimate as set forth in paragraph 3.82(c) above. By bidding upon and entering into this Contract, the Contractor knowingly and voluntarily waives any and all right or entitlement it may have for a lesser percentage to be retained from payments pursuant to Section 24-91-103(1)(a), Colorado Revised Statutes.

3.84 - CITY'S RIGHT TO WITHHOLD CERTAIN AMOUNTS AND MAKE APPLICATIONS THEREOF

(a) The city may withhold, in addition to retained percentages, from any payment to the Contractor, such an amount or amounts as may be necessary to cover:

(1) Claims filed with the City for labor or materials furnished in connection with the work.

(2) Correction of defective work not promptly remedied by Contractor.

(3) Amounts owed to his suppliers, subcontractors and workers.

(4) An amount sufficient to ensure completion if a reasonable basis exists to believe that the contract cannot be completed for the balance then unpaid.

(5) Damage caused by Contractor to another contractor or public or private property.

(6) Excess cost of field engineering and inspection.

(7) City Sales and Use Tax to which the City is entitled.

(8) Liquidated damages.

(c) The City may disburse and shall have the right to act as agent for the Contractor in disbursing such funds as have been withheld pursuant to this paragraph to the party or parties who are entitled to payment therefrom. The City will render to the Contractor a proper accounting of all such funds disbursed in behalf of the Contractor.

(d) Neither the final payment nor any part of the retained percentage shall become due until 30 days after publication of Notice of Final Settlement on the Project and after the Contractor shall have delivered to the City a complete release for himself and all materialmen and subcontractors of all claims or liens arising out of the contract, or receipt in full in lieu thereof. The Contractor may, however, furnish a bond, satisfactory to the City Attorney, to indemnify the City against any claim

or lien. If any claim or lien remains unsatisfied after all payments are made, the Contractor and his Surety shall be liable to the City for all moneys that the latter may be compelled to pay in discharging such claim or lien, including all costs and reasonable attorney's fees.

3.85 - UNCORRECTED WORK

All work performed incorrectly or of incorrect materials shall be replaced before final payment. Final payment will be withheld until such corrections have been accomplished.

3.86 - CHANGE ORDERS

(a) The Engineer, in writing, may direct that changes be made in the work to be performed or the materials to be furnished pursuant to the provisions of this contract. A written change order which causes any increase in the original Contract Price shall include a statement that lawful appropriations have been made sufficient to cover the costs of the change order.

(b) Adjustments, if any, in the amounts to be paid to the Contractor by reason of any such change shall be determined by one or more of the following methods:

(1) By unit prices contained in the Contractor's original bid and incorporated in this construction contract;

(2) By a supplemental schedule of prices contained in the Contractor's original bid and incorporated in this construction contract; or by schedule of unit prices approved by Engineer pursuant to Section 3.126 of this Article;

(3) By an acceptable lump sum proposal from the Contractor;

(4) On a cost-plus-limited basis not to exceed a specified limit (defined as the cost of labor, materials and insurance plus a specified percentage of the cost of such labor, materials, and insurance; provided the specified percentage does not exceed fifteen (15) percent of the aggregate cost of such labor, materials, and insurance and shall in no event exceed a specified limit). Provided, however, that the aggregate payment of all work shall in no case exceed the estimate of the Engineer.

(c) No claims for an addition to the contract sum shall be valid unless authorized in writing as aforesaid.

(d) In cases where a lump sum proposal is submitted by the Contractor in excess of $500.00 (Five Hundred Dollars) and the Engineer considers the proposal so submitted is excessive or unreasonable for the changes or added work contemplated, the City reserves the right to request a proposal for the same changed items from other contractors. If a proposal for such added work is obtained from other contractors at a lesser amount, the City reserves the right to make an award for such work to another contractor unless the Contractor on this contract agrees to do the added or changed work for the price named by the other contractor.

(e) It shall be expressly understood and hereby agreed to by the Contractor that no claim for extra work will be recognized by the City unless claim for such added work has been filed by the Contractor within ten (10) days after such alleged extra work was performed.

3.87 SIGNIFICANT CHANGES IN CHARACTER OF THE WORK

(a) The Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the Contract nor release the surety, and the Contractor agrees to perform the work as altered.

(b) If the alterations or changes in quantities significantly change the character of the work under the Contract, whether such alternations or changes are in themselves significant changes to the character of the work, or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding loss of anticipated profit, will be made to the Contract Price. The basis for adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon for any reason what so ever, then an adjustment will be made either for or against the Contractor in such amount as the Engineer may determine to be fair and equitable.

(c) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the altered work will be paid for as provided elsewhere in the Contract.

(d) As used in this section, the term “significant change” shall be construed to apply only to the following circumstances:

(1) When the character of the work as altered differs substantially and materially in kind or nature from that involved or included in the original proposed construction, or

(2) When a major item of work is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed. A major item is defined to be any item having an original contract value in excess of 10 percent of the original contract amount.

3.9 - CONTRACTOR'S RIGHT TO TERMINATE

3.91 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work should be stopped under an order of any court, or other public authority, for a period of three (3) months, through no act or fault of the Contractor or of anyone employed by him, or if the Engineer should fail without cause to issue any estimate within thirty (30) days after it is due, then the Contractor may, upon ten (10) days written notice to the City of Pueblo, stop work or terminate the contract and recover from the City payment for all work executed plus any loss sustained upon any plant or material plus reasonable profit and damages.

July 19, 2016
Kleinfelder Project No. 20170699.001A/CSP16R43845

Mr. Earl Wilkinson
Director of Public Works
City of Pueblo
211 E. D St.
Pueblo, Colorado

Subject: **Geotechnical Evaluation Report**
Proposed Wills Boulevard and Outlook Boulevard Extensions
South of Dillon Drive
Pueblo, Colorado

Dear Mr. Wilkinson:

The attached report presents the results of our Geotechnical Evaluation performed for the proposed Wills Boulevard and Outlook Boulevard Extensions in Pueblo, Colorado. Our work consisted of a subsurface exploration, laboratory testing, engineering analyses, and preparation of this report.

We appreciate this opportunity to be of service to you, and look forward to future endeavors. If you have any questions regarding this report or need additional information or services, please contact our office at (719) 632-3593.

Respectfully submitted,

KLEINFELDER, INC.

JG T. McCall, EIT
Staff Geotechnical Engineer

J. Kevin White, PE
Principal Geotechnical Engineer

JTM/JKW/jkw

Enclosures

KLEINFELDER 4815 List Drive, Unit 115, Colorado Springs, CO 80919 p | 719.632.3593 f | 719.632.2648

GEOTECHNICAL EVALUATION REPORT
PROPOSED WILLS BOULEVARD AND OUTLOOK BOULEVARD EXTENSIONS
PUEBLO, COLORADO
KLEINFELDER PROJECT # 20170699.001A

JULY 19, 2016

A Report Prepared for:

Mr. Earl Wilkinson
Director of Public Works
City of Pueblo
211 E. D St.
Pueblo, CO 81005

GEOTECHNICAL EVALUATION REPORT
PROPOSED WILLS BOULEVARD AND
OUTLOOK BOULEVARD EXTENSIONS
PUEBLO, COLORADO

Prepared by:

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Project Engineer

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Staff Geotechnical Engineer

Reviewed by:

COLORADO LICENSED JAMES KEVIN WHITE 50163 PROFESSIONAL ENGINEER

7/19/16

J. Kevin White, PE
Principal Geotechnical Engineer

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July 19, 2016
Kleinfelder Project No: 20170699.001A

KLEINFELDER
Bright People. Right Solutions.

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1 INTRODUCTION

1.1 GENERAL

This report presents the results of Kleinfelder's geotechnical evaluation performed for the proposed Wills Boulevard and Outlook Boulevard Extensions in Pueblo, Colorado. The general location of the project is shown in Figure 1, Site Vicinity Map.

This report includes our recommendations relating to the geotechnical aspects of project design and construction. The conclusions and recommendations stated in this report are based upon the subsurface conditions found at the locations of our exploratory borings at the time our exploration was performed. They also are subject to the provisions stated in the report sections titled Additional Services and Limitations. Our findings, conclusions and recommendations should not be extrapolated to other areas or used for other projects without our prior review. Furthermore, they should not be used if the site has been altered, or if a prolonged period has elapsed since the date of the report, without Kleinfelder's prior review to determine if they remain valid.

1.2 PROJECT DESCRIPTION

The project consists of the design and construction approximately 700 linear feet of new asphalt pavement roadway along the Wills Boulevard alignment, and approximately 1,900 linear feet of new asphalt pavement along the Outlook Boulevard alignment, each located south of Dillon Drive. The existing adjacent roads and proposed alignments are presented in Figure 2, Exploration Location Plan. We assumed that planned cuts and fills to achieve finish site grades will be on the order of 2 feet or less along the project alignment. Other construction related activities are anticipated to include minor site grading for drainage improvements, installation of utilities, and landscaping.

1.3 PURPOSE AND SCOPE

The purpose of our investigation was to explore and evaluate subsurface conditions at various locations along the roadway alignments and, based on the conditions found, to develop recommendations relating to the geotechnical aspects of project design and construction. Our conclusions and recommendations in this report are based on analysis of the data from our field exploration, laboratory tests, and our experience with similar soil and geologic conditions in the area.

Kleinfelder's scope of services consisted of the following:

- A visual reconnaissance to observe surface and geologic conditions at the project site and locate the exploratory borings;
- Notification of UNCC and the appropriate facility owners to locate underground utility lines at the boring locations prior to drilling;
- The drilling of eight borings along the project alignment;
- Laboratory testing of selected samples obtained during the field exploration to evaluate relevant physical and engineering properties of the soil;
- Evaluation and engineering analysis of the field and laboratory data collected to develop our geotechnical conclusions and recommendations; and

Preparation of this report, which includes a description of the proposed project, a description of the surface and subsurface site conditions found during our investigation, our conclusions and recommendations as to pavement section thickness design and other related geotechnical issues, and appendices which summarize our field and laboratory investigations.

2 FIELD EXPLORATION AND LABORATORY TESTING

2.1 FIELD EXPLORATION

Our field exploration program was performed on June 17, 2016 and included advancing borings spaced at approximately every 350 feet along the proposed alignment. All borings were advanced to a depth of 10 feet below existing grade.

The exploratory borings were advanced using a truck-mounted CME-55 drill rig equipped with 4-inch outside-diameter, continuous-flight, solid-stem auger. Subsurface soil samples were obtained during exploration by bulk methods, as well as by using a California-type sampler (2.0-inch I.D./2.5-inch O.D.) and standard split-spoon sampler (1.375-inch I.D./2.5-inch O.D.) driven into the strata, with blows from a 140-pound hammer falling through a 30-inch drop. The blows required to drive the sampler into the strata are recorded on the logs. These blow counts are an indication of the relative density or consistency of the strata.

Appendix A includes individual boring logs describing the subsurface conditions encountered, and legends to the boring logs. The lines defining boundaries between soil and bedrock types on the logs are based on drill rig behavior and interpolation between samples and laboratory test results, and are therefore approximate. Transition between soil and bedrock types may be abrupt or may be gradual.

2.2 LABORATORY TESTING

2.2.1 Geotechnical Laboratory Testing

Geotechnical laboratory tests were performed on selected soil samples to estimate their relative engineering properties and to aid in classification. The following tests were performed in general accordance with recognized standards:

- Description and Identification of Soils (Visual-Manual Procedure);
- Classification of Soils for Engineering Purposes;
- Sieve Analysis of Fine and Coarse Aggregates Test;
- Swell/Consolidation Test;
- Natural Density and Moisture Content Test;
- Liquid Limit, Plastic Limit, and Plasticity Index Test, and;
- R-Value.

2.2.2 Analytical Laboratory Testing

The following analytical laboratory testing was performed on a select on-site soil samples by an independent laboratory:

- Water Soluble Sulfates;
- pH;
- Soil Resistivity;
- Soluble Sulfates;
- Soluble Chlorides;
- Redox; and
- Sulfides

Results of the geotechnical and analytical laboratory tests are included in Appendix B and C, respectively. Selected test results are also shown on the boring logs, Appendix A.

3 SITE CONDITIONS

3.1 PROJECT SITE

The proposed roadways are located along an undeveloped open space area. The site is bounded by commercial buildings to the east, residential developments to north and south, undeveloped space to the west. Surface conditions consisted of relatively flat terrain. The site is undeveloped except for un-maintained, primitive roadways. Sparse vegetation consisting of low grasses and weeds lined the existing roadway alignment.

3.2 GEOLOGY

Prior to drilling, the site geology was evaluated by reviewing the Colorado Geological Survey Map of the Pueblo 1° x 2° Quadrangle, south-central Colorado (Scott, Taylor, Epis, Wobus, 1978). The map review indicates the surficial conditions across the sites typically consist of Pierre Shale Formation. The published geologic mapping is generally consistent with our explorations in this area.

3.3 SUBSURFACE

Based on the conditions encountered during our field exploration, we characterized the subsurface and developed the general profile described below.

Asphalt and Base Course

Approximately 4.0inches of asphalt underlain by approximately 4 inches of aggregate base were encountered in Boring P-8. . All other borings were drilled on the existing soils.

Clay to Claystone

Clay with varying amounts of sand grading to claystone were encountered underlying the pavement section at Boring P-8, and from the surface at the remaining borings to the maximum depth explored of 11 feet. The blow counts generally indicate that the transition from soil-like clay to claystone is gradual and ranges from depths of about 3 to 8.5 feet.

The upper clay portion ranges from medium to high plasticity, very stiff to hard, and brown to dark brown. The lower claystone is typically highly weathered, ranges from medium to high plasticity, hard, and light brown, dark brown and gray. At BoringP-8, the claystone is unweathered.

The boring logs contained in Appendix A of this report should be reviewed for more detailed descriptions of the subsurface conditions at each of the boring locations explored.

3.4 SWELL POTENTIAL

We performed six laboratory swell tests on selected samples obtained from the borings to evaluate the expansive characteristics of the clay and weathered claystone. A summary of the test results is presented in the Table 1 below.

Table 1 – Swell Test Results Summary

Boring No.	Depth, ft	USCS Group Symbol	PI	Surcharge Load, psf	Swell, %
P-1	4	CL	19	150	1.8
P-2	9	Pierre Shale (CH)	25	500	1.1
P-4	3	CL	-	200	2.1
P-5	8	Pierre Shale (CH)	29	500	9.9
P-8	6	Pierre Shale (CH)	-	500	2.2
P-8	9	Pierre Shale (CH)	-	500	1.2

The results indicate that the near-surface clayey soils exhibit an average swell on the order of 2%, while the deeper, more bedrock-like materials exhibit widely varying swells, with an average swell of 3.3%

3.5 GROUNDWATER

Groundwater was not encountered during drilling at any of the boring locations to the maximum depth explored of 10.5 feet. It is not anticipated that groundwater will affect construction of the pavement sections or storm sewer installation. Soil moisture levels and groundwater levels commonly vary over time and space depending upon seasonal precipitation, irrigation practices, land use, and runoff conditions. Accordingly, the soil moisture and groundwater data in this report pertain only to the locations and times at which exploration was performed. It should be noted that Kleinfelder has not performed a hydrologic study to identify seasonal changes in groundwater conditions.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 PAVEMENT RECOMMENDATIONS

Our pavement investigation and thickness calculations were performed in general accordance with the City of Pueblo Pavement Design Criteria, dated *January 26, 2004*. Kleinfelder performed the flexible pavement design using the Software Program DARWin, which is based on the 1993 AASHTO Guide for Design of Pavement Structures.

A pavement section is a layered system designed to distribute concentrated traffic loads to the subgrade. Performance of the pavement structure is directly related to the physical properties of the subgrade soils and traffic loadings. Soils are represented for pavement design purposes by means of a soil support value for flexible pavements. Pavement design procedures are based on strength properties of the subgrade and pavement materials, along with the design traffic conditions.

4.1.1 Anticipated Pavement Subgrade

The pavement subgrade materials are anticipated to consist predominantly of lean to fat clayey sand and clay. A Hveem stabilometer (R-Value) test was performed on composite soil samples comprising the upper 5 feet of soil obtained in each boring. The resulting R-value was 7. Therefore, a resilient modulus (M_R) value of 5,040 psi was calculated from the appropriate R-Value conversion formula and was used in our pavement thickness calculations.

Results of the swell testing indicate that the projected subgrade soils within the upper 2 to 3 feet of existing grade exhibit an average swell less than 3%. Therefore, per the City's specifications, no swell mitigation is required. It must be noted that the swell potential of the deeper claystone exhibits variable and, in one case, a very high swell potential with significant swell pressure. Mitigation to significant depths would be required to significantly reduce the potential for the impacts of swelling deeper clays and claystone, and is considered not feasible.

4.1.2 Pavement Design Parameter Summary

Based upon information provided by the City, the above-referenced pavement design manual, and the composite R-value sample of the pavement subgrade from each boring, the following table presents the pavement design parameters that were utilized in our design. These parameters were utilized to calculate required thickness of new hot mix asphalt (HMA) and aggregate base course (ABC) layers.

Table 2 – Pavement Design Parameters

Pavement Design Parameters	
Roadway Classification	Collector Industrial - Commercial
20 year, 18-kip ESAL	730,000
Initial Serviceability Index	4.50
Terminal Serviceability Index	2.30
Overall Standard Deviation	0.45
Reliability [%]	90
R-Value	7
Resilient Modulus (M_R), psi	5,040
Strength Coefficients	
New HMA	0.44
New ABC	0.12

4.1.3 Design Sections

The following describes our recommended minimum thickness of HMA and ABC.

A new composite pavement section constructed, as described below, assumes that the existing subgrade can be removed to make room for the new pavement section, followed by 8-inches of scarification, moisture treatment, and compaction of the remaining subgrade materials as described in Section 4.2.2, and placement of new HMA and ABC on the properly prepared subgrade materials. Based on the subgrade strength characteristics and pavement design parameters described in Section 4.1.2, the minimum recommended composite pavement section thickness is presented in Table 3 below.

Table 3 – Minimum Recommended Composite Pavement Section Thickness*

Hot Mix Asphalt (HMA) *overlying* **Aggregate Base Course (ABC)**
6 inches HMA
12 inches ABC

*Overlying properly prepared subgrade per Section 4.2.2

4.2 CONSTRUCTION CONSIDERATIONS

All site preparation, earthwork operations and construction materials should be performed in accordance with applicable codes, safety regulations and other local, state or federal guidelines as applicable including, but not limited to:

- Pavement Design Criteria for City of Pueblo Colorado;
- Pikes Peak Region Asphalt Paving Specifications Manual; and
- Colorado Department of Transportation (CDOT), as applicable, and included by reference.

4.2.1 Pavement Materials

For analysis of the asphalt sections, we assumed that new HMA will conform to the requirements of the latest edition of the *Pikes Peak Region Asphalt Paving Specifications Manual,* including PG 64-22 binder grade, described in Table 1.002.4 of Section 1.001 - E. The HMA pavement should be placed in lifts not to exceed 3 inches in thickness, unless otherwise accepted by the project engineer, and be compacted to between 92 percent and 96 percent of its maximum theoretical (Rice) density.

The base course will conform to the requirements for Class 6 ABC in section 703.03 of the CDOT specifications, and AASHTO M 147. The ABC should have a Hveem R-value of 72 or higher or a CBR of 80+, and be compacted to at least 95 percent of the ASTM D 1557 maximum dry density at a water content within ±2 percentage of the optimum water content.

Recycled Asphalt Pavement (RAP) may be used as base course material provided it conforms to the requirements for Class 6 ABC in section 703.03 of the CDOT specifications, and AASHTO M 147. Testing during the construction phase will be required to evaluate conformance to CDOT specifications.

Portland cement concrete (PCC) for use in curb, gutter, and crosspan replacements shall conform to the requirements of the City's Pavement Design Criteria.

4.2.2 Subgrade Preparation

Any obviously unsuitable materials present (e.g., debris, organic materials, waste) should be completely removed. Remove the stripped materials for offsite disposal in accordance with local laws and regulations.

Prior to placement of pavement sections and subsequent to installation of storm sewer pipeline, processing of the subgrade should be performed. This should include scarifying the subgrade as necessary to a minimum depth of 8 inches, moisture conditioning of the subgrade soils to within a range of -2 to +2 percent of optimum moisture content, and compacting to a minimum of 92% of the laboratory maximum Proctor dry density (ASTM D 1557) for trench backfill soils, or minimum 95% (ASTM D 1557) for pavement subgrade and existing base course. Subsequent fill should be moisture conditioned as above and compacted as recommended in Table 5 in Section 4.2.4 of this report.

Any soft and/or wet areas exposed during the excavation process may need to be stabilized prior to placement of new fill and pavement sections to create a stable, unyielding construction platform. The method and extent of stabilization will depend on the actual conditions encountered, and the more appropriate method of stabilization will likely be best determined in the field at the time of excavation, by Kleinfelder representatives. A typical stabilization method includes utilizing geo-grid such as Tensar TX140 or TX160, and Class 6 Aggregate Base Course (ABC) to form a stable base on which to place the pavement section. Installation typically includes placement of the geo-grid directly on subgrade with on the order of 12 to 18 inches of ABC above the grid. Thicknesses will vary depending on actual conditions encountered and would require adjustment during construction.

Prior to placing the pavement section including aggregate base course, the pavement subgrade should be proof-rolled with a heavily loaded pneumatic-tired vehicle, such fully loaded water truck, after preparation. Areas that pump or deform significantly under heavy wheel loads are not stable and should be removed to a maximum depth of 2 feet and replaced with granular structural fill to achieve a stable subgrade prior to paving. Care should be taken to ensure areas around manholes or other utility protrusions are proof-rolled adequately.

4.2.3 Excavation Characteristics

Based on our subsurface drilling information, excavation into the overburden soil material can likely be accomplished utilizing conventional standard duty earth moving equipment. Based on blow count data and visual observation, the weathered shale bedrock encountered was judged to be predominantly weakly formed. Many factors impact excavatability of bedrock deposits,

including rock type, strength, hardness, weathering, degree of cementation, layering, fracturing, and the proposed excavation geometry. While we anticipate that a portion of the on-site bedrock materials can be excavated with standard excavation equipment, it is likely heavy-duty backhoes, hoe rams, and dozers equipped with rock excavating teeth/rippers and similar equipment will be required to excavate a large proportion of the on-site bedrock materials, where encountered. Additionally, we anticipate excavation in the more resistant materials could be relatively slow depending on the depth of excavation, the type of bedrock encountered, the type and site of equipment used, as well as the contractor's experience with similar excavation.

Groundwater was not encountered in our borings during this investigation. However, based on our experience in the area, localized areas of shallow groundwater have been encountered in the vicinity and localized groundwater seepage can be encountered at random locations and elevations within the soils and bedrock formations and is subject to seasonal precipitation events. Therefore, where trenching operations encounter shallow groundwater construction dewatering may be required. Utilizing appropriate construction dewatering equipment/systems, such as well points, sumps, and trenches, will be the responsibility of the trenching contractor. A dewatering expert should be retained as appropriate. In addition, trenching into wet and/or saturated overburden soils will require temporary shoring, where the construction of safe slopes is not feasible.

All excavations must comply with the applicable local, state and federal safety regulations, and particularly with the excavation standards of the Occupational Safety and Health Administration (OSHA). Construction site safety, including excavation safety, is the sole responsibility of the contractor as part of its overall responsibility for the means, methods and sequencing of construction operations. Determination of soil type and allowable sloping must be made by the contractor in the field by an OSHA-qualified "competent person."

4.2.4 Structural Fill

Structural fill refers to material that is appropriate for placement beneath structure components, embankment fill, and pavement subgrade. We recommend against using on-site clayey soils as structural fill. If imported fill is required to meet proposed site grades, it should consist of a non-expansive, mainly granular material meeting the requirements presented in Table 5, below.

A sample of any proposed imported structural fill should be submitted to our office for review and testing at least 3 days prior to stockpiling at the site. Structural fill should be compacted according

to the recommendations in Section 4.2.5 of this report. The native subgrade to receive structural fill should be prepared in accordance with Section 4.2.2.

Table 5 – Imported Structural Fill Criteria

Gradation Requirements	
Standard Sieve Size	Percent Passing
2 inch	100
No. 200	10 - 30
Plasticity Requirements (Atterberg Limits)	
Liquid Limit	30 or less
Plasticity Index	6 or less

A representative of Kleinfelder should perform testing and observation of the subgrade structural fill placement.

4.2.5 Compaction Requirements

Soil and aggregate materials should be placed on a horizontal plane and placed in loose lifts not to exceed 8 inches in thickness, unless otherwise accepted by the geotechnical engineer. Materials should be moisture-conditioned and compacted according to following criteria.

Table 6 – Subgrade Preparation and Fill Placement Criteria

Fill Location	**Material Type**	**Minimum Percent Compaction (ASTM D-1557)**	**Moisture Content**
Pavement Subgrade	On-site soils/ Imported Structural Fill	95	± 2 % of optimum
Utility Trench Backfill	Imported Structural Fill	92	± 2 % of optimum
Aggregate Base Course (ABC)	Imported CDOT Class 6 ABC/ Recycled Asphalt Pavement (See Section 4.2.1)	95	± 2 % of optimum

4.2.6 Trench Backfill

Backfill material for trenches should be free of humus, vegetable, or other organic matter, frozen material, clods, sticks and debris. In addition, rock particles and hard earth clods larger than 3 inches will be removed. However, backfill material in the “pipe zone” (from the trench floor to 1 foot above the top of pipe) should not contain rock particles larger than 1 inch. Requirements specified by the utility agency for bedding and pipe-zone fill should be observed and take

precedence where in conflict with the recommendations in this report. In general, backfill above the pipe zone in utility trenches should be placed in lifts of 6 to 8 inches, and compacted using power equipment designed for trench work to the specifications recommended in Section 4.2.5 of this report.

4.2.7 Construction in Wet or Cold Weather

During construction, grade the site such that surface water can drain readily away from the site area. Promptly pump out or otherwise remove any water that may accumulate in excavations or on subgrade surfaces, and allow these areas to dry before resuming construction. Berms, ditches and similar means may be used to prevent stormwater from entering the work area and to convey any water off site efficiently.

If earthwork is performed during the winter months when freezing is a factor, no grading fill, structural fill or other fill should be placed on frosted or frozen ground, nor should frozen material be placed as fill. Frozen ground should be allowed to thaw or be completely removed prior to placement of fill. A good practice is to cover the compacted fill with a "blanket" of loose fill to help prevent the compacted fill from freezing.

If construction is initiated during cold weather, concrete elements should not be constructed on frozen soil. Frozen soil should be completely removed from beneath the concrete elements, or thawed, scarified and recompacted. The amount of time passing between excavation or subgrade preparation and placing concrete should be minimized during freezing conditions to prevent the prepared soils from freezing. Blankets, soil cover or heating as required may be utilized to prevent the subgrade from freezing.

4.2.8 Drainage

Proper drainage is of paramount importance in enhancing pavement performance. To avoid distress to pavement from wet, soft subgrade soils, we recommend the maintenance of good drainage away from all pavements. Possible water sources include storm runoff, irrigation of landscaping adjacent the pavement and localized groundwater seepage, among others. Joints in the pavement or at asphalt/concrete interfaces should be sealed. Any cracks or openings in the finished pavement surface should be sealed and/or repaired as quickly as possible.

4.2.9 Pavement Maintenance

Annual maintenance generally refers to crack filling and general surface sealers. We recommend implementation of an at least annual if not more frequent flatwork/pavement crack sealing

program. This is very important to prevent surface water (especially from slow infiltration from sources such as snow melt and surface run-off) from entering cracks and wetting the subgrade. Due to temperature fluctuations in Colorado significant separations can also occur at interfaces between the asphalt pavement and curbs, concrete flatwork, and other features. These areas generally result in a high rate of premature distress and failure that can propagate well beyond the original problem area. Any cracks or openings in the finished pavement surface should be sealed and/or repaired as quickly as possible.

4.2.10 Concrete and Water Soluble-Sulfate Content

The concentration of water-soluble sulfates measured on subsurface soil samples submitted for testing was found to be 1.547 percent for the native soils. In accordance with ACI 318, the requirements for concrete exposed to sulfate – containing soils are presented in following table.

Table 7 – Requirements for Concrete Exposed to Sulfate-Containing Soils

Sulfate Exposure	Water soluble sulfate (SO_4) in soil, percent by weight	Cement Type
Negligible	0.00 to 0.10	--------
Moderate	0.10 to 0.20	II, IP(MS), IS(MS), P(MS),I(PM)(MS), I(SM)(MS)
Severe	0.20 to 2.00	V
Very Severe	Over 2.00	V plus pozzolan

The concentration of water-soluble sulfates measured on subsurface soils submitted for testing represents a severe sulfate attack on concrete exposed to the on-site soils. These results indicate that a locally available Type V cement would be appropriate for concrete in contact with the on-site soils or imported structural fill meeting the requirements presented in this report.

5 ADDITIONAL SERVICES

5.1 REQUIREMENTS FOR ADDITIONAL SERVICES

In most cases, other services beyond completion of a geotechnical report are necessary or desirable to complete a project satisfactorily. It also sometimes happens that, while performing our services, we discover conditions or circumstances that require the performance of additional work that was not anticipated when the geotechnical report was written. Kleinfelder offers a range of environmental, geological, geotechnical, and construction services to suit the varying needs of our clients. This section outlines some of those services that may pertain to this project. Kleinfelder will be happy to submit a proposal for performing any such services upon request.

5.2 REVIEW OF PLANS AND SPECIFICATIONS

We strongly recommend that Kleinfelder be given an opportunity to review the plans and specifications for this project before they are finalized. Such a review allows us to verify that our recommendations and concerns have been adequately incorporated in the design. It also gives us an opportunity to discuss those recommendations and concerns with other members of the design team so that we can clear up misunderstandings or ambiguities before the project reaches the construction stage.

5.3 PRE-BID AND PRE-CONSTRUCTION MEETINGS

Contractors often contact us during the bidding process to discuss the geotechnical aspects of projects. Informal contacts between Kleinfelder and individual contractors can result in incorrect or incomplete information being provided to the contractor. Therefore, we recommend that a pre-bid meeting be held to answer any questions about the report prior to submittal of bids. If this is not possible, questions or requests for clarifications regarding this report should be directed to the Owner or his designated representative. After consultation with Kleinfelder, the Owner (or his representative) should provide clarifications or additional information to all contractors bidding the job.

After award of a construction contract for this project, we recommend that the Owner, the Contractor, and the other members of the design team hold a pre-construction meeting with Kleinfelder's project engineer. The purpose of this meeting is to go over geotechnical aspects of the project so that all parties have a clear understanding of the geotechnical issues that affect the

Contractor's work and how they will be handled. The meeting also allows us to set up the communication and coordination needed for construction observation and testing, and to identify points of confusion or disagreement that need to be resolved.

5.4 CONSTRUCTION OBSERVATION AND TESTING

The recommendations in this report depend on the assumption that an adequate program of testing and observation will be made during construction to verify compliance with our recommendations. These tests and observations may include, but not necessarily be limited to, the following:

- Observations and density testing during site preparation and earthwork;
- Observation and testing of subgrade preparation, placement of ABC and HMAM; and
- Consultation as may be required during construction.

Adequate testing and observation is essential to successful and economical completion of a construction project. Testing and observation allow us to verify that our recommendations are being followed. They also make it possible to identify new or changed conditions that require us to modify those recommendations. Construction testing and observation should be scheduled in advance so that our personnel can plan to be available for the work. It is also desirable that we receive a set of project plans and specifications at the time our work is first scheduled.

6 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two years from the date of the report.

The work performed was based on project information provided by Client. If Client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, Client must obtain written approval from Kleinfelder's engineer that such changes do not affect our recommendations. Failure to do so will vitiate Kleinfelder's recommendations.

FIGURES

SITE VICINITY MAP
EXPLORATION LOCATION PLAN

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

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PROJECT NO.	20170699
DRAWN:	7/1/2016
DRAWN BY:	A.Leonard
CHECKED BY:	J.McCall
FILE NAME:	Fig1_SiteVicinity.mxd

SITE VICINITY MAP

PAVEMENT SECTION THICKNESS DESIGN
PROPOSED WILLS BOULEVARD AND
OUTLOOK BOULEVARD EXTENSIONS
SOUTH OF DILLON DRIVE
PUEBLO, COLORADO

FIGURE

1

0 200 400 800
Feet

Legend

Approximate Boring Location

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PROJECT NO.	20170699
DRAWN:	7/19/2016
DRAWN BY:	A.Leonard
CHECKED BY:	J.McCall
FILE NAME:	Fig2_ExplorationLocation.mxd

EXPLORATION LOCATION PLAN

PAVEMENT SECTION THICKNESS DESIGN
PROPOSED WILLS BOULEVARD AND
OUTLOOK BOULEVARD EXTENSIONS
SOUTH OF DILLON DRIVE
PUEBLO, COLORADO

FIGURE
2

APPENDIX A
BORING LOGS

SAMPLE/SAMPLER TYPE GRAPHICS

MODIFIED CALIFORNIA SAMPLER
(2 or 2-1/2 in. (50.8 or 63.5 mm.) outer diameter)

STANDARD PENETRATION SPLIT SPOON SAMPLER
(2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)

GROUND WATER GRAPHICS

- WATER LEVEL (level where first observed)
- WATER LEVEL (level after exploration completion)
- WATER LEVEL (additional levels after exploration)
- OBSERVED SEEPAGE

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, ie., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	**GRAVELS** (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu≥4 and 1≤Cc≤3		**GW**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu<4 and/ or 1>Cc>3		**GP**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5% TO 12% FINES	Cu≥4 and 1≤Cc≤3		**GW-GM**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu<4 and/ or 1>Cc>3		**GP-GM**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH > 12% FINES			**GM**	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
					GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
					GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu≥6 and 1≤Cc≤3		**SW**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu<6 and/ or 1>Cc>3		**SP**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5% TO 12% FINES	Cu≥6 and 1≤Cc≤3		**SW-SM**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu<6 and/ or 1>Cc>3		**SP-SM**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SP-SC	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH > 12% FINES			**SM**	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
					SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES

FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)	**ML**	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid Limit greater than 50)	**MH**	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

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GRAPHICS KEY

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

A-1

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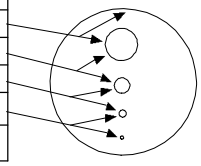
GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles		3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse	3/4 -3 in. (19 - 76.2 mm.)	3/4 -3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine	#4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine	#200 - #40	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller



MUNSELL COLOR

NAME	ABBR
Red	R
Yellow Red	YR
Yellow	Y
Green Yellow	GY
Green	G
Blue Green	BG
Blue	B
Purple Blue	PB
Purple	P
Red Purple	RP
Black	N

ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

PARTICLES PRESENT

Amount	Percentage
trace	<5
few	5-10
little	15-25
some	30-45
and	50
mostly	50-100

PLASTICITY

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N_{60} (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

NOTE: AFTER TERZAGHI AND PECK, 1948

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (q_u)(psf)	CRITERIA
Very Soft	< 1000	Thumb will penetrate soil more than 1 in. (25 mm.)
Soft	1000 - 2000	Thumb will penetrate soil about 1 in. (25 mm.)
Firm	2000 - 4000	Thumb will indent soil about 1/4-in. (6 mm.)
Hard	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail
Very Hard	> 8000	Thumbnail will not indent soil

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

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SOIL DESCRIPTION KEY

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

A-2

BORING LOG P-1

Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger		
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

Depth (feet)	Graphical Log	Surface Condition: Graded Dirt/Weeds Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Sandy Lean CLAY (CL): fine to coarse-grained sand, with fine-grained gravel, light brown, brown, dark brown, moist, very stiff to hard		BC=9 16	6"								Hole moved 13 feet south due to utilities
				BC=18 30	10"	CL	14.5	84.0	99	86	44	19	**Expansion/Compression=** Expansion= 1.8% under 0.2 ksf when wetted.
5		**Pierre Shale Formation** **CLAYSTONE**: fine-grained, gray, yellow, dark brown, moist, hard		BC=19 25	5"								
				BC=13 28 46	10"								
10													
15													

The boring was terminated at approximately 10.5 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

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BORING LOG P-1

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Proposed Wills Blvd and Outlook Blvd Extensions
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BORING

P-1

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Date Begin - End: 6/17/2016 **Drilling Company:** Custom Auger

BORING LOG P-2

Logged By: J. Ibarra **Drill Crew:** Jake, Dave

Hor.-Vert. Datum: Not Available **Drilling Equipment:** CME-55 **Hammer Type - Drop:** 140 lb. Cathead - 30 in.

Plunge: -90 degrees **Drilling Method:** Solid Stem Auger

Weather: Sunny, Clear **Exploration Diameter:** 4 in. O.D.

Depth (feet)	Graphical Log	Surface Condition: Graded Dirt/Weeds Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lean CLAY (CL): brown, dark brown, light brown, tan, moist, hard											
				BC=13 21 25	10"								
				BC=21 32	11"								
5				BC=20 39	7"	CH	13.3	101.7	100	93	52	25	
		Pierre Shale Formation **CLAYSTONE**: fine-grained, light brown, tan, yellow, moist, hard											Increased drill resistance at 7 feet
				BC=30 45	10"		10.6	109.9					**Expansion/Compression=** Expansion= 1.1% under 0.5 ksf when wetted.
10													
15													

The boring was terminated at approximately 10 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:

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BORING LOG P-2

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P-2
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BORING LOG P-3

Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger		
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		FIELD EXPLORATION: Surface Condition: Graded Dirt/Weeds				LABORATORY RESULTS							
0		**Lean CLAY (CL)**: with sand, fine to coarse-grained sand, brown, light brown, moist, very stiff to hard		BC=9 10	11"	CL	14.3	92.6	100	82	46	24	
				BC=18 23	11"								
		- less sand, increased fines below 4 feet		BC=9 11 17	14"								
5													
		Pierre Shale Formation **CLAYSTONE**: fine-grained, light brown, tan, yellow, moist, hard		BC=20 39	11"								Increased drill resistance at 8.5 feet
10													
15													

The boring was terminated at approximately 10 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

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BORING LOG P-3

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P-3
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BORING LOG P-4

Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger		
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

Depth (feet)	Graphical Log	Surface Condition: Graded Dirt/Weeds Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lean CLAY (CL): with sand, light brown to tan, moist, very stiff											
				BC=14 22	10"	CL	8.7	95.6	100	86	47	27	
				BC=17 25	11"		9.8	96.3					**Expansion/Compression=** Expansion= 2.1% under 0.2 ksf when wetted.
5													Increased drill resistance at 5 feet
				BC=23 40 50	14"								
		Pierre Shale Formation **CLAYSTONE**: fine-grained, brown, light brown, tan, moist, hard											
				BC=30 50	7"								
10													
15													

The boring was terminated at approximately 10 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

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BORING LOG P-4

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P-4
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Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger	**BORING LOG P-5**	
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Surface Condition: Graded Dirt/Weeds

Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lean CLAY (CL): with sand, light brown, tan, moist, very stiff											
				BC=11 11 17	13"								
				BC=17 20	10"								
5		**Pierre Shale Formation** **CLAYSTONE**: fine-grained, brown, dark brown, orange, moist, hard											
				BC=18 25	10"	CH	12.3	112.4	100	84	53	29	**Expansion/Compression=** Expansion= 9.9% under 0.5 ksf when wetted.
10				BC=20 48	7"								
15													

The boring was terminated at approximately 11 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:

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BORING LOG P-5

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BORING LOG P-6

Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger		
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

Depth (feet)	Graphical Log	Surface Condition: Graded Dirt/Weeds Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lean CLAY (CL): with sand, fine to coarse-grained sand, light brown, tan, moist, very stiff		BC=13 11	10"								
				BC=5 5 12	14"								
5		**Pierre Shale Formation** **Weathered CLAYSTONE**: fine-grained, dark brown, gray, orange, moist, very stiff to hard		BC=18 35	7"								
10				BC=16 19	10"	CL				98	46	22	
15													

The boring was terminated at approximately 10 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

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BORING LOG P-6

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BORING

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BORING LOG P-7

Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger		
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

Depth (feet)	Graphical Log	Surface Condition: Graded Dirt/Weeds Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Sandy Lean CLAY (CL): fine to coarse-grained sand, light brown, tan, moist, stiff to very stiff		BC=12 18	10"								
				BC=7 9	9"								
		Pierre Shale Formation **Weathered CLAYSTONE**: fine to coarse-grained, light brown, tan, orange, brown, moist, very stiff to hard											Increased drill resistance at 3 feet
5													
				BC=15 25	10"	CH	11.8	122.3	100	95	56	35	
				BC=15 17 21	16"								
10													
15													

The boring was terminated at approximately 10.5 ft. below ground surface. The boring was backfilled with auger cuttings on June 17, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

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BORING LOG P-7

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BORING LOG P-8

Date Begin - End:	6/17/2016	**Drilling Company:**	Custom Auger		
Logged By:	J. Ibarra	**Drill Crew:**	Jake, Dave		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny, Clear	**Exploration Diameter:**	4 in. O.D.		

Depth (feet)	Graphical Log	Surface Condition: Pavement/Asphalt Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		ASPHALT: 4 inches thick											Hole moved 4 feet west due to utilities
		AGGREGATE BASE: 4 inches thick, reddish brown, gravelly											
		Lean to Fat CLAY (CL-CH): brown, dark brown, moist, stiff		BC=6 11	9"								
				BC=6 12	9"	CH	20.9	107.7	100	96	57	32	
		Pierre Shale Formation **CLAYSTONE**: fine-grained, light brown, brown, gray, dark gray, hard											
5													Increased drill resistance at 5 feet
				BC=50/6"	5"		14.6	112.3					**Expansion/Compression=** Expansion= 2.2% under 0.5 ksf when wetted.
				BC=49 50/3"	7"		13.3	104.1					**Expansion/Compression=** Expansion= 1.2% under 0.5 ksf when wetted.
10		The boring was terminated at approximately 10 ft. below ground surface. The boring was backfilled with auger cuttings and patched at surface on June 17, 2016.											
15													

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:

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BORING LOG P-8

Pavement Section Thickness Design
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APPENDIX B
GEOTECHNICAL LABORATORY TEST RESULTS

Exploration ID	Depth (ft.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
P-1	4.0	LEAN CLAY (CL)	14.5	84.0		99	86	44	25	19	**Expansion/Compression=**
											Expansion= 1.8% under 0.2 ksf when wetted.
P-1 to P-8 Composite	0.0 - 4.0	LEAN CLAY WITH SAND (CL)			100	97	78	45	19	26	**pH=** 7.7
											Resistivity= 558 ohm.cm
											Sulfates= 1.547%
											Chlorides= 0.0030%
											Redox= 336 mv
											Sulfides= Negative
											R-Value= 7
P-2	6.0	FAT CLAY (CH)	13.3	101.7		100	93	52	27	25	
P-2	9.0		10.6	109.9							**Expansion/Compression=**
											Expansion= 1.1% under 0.5 ksf when wetted.
P-3	0.0	LEAN CLAY WITH SAND (CL)	14.3	92.6		100	82	46	22	24	
P-4	1.0	LEAN CLAY (CL)	8.7	95.6		100	86	47	20	27	
P-4	3.0		9.8	96.3							**Expansion/Compression=**
											Expansion= 2.1% under 0.2 ksf when wetted.
P-5	8.0	FAT CLAY WITH SAND (CH)	12.3	112.4		100	84	53	24	29	**Expansion/Compression=**
											Expansion= 9.9% under 0.5 ksf when wetted.
P-6	9.0	LEAN CLAY (CL)					98	46	24	22	
P-7	7.0	FAT CLAY (CH)	11.8	122.3		100	95	56	21	35	
P-8	3.0	FAT CLAY (CH)	20.9	107.7		100	96	57	25	32	
P-8	6.0		14.6	112.3							**Expansion/Compression=**
											Expansion= 2.2% under 0.5 ksf when wetted.
P-8	9.0		13.3	104.1							**Expansion/Compression=**
											Expansion= 1.2% under 0.5 ksf when wetted.

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.
NP = NonPlastic

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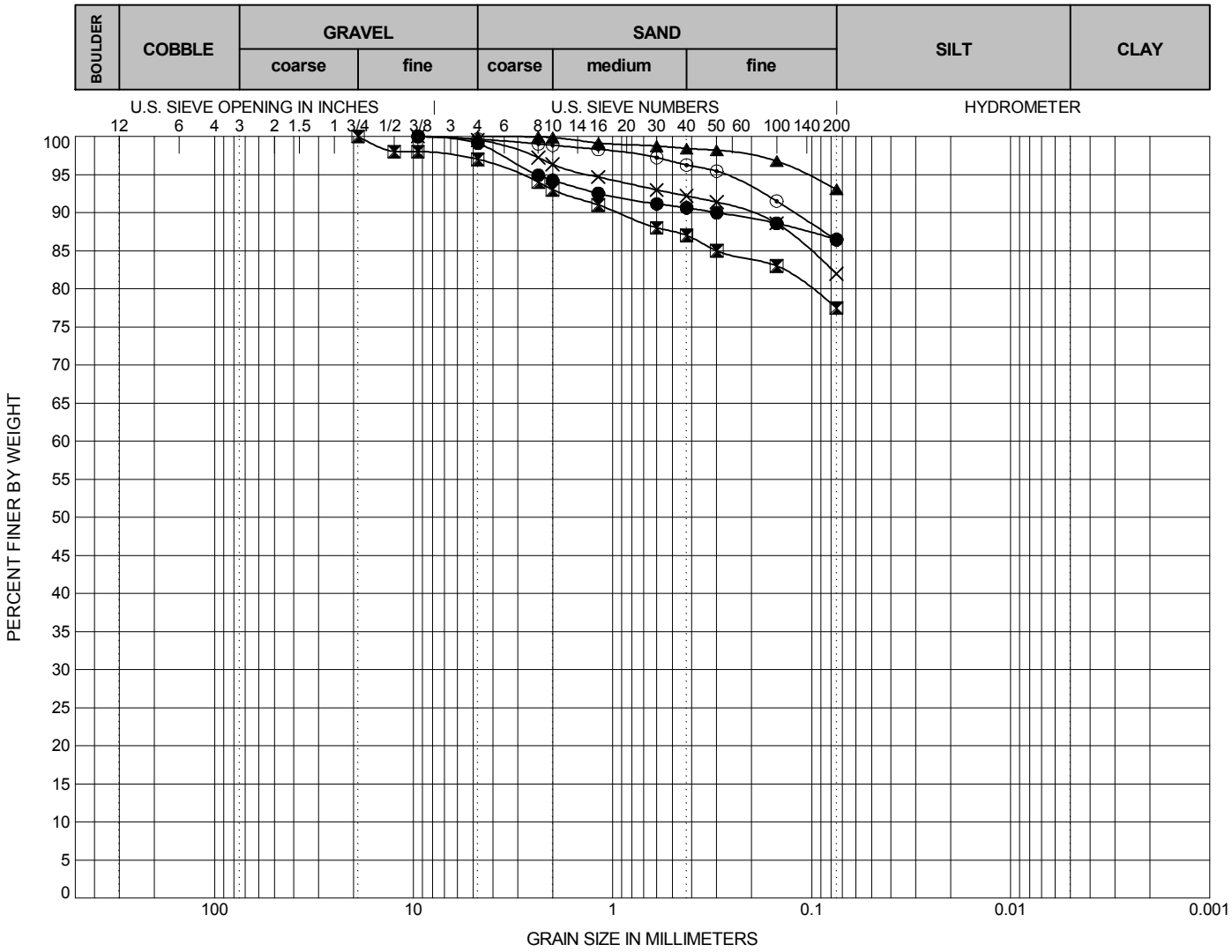
DATE:
REVISED: -

LABORATORY TEST RESULT SUMMARY

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

TABLE
B-1



Exploration ID		Depth (ft.)	Sample Description	LL	PL	PI
●	P-1	4	LEAN CLAY (CL)	44	25	19
⊠	P-1 to P-8 Composite	0 - 4	LEAN CLAY with SAND (CL)	45	19	26
▲	P-2	6	FAT CLAY (CH)	52	27	25
×	P-3	0	LEAN CLAY with SAND (CL)	46	22	24
⊙	P-4	1	LEAN CLAY (CL)	47	20	27

Exploration ID		Depth (ft.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	P-1	4	9.5	NM	NM	NM	NM	NM		99	86	NM	NM
⊠	P-1 to P-8 Composite	0 - 4	19	NM	NM	NM	NM	NM	100	97	78	NM	NM
▲	P-2	6	4.75	NM	NM	NM	NM	NM		100	93	NM	NM
×	P-3	0	9.5	NM	NM	NM	NM	NM		100	82	NM	NM
⊙	P-4	1	9.5	NM	NM	NM	NM	NM		100	86	NM	NM

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422.
NP = Nonplastic
NM = Not Measured

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
D_{10} = Grain diameter at 10% passing

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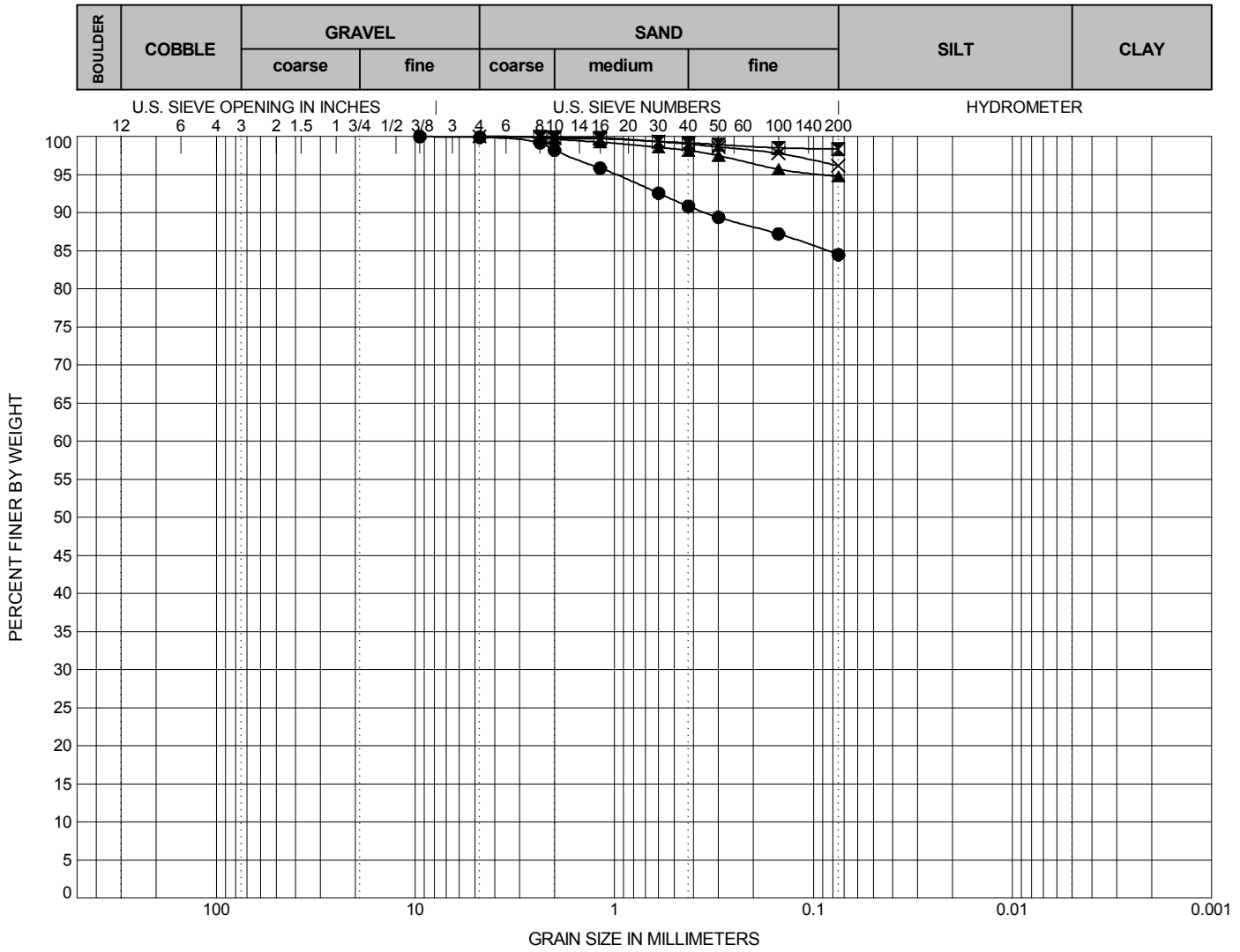
SIEVE ANALYSIS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE
B-2



	Exploration ID	Depth (ft.)	Sample Description	LL	PL	PI
●	P-5	8	FAT CLAY with SAND (CH)	53	24	29
⊠	P-6	9	LEAN CLAY (CL)	46	24	22
▲	P-7	7	FAT CLAY (CH)	56	21	35
×	P-8	3	FAT CLAY (CH)	57	25	32

	Exploration ID	Depth (ft.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	P-5	8	9.5	NM	NM	NM	NM	NM		100	84	NM	NM
⊠	P-6	9	2.36	NM	NM	NM	NM	NM			98	NM	NM
▲	P-7	7	4.75	NM	NM	NM	NM	NM		100	95	NM	NM
×	P-8	3	4.75	NM	NM	NM	NM	NM		100	96	NM	NM

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422.
NP = Nonplastic
NM = Not Measured

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
D_{10} = Grain diameter at 10% passing

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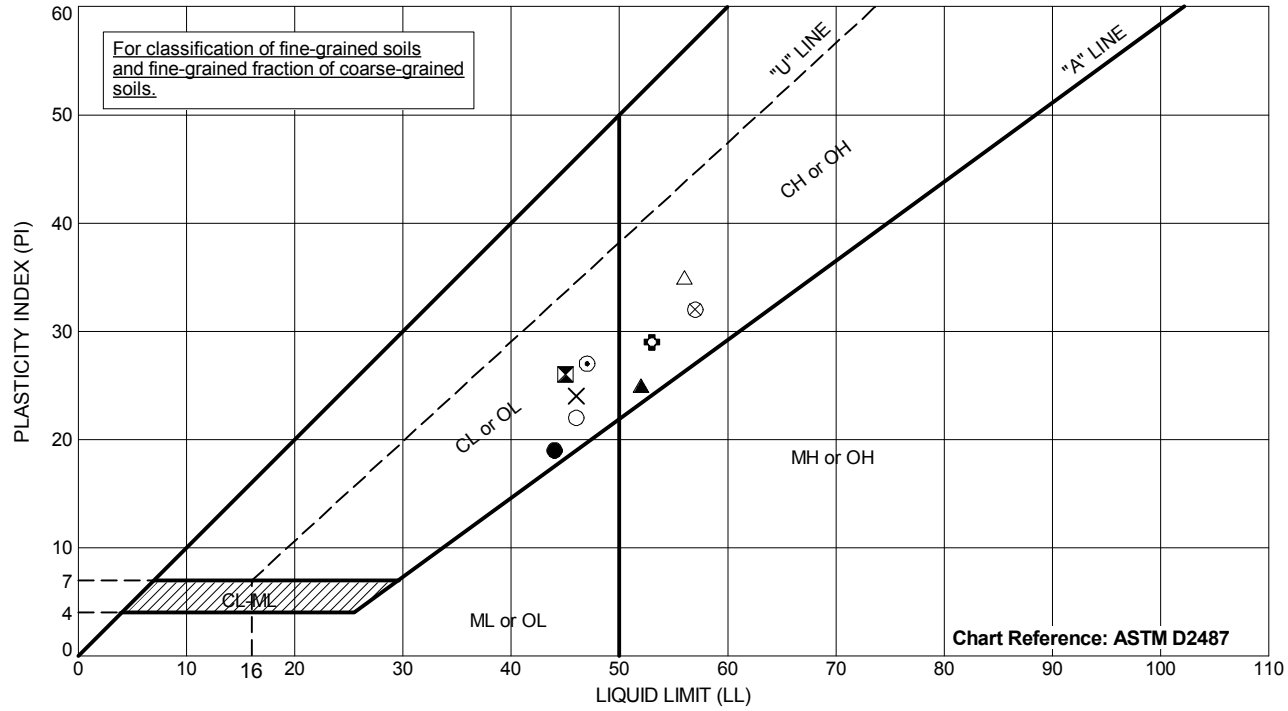
SIEVE ANALYSIS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE
B-3



Exploration ID		Depth (ft.)	Sample Description	Passing #200	LL	PL	PI
●	P-1	4	LEAN CLAY (CL)	86	44	25	19
⊠	P-1 to P-8 Composite	0 - 4	LEAN CLAY with SAND (CL)	78	45	19	26
▲	P-2	6	FAT CLAY (CH)	93	52	27	25
×	P-3	0	LEAN CLAY with SAND (CL)	82	46	22	24
⊙	P-4	1	LEAN CLAY (CL)	86	47	20	27
✿	P-5	8	FAT CLAY with SAND (CH)	84	53	24	29
○	P-6	9	LEAN CLAY (CL)	98	46	24	22
△	P-7	7	FAT CLAY (CH)	95	56	21	35
⊗	P-8	3	FAT CLAY (CH)	96	57	25	32

Testing perfomed in general accordance with ASTM D4318.
NP = Nonplastic
NM = Not Measured

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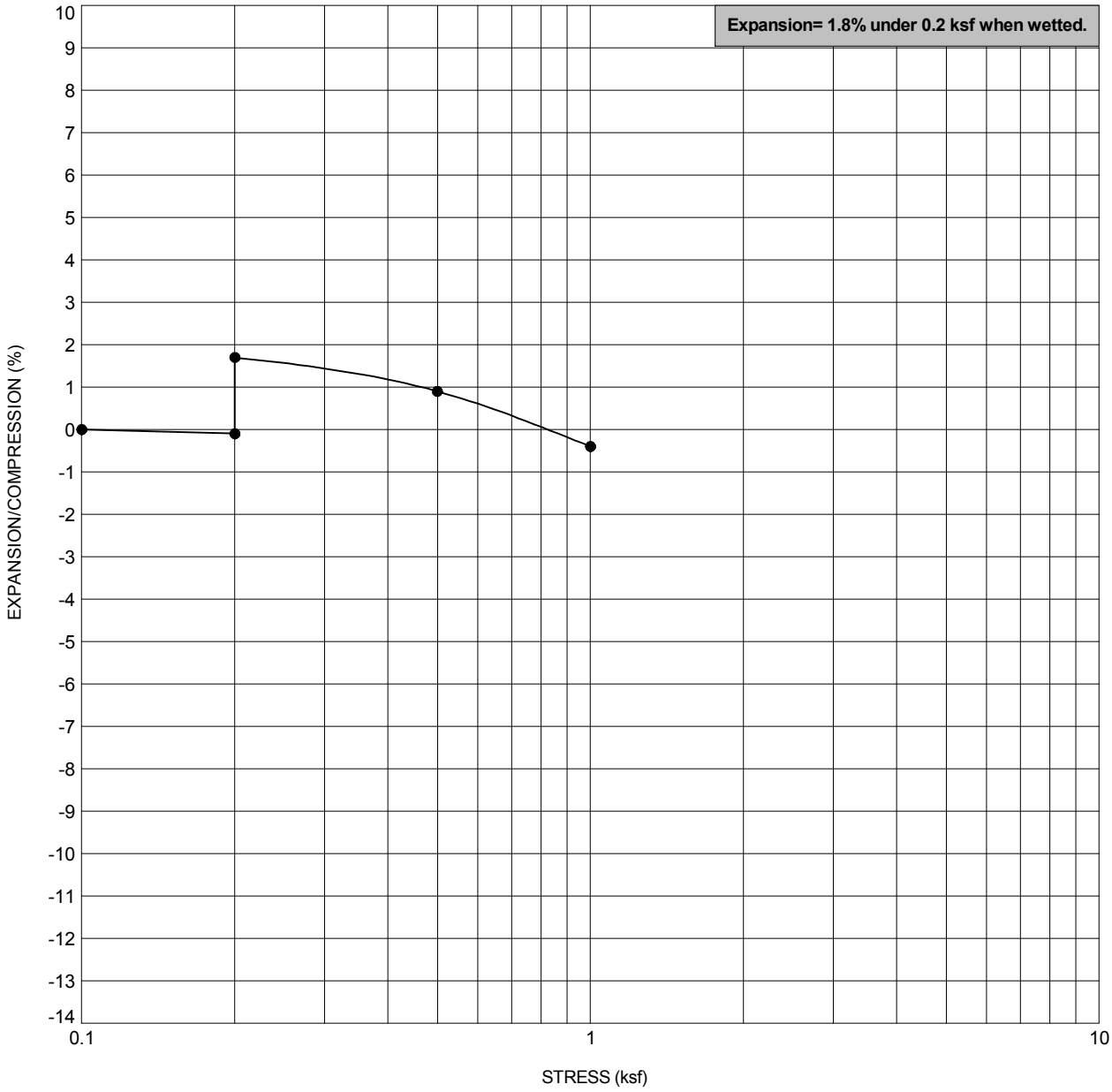
ATTERBERG LIMITS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-4



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
P-1	4	LEAN CLAY (CL)	14.5	84.0	37.3	84.0

Testing perfomed in general accordance with ASTM D4546 Method C.

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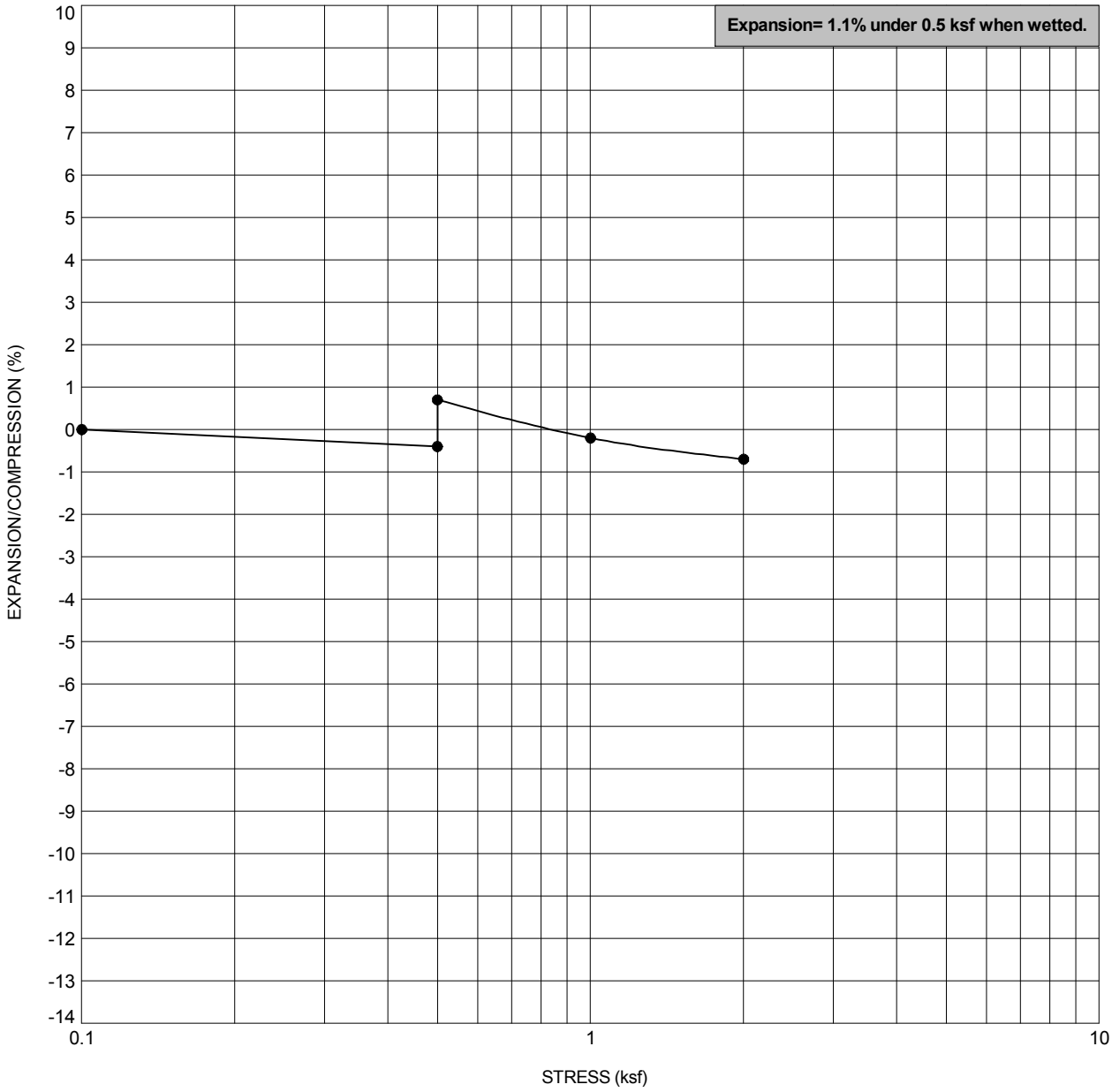
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-5



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
P-2	9		10.6	109.9	20.3	109.9

Testing perfomed in general accordance with ASTM D4546 Method C.

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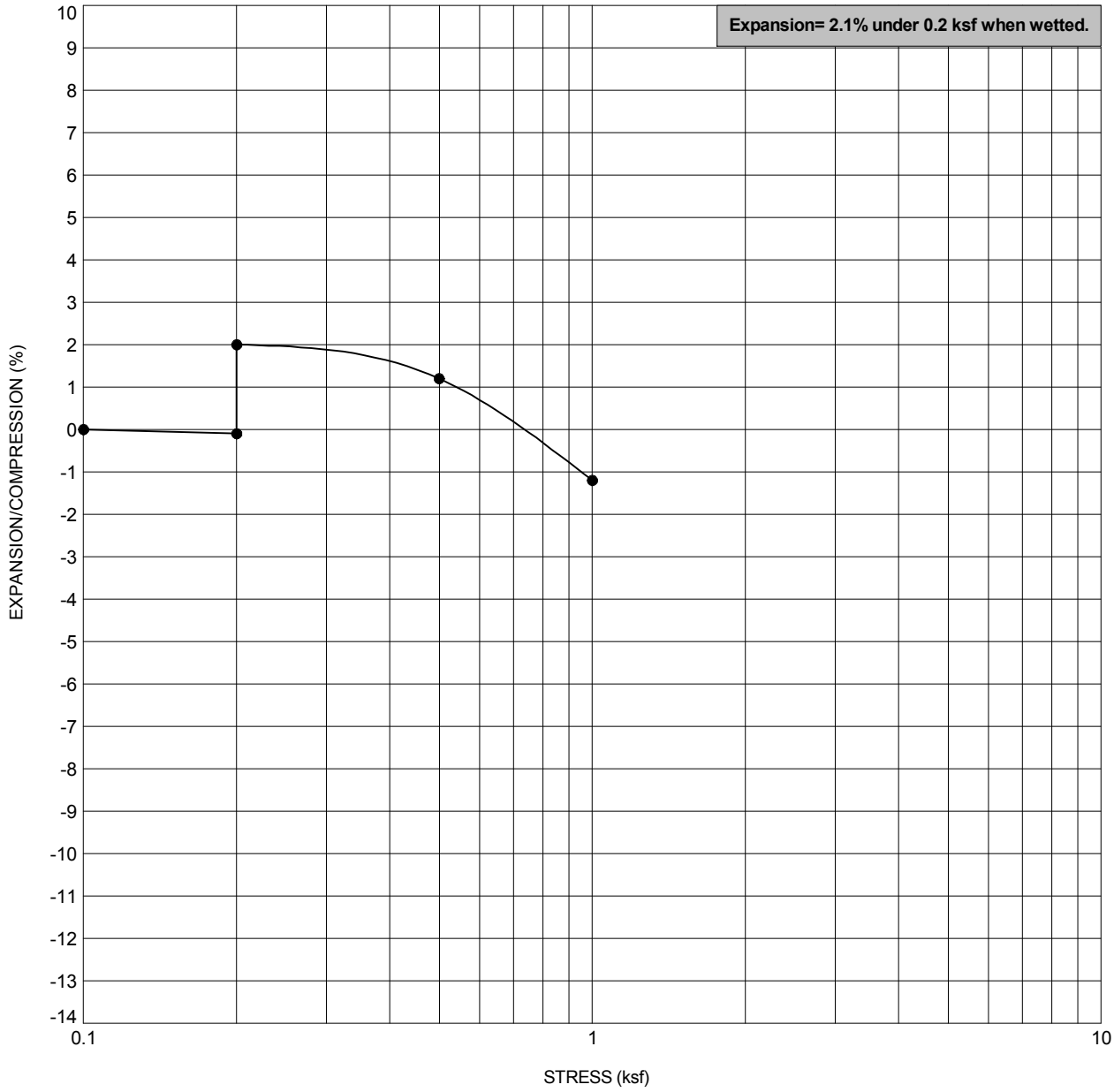
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-6



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
P-4	3		9.8	96.3	27.7	96.3

Testing perfomed in general accordance with ASTM D4546 Method C.

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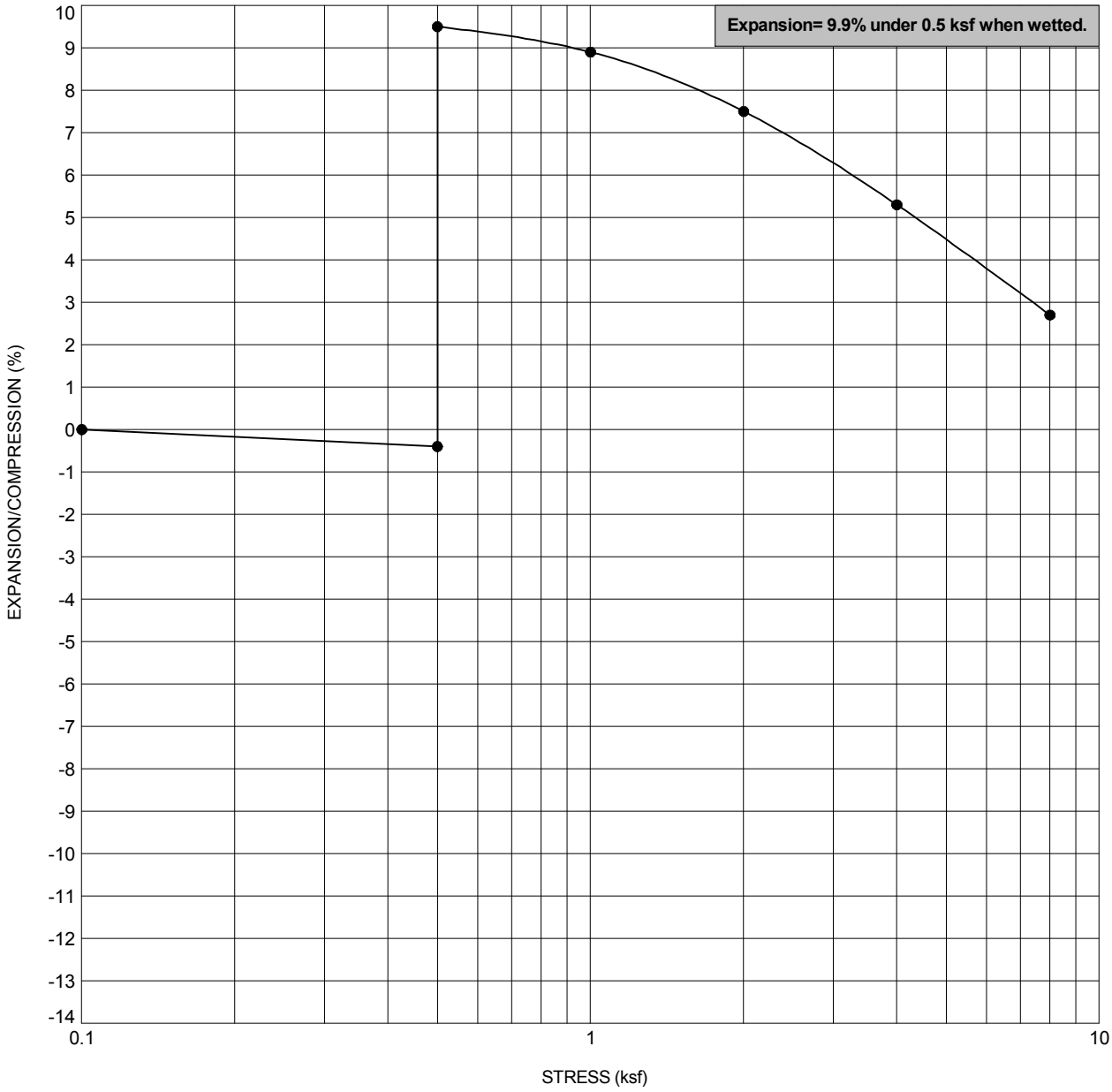
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-7



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
P-5	8	FAT CLAY with SAND (CH)	12.3	112.4	21.2	112.4

Testing perfomed in general accordance with ASTM D4546 Method C.

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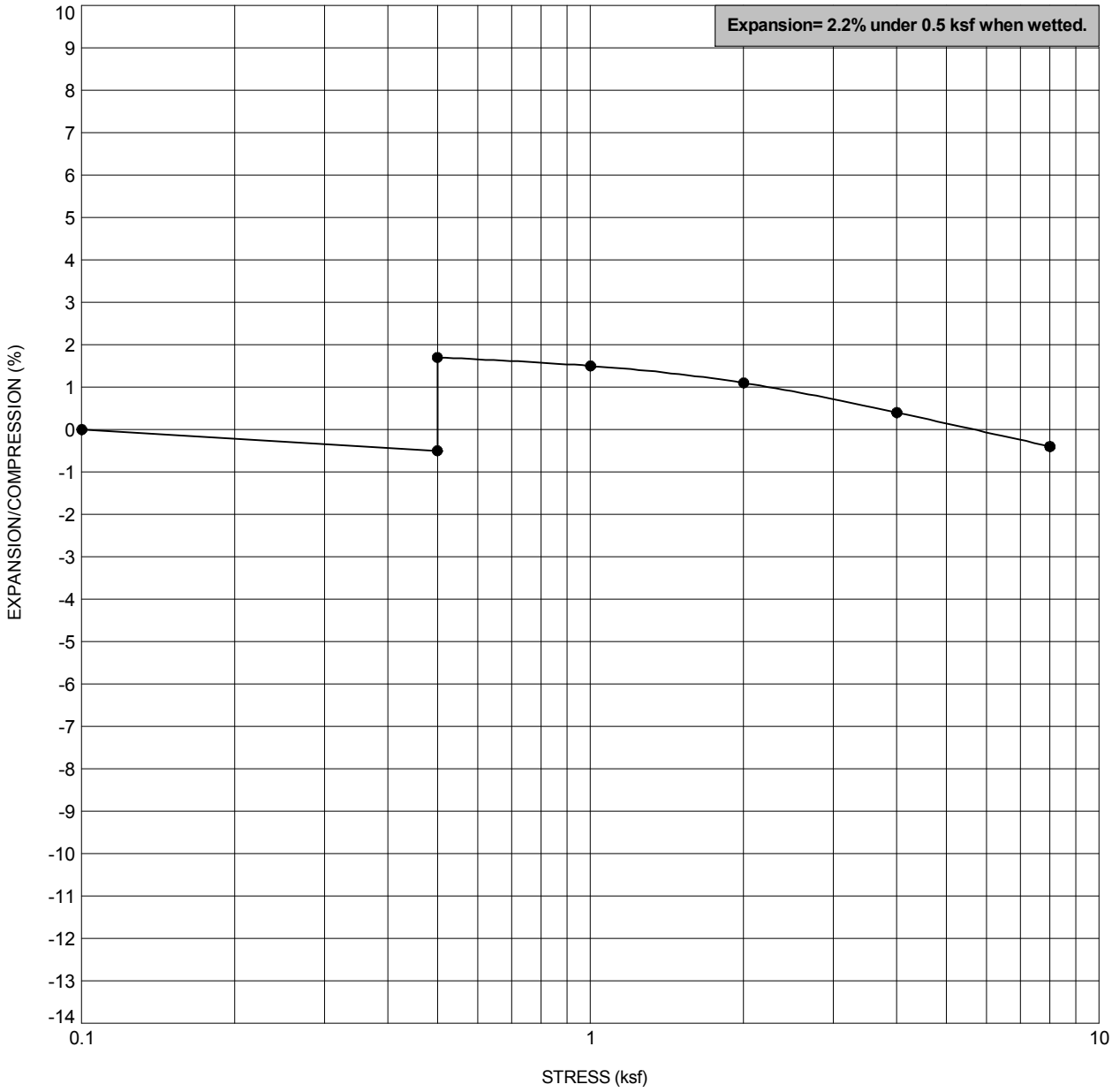
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-8



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
P-8	6		14.6	112.3	19.6	112.3

Testing perfomed in general accordance with ASTM D4546 Method C.

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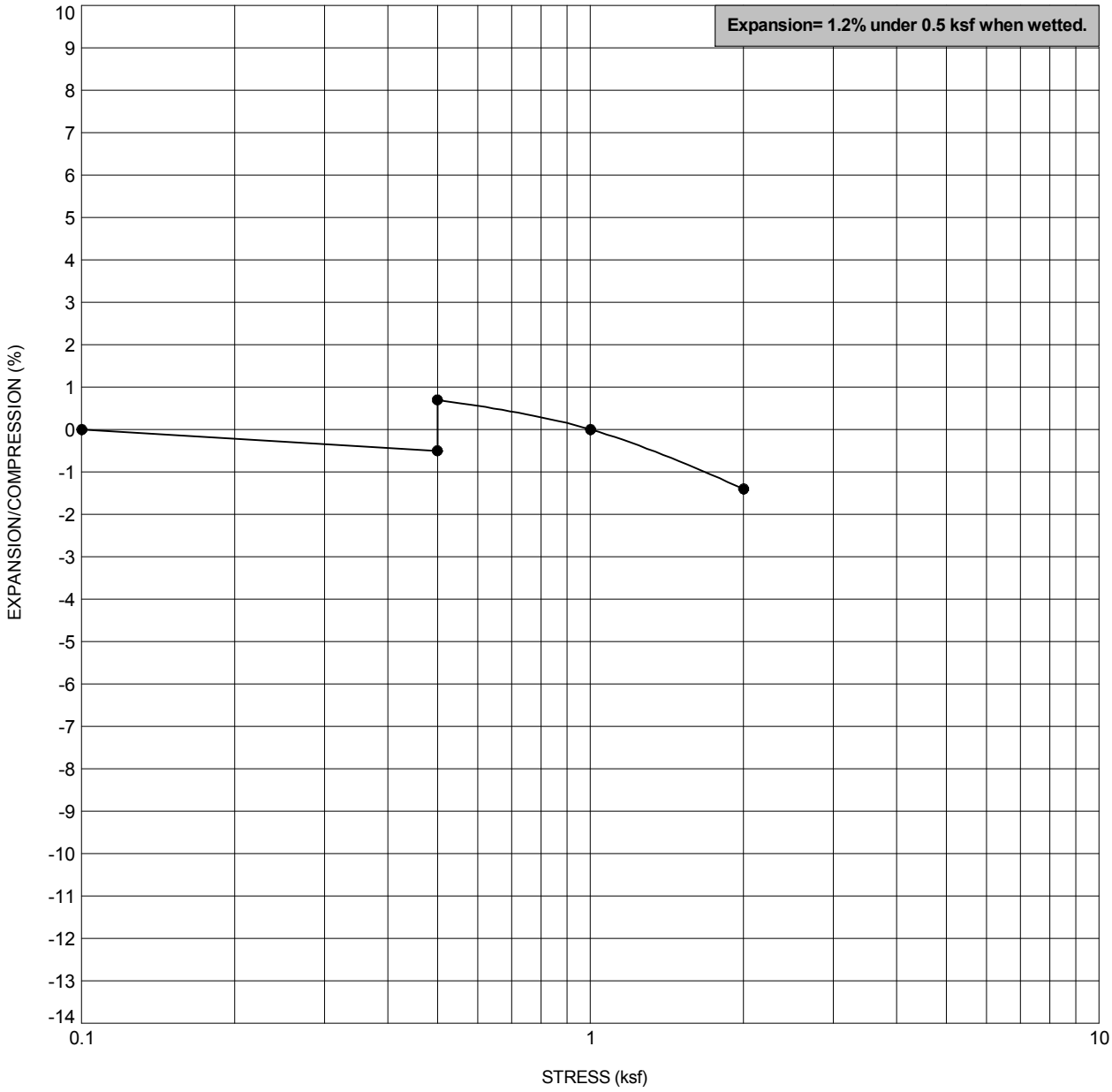
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-9



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
P-8	9		13.3	104.1	23.0	104.1

Testing perfomed in general accordance with ASTM D4546 Method C.

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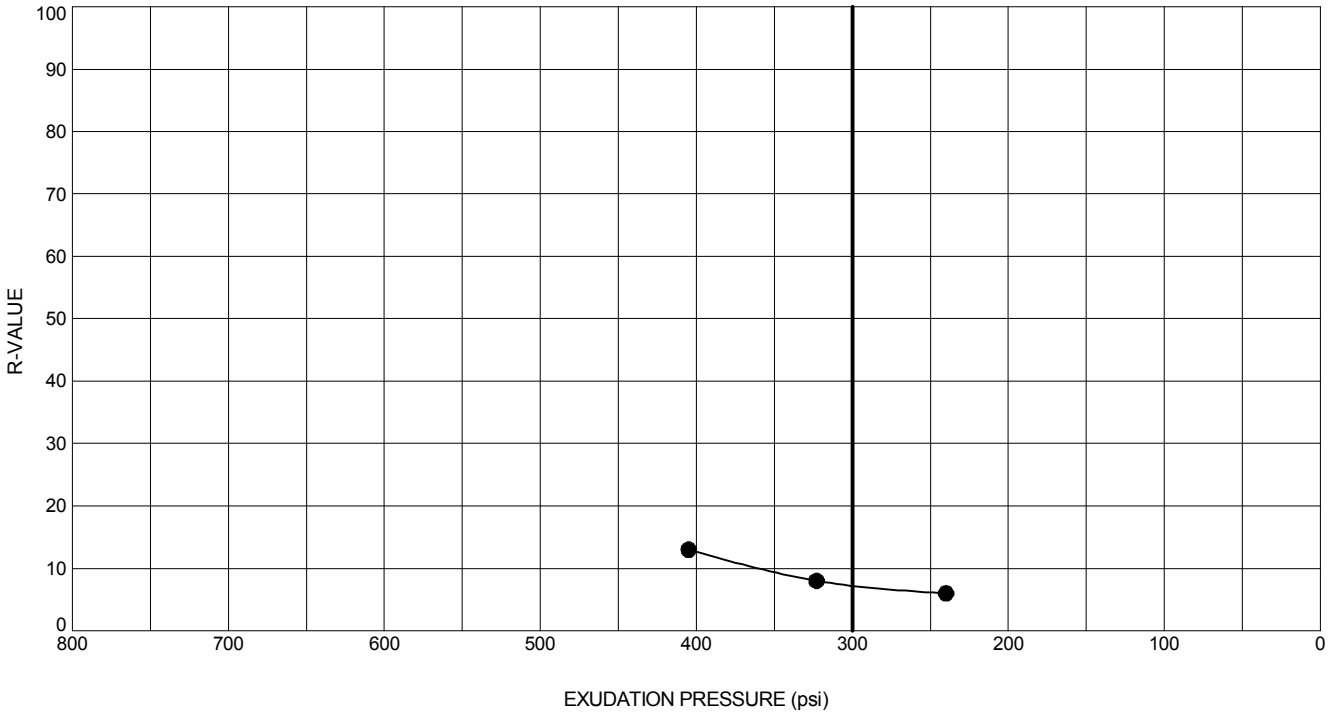
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-10



Exploration ID	Depth (ft.)	Sample Description	R-Value @ 300 psi Exudation Pressure
P-1 to P-8 Composite	0 - 4	LEAN CLAY with SAND (CL)	7

Specimen No.	Moisture at Time of Test (%)	Dry Unit Weight (pcf)	Expansion Pressure (psi)	Exudation Pressure (psi)	Corrected Resistance Value
1	23.2	99.8	4	323	8
2	24.8	95.4	0	240	6
3	21.5	102.6	4	405	13

Testing perfomed in general accordance with ASTM D2844.

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R-VALUE

Pavement Section Thickness Design
Proposed Wills Blvd and Outlook Blvd Extensions
South of Dillon Drive
Pueblo, Colorado

FIGURE
B-11

APPENDIX C
ANALYTICAL LABORATORY TEST RESULTS

Colorado Analytical LABORATORIES, INC.

Analytical Results

TASK NO: 160627018

Report To: JG McCall
Company: Kleinfelder - Colo Springs
4815 List Drive
Unit 115
Colorado Springs CO 80919

Bill To: Accounts Payable
Company: Kleinfelder - Colo Springs
4815 List Drive
Unit 115
Colorado Springs CO 80919

Task No.: 160627018
Client PO:
Client Project: Willis Outlook Blvd Ext 20170699-01-L

Date Received: 6/27/16
Date Reported: 6/30/16
Matrix: Soil - Geotech

Customer Sample ID P-1 to P-8 @ 0-5 Ft. Bulk Composite
Lab Number: 160627018-01

Test	Result	Method
Chloride - Water Soluble	**0.0030 %**	AASHTO T291-91/ ASTM D4327
pH	**7.7 units**	AASHTO T289-91
Redox Potential	**336 mv**	ASTM D1498
Resistivity	**558 ohm.cm**	AASHTO T288-91
Sulfate - Water Soluble	**1.547 %**	AASHTO T290-91/ ASTM D4327
Sulfide	**Negative**	AWWA C105

Abbreviations/ References:

AASHTO - American Association of State Highway and Transportation Officials.
ASTM - American Society for Testing and Materials.
ASA - American Society of Agronomy.
DIPRA - Ductile Iron Pipe Research Association Handbook of Ductile Iron Pipe.

DATA APPROVED FOR RELEASE BY

APPENDIX D
PAVEMENT SECTION THICKNESS CALCULATIONS

1993 AASHTO Pavement Design

DARWin Pavement Design and Analysis System

A Proprietary AASHTOWare
Computer Software Product

Flexible Structural Design Module

Flexible Pavement Section per City of Pueblo Manual

Flexible Structural Design

18-kip ESALs Over Initial Performance Period	730,000
Initial Serviceability	4.5
Terminal Serviceability	2.3
Reliability Level	90 %
Overall Standard Deviation	0.45
Roadbed Soil Resilient Modulus	5,040 psi
Stage Construction	1
Calculated Design Structural Number	3.64 in

Specified Layer Design

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Thickness (Di)(in)	Width (ft)	Calculated SN (in)
1	HMA	0.44	0.9	6	-	2.38
2	ABC	0.12	0.9	12	-	1.30
Total	-	-	-	18.00	-	3.67

Layered Thickness Design

Thickness precision Actual

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Spec Thickness (Di)(in)	Min Thickness (Di)(in)	Elastic Modulus (psi)	Width (ft)	Calculated Thickness (in)	Calculated SN (in)
Total	-	-	-	-	-	-	-	0.00	0.00

*Note: This value is not represented by the inputs or an error occurred in calculation.

Optimized Layer Design

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Cost (sq yd/in)	Min Thick (Di)(in)	Max Thick (in)	Width (ft)	Optimum Thick (in)	Calculated SN (in)	Calculated Cost (sq yd)
Total	-	-	-	-	-	-	-	-	-	-

*Note: This value is not represented by the inputs or an error occurred in calculation.

APPENDIX E
IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

January 23, 2017
KLF Project No.: 20170699.001A/CSP17O53439

Mr. Sam Vigil
City of Pueblo
211 E. D St.
Pueblo, Colorado
svigil@pueblo.us

Subject: **Addendum to Geotechnical Evaluation**
Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

Dear Mr. Vigil:

Kleinfelder has completed the authorized subsurface exploration and geotechnical engineering evaluation for proposed sewer line extension along Outlook Boulevard in association with the proposed Wills Boulevard and Outlook Boulevard Extensions in Pueblo, Colorado. The location of the project is shown in Figure 1.

The services provided were in general accordance with our proposal LOCALMKT.WEOH/CSP16P51765 dated December 19th, 2016. Conclusions and recommendations presented in this addendum are based on the subsurface information encountered at the location of our explorations and are subject to the provisions and requirements outlined in the LIMITATIONS section of this addendum and in our previous full report: Geotechnical Evaluation Report, Wills Boulevard and Outlook Boulevard Extensions Project, dated July 19, 2016, that was completed for the roadway extensions project.

PROJECT DESCRIPTION AND SCOPE OF SERVICES

Our understanding of the project is based on our discussions with you and review of project plans. The project consists of the design and construction of approximately 1,600 feet of new RCP sewer line with a maximum diameter of 48-inches, along the Outlook Boulevard alignment and east of the alignment towards N. Elizabeth St. We estimate that approximately 15 percent of the alignment will extend beneath future roadways. The proposed sewer line will be installed approximately 10 to 20 feet below the existing ground surface (bgs).

The purpose of this supplemental study was to further characterize the subsurface conditions at the proposed sewer alignment, and provide trench excavation and backfill earthwork recommendations. Our scope of services consisted of the following:

- Field investigation
- Laboratory testing
- Engineering analysis and addendum preparation

SURFACE CONDITIONS

At the time of our field investigation, earthwork, grading soil wetting, and compaction activities were ongoing at the site. Stock piles were visible on site and were drilled through at boring SL-B-6. The origin of the stock piles is not known to Kleinfelder; however, it is assumed that the stock pile originates from reworked soil on site based on our subsurface exploration and site reconnaissance.

EXPLORATION PROGRAM AND SUBSURFACE CONDITIONS

Kleinfelder explored the subsurface conditions by advancing 6 borings (SL-B-1 to SL-B-6), along the sewer line, at the approximate locations presented in Figure 2. The northing and easting of each boring was surveyed by NorthStar, and are provided on the individual boring logs presented in Appendix A.

Fill material was encountered in boring SL-B-6 to approximately 12 feet bgs. The fill consists of lean clay, and is moist and stiff in consistency. The fill appears to be placed as stockpile material, as part of the mass grading operations at the site. We were not provided with documentation of fill placement, therefore the fill encountered is considered non-engineered.

Native soils were encountered in all borings to approximately 13.5 to 30.5 feet bgs. The native soils consist of lean to fat clay with various amounts of sand and silt, and poorly graded sand with clay. Cohesive soils are moist and range from stiff to hard in consistency, while granular soils are moist and dense. Based on our experience we anticipate that the clays exhibit a low to moderate expansive potential under the projected loads.

Shale bedrock was encountered below the native soil in all borings except SL-B-6 and extending to the bottom of the borings at the approximate depths ranging from 13.5 to 21 feet bgs. The shale was highly weathered, had combinations of color consisting of dark gray, brown, black, and yellow, and was extremely weak to very weak in relative hardness. The results of our laboratory testing program indicates that the shale exhibits a moderate to high expansive potential under the projected loads.

Groundwater was not encountered during and after the completion of drilling to the maximum depths explored of 30.5 feet bgs. Fluctuations of groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

LABORATORY TESTING

Laboratory tests were performed on selected soil and bedrock samples obtained from the explorations to evaluate their physical and engineering properties and to aid in classification. The tests were performed in general accordance with the current ASTM standards. Results of the laboratory tests are included in Appendix B. Selected laboratory results are also summarized on the boring logs, Appendix A.

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SUMMARY OF FINDINGS

The results of our study indicate that construction of the proposed utilities is feasible. The primary geotechnical related issues at the site are:

1. Widely varying and potentially very poor onsite backfill;
2. Varying excavation characteristics, including bedrock; and
3. Thick fills.

Proper compaction of the thick trench backfills will be imperative to reduce the potential for excessive settlement in settlement sensitive areas such as pavements and outside flatwork. Where encountered, excavated high plasticity soils and bedrock are anticipated to be very difficult, and potential impossible, for reuse as structural backfill. The excavatability of the trenches is anticipated to be variable, and possibly moderately difficult due the variable subsurface conditions and bedrock.

More detailed utility trench recommendations are provided in the following sections.

RECOMMENDATIONS

Excavation Characteristics

We anticipate that excavations on the order of 10 to 20 feet below the ground surface will be required to install the sewer line extension. Based on the subsurface profile encountered in our borings, excavation will be variable, and range from sand and clay soil to extremely to very weak shale bedrock. We anticipate that excavation of the on-site soils and bedrock can be performed with standard heavy-duty earthmoving equipment. We do not anticipate that blasting will be required.

Groundwater was not encountered during our investigation to the maximum depth explored of 30.5 feet bgs. Therefore, dewatering of excavations is not anticipated.

Trenches should be wide enough to facilitate proper compaction around the haunches of the pipe. All excavations must comply with the applicable local, state, and federal safety regulations, and particularly with the excavation standards of the Occupational Safety and Health Administration (OSHA). Construction site safety, including excavation safety, is the sole responsibility of the contractor as part of its overall responsibility for the means, methods and sequencing of construction operations. The actual determination of soil type, allowable excavation slopes and the need for shoring must be made in the field by the contractor's OSHA-qualified "competent person."

Trench Subgrade Preparation

All site preparation and earthwork operations should be performed in accordance with applicable codes, safety regulations and other local, state or federal guidelines. Initial site work should consist of stripping any organics or other deleterious materials from the trench areas.

Trench subgrades should be firm and unyielding. Prior to the placement of trench backfill, manholes and catch basins, all loose and disturbed soils, non-engineered fill and other deleterious materials should be completely removed.

Where soft subgrade soils are encountered they should be removed and replaced with granular structural fill under the direction of a Kleinfelder representative. Any water encountered in the trench excavation should be removed prior to fill placement.

Trench Backfill Materials

All backfill material should be essentially free of organics, debris, and other deleterious matter.

Pipe bedding shall be Class B per Section 12.2.11 of the City's Standard Construction Specifications and carefully placed on each side of the pipe per Section 12.2.13.

Structural fill

Structural fill is defined as any fill that will ultimately support pavements, outside flatwork or other settlement sensitive structures. Structural fill should extend at least 5 feet laterally beyond settlement sensitive structures.

Trench backfill extending above the bedding to the below the roadbase shall be well graded with a maximum particle size of 4 inches. The excavated materials are variable and include high plasticity soils and bedrock. Native on-site soils are considered suitable for use as structural fill for utility trench backfill and excavation backfill, provided that they strictly adhere to the compaction criteria presented in this report. Due the high liquid limits and moisture content of the onsite clay soils, it is anticipated that the compaction process to meet the requirement will be very difficult, especially during periods of wet weather. Reuse of excavated bedrock is likely feasible only with processing.

Any imported structural fill should consist of a non-expansive, mainly granular material as specified in Table 1.

Table 1
Imported Structural Fill Criteria

Gradation Requirements	
Standard Sieve Size	Percent Passing
2-inch	100
No. 200	10 - 30
Plasticity Requirements (Atterberg Limits)	
Liquid Limit	30 or less
Plasticity Index	8 or less

Where required for subgrade stabilization, backfill should consist of clean gravel with a maximum particle size of 2.5 inches.

Non-structural Fill

Non-structural fill is defined as all fill not supporting settlement sensitive developments. Non-structural backfill may consist of all soils and broken up pieces of bedrock with a maximum particle size of 8 inches. The fills should be reasonably blended such that significant voids (honeycombing) are not created.

Compaction Requirements

Proper placement and compaction of fill materials is critical for long-term performance of site developments. All fill should be placed in loose lifts of less than 8 inches, and placed and compacted using appropriate equipment.

Structural fill
Fill derived from clay, claystone, or silt soils within 10 feet of final grade and all fill in sub-excavation zones should be moistened to 1 to 4 percent above optimum moisture content and compacted to at least 95 percent of the maximum dry density, as determined by modified Proctor (AASTO T180). For fill placed more than 10 feet below finished grade, the moisture content should be 0 to 3 percent above optimum, and minimum compaction should be increased to 98 percent of maximum dry density.

For granular materials placed within 10 feet of final grade, the fill soils should be moistened to within 2 percent of optimum moisture content and compacted to at least 95 percent of the maximum dry density as determined by modified Proctor (AASTO T99). For fill placed more than 10 feet below finished grade, the minimum compaction should be increased to 98 percent of maximum dry density.

Non-structural Fill
Non-structural fill may be placed within 2 percent of optimum moisture and compacted to at least 90 percent of modified Proctor (AASHTO T99). It must be understood that some settlement of thick fill placed to the requirements of non-structural fill will experience some settlement over time. Although difficult to predict, settlement on the order of several inches may occur.

Construction in Wet or Cold Weather

During construction, grade the site such that surface water can drain readily away from the structural areas. Promptly pump out or otherwise remove any water that may accumulate in excavations or on subgrade surfaces, and allow these areas to dry before resuming construction. The use of berms, ditches, and similar means may be used to prevent stormwater from entering the work area and to convey any water off site efficiently.

If earthwork is performed during the winter months when freezing is a factor, no grading fill, structural fill or other fill should be placed on frosted or frozen ground, nor should frozen material be placed as fill. Frozen ground should be allowed to thaw or be completely removed prior to placement of fill. A good practice is to cover the compacted fill with a “blanket” of loose fill to help prevent the compacted fill from freezing.

If the structures are erected during cold weather, foundations, concrete slabs-on-grade, or other concrete elements should not be constructed on frozen soil. Frozen soil should be completely removed from beneath the concrete elements, or thawed, scarified and re-compacted. The amount of time passing between excavation or subgrade preparation and placing concrete should be minimized during freezing conditions to prevent the prepared soils from freezing. Blankets, soil cover or heating as required may be utilized to prevent the subgrade from freezing.

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Construction Testing and Observation

Testing and construction observation should take place under the direction of Kleinfelder to support our professional opinion as to whether the earthwork does or does not substantially conform to the recommendations in this addendum. Furthermore, the opinions and conclusions of a geotechnical report are based upon the interpretation of a limited amount of information obtained from the field exploration. It is therefore not uncommon to find that actual site conditions differ somewhat from those indicated in the report. Kleinfelder should remain involved throughout the project to evaluate such differing conditions as they appear, and to modify or add to the geotechnical recommendations as necessary.

LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This letter may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two years from the date of this addendum.

The work performed was based on project information provided by the client. If the client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, the client must obtain written approval from Kleinfelder's engineer that such changes do not affect our recommendations. Failure to do so will vitiate Kleinfelder's recommendations.

Sincerely,

KLEINFELDER

JG T. McCall, EIT
Staff Geotechnical Engineer II

COLORADO LICENSED
JAMES KEVIN WHITE
50163
PROFESSIONAL ENGINEER
1/23/17

J. Kevin White, PE
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Exploration Location Map
Appendix A – Logs
Appendix B – Laboratory Test Results Summary

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ATTACHMENTS

FIGURES

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CHECKED BY:	J.McCall
FILE NAME:	Fig1_SiteVicinity.mxd

SITE VICINITY MAP

OUTLOOK BOULEVARD SEWER LINE
SOUTH OF DILLON DRIVE
PUEBLO, COLORADO

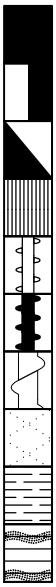
FIGURE
1

APPENDIX A

LOGS

KLEINFELDER 4815 List Drive, Unit 115, Colorado Springs, CO 80919 **p|** 719.632.3593 **f|** 719.632.2648

SAMPLER AND DRILLING METHOD GRAPHICS



MODIFIED CALIFORNIA SAMPLER
(2 or 2-1/2 in. (50.8 or 63.5 mm.) outer diameter)

CALIFORNIA SAMPLER
(3 in. (76.2 mm.) outer diameter)

STANDARD PENETRATION SPLIT SPOON SAMPLER
(2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)

NQ CORE SAMPLE
(1.874 in. (47.6 mm.) core diameter)

HOLLOW STEM AUGER

SOLID STEM AUGER

AUGER CUTTINGS

HAND AUGER

AIR ROTARY

MUD ROTARY

GROUND WATER GRAPHICS

WATER LEVEL (level where first observed)

WATER LEVEL (level after exploration completion)

WATER LEVEL (additional levels after exploration)

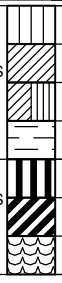
OBSERVED SEEPAGE

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, ie., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	**GRAVELS** (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu ≥4 and 1≤ Cc≤3		**GW**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu <4 and/ or 1>Cc >3		**GP**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5% TO 12% FINES	Cu ≥4 and 1≤ Cc≤3		**GW-GM**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu <4 and/ or 1>Cc >3		**GP-GM**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH > 12% FINES			**GM**	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
					GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
					GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥6 and 1≤ Cc≤3		**SW**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu <6 and/ or 1>Cc >3		**SP**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5% TO 12% FINES	Cu ≥6 and 1≤ Cc≤3		**SW-SM**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu <6 and/ or 1>Cc >3		**SP-SM**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SP-SC	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH > 12% FINES			**SM**	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
					SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES

FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)		**ML**	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid Limit greater than 50)		**MH**	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

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DRAWN BY:	MAP
CHECKED BY:	NJF
DATE:	1/18/2017
REVISED:	-

GRAPHICS KEY

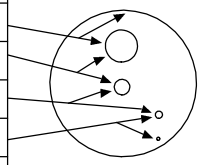
Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

FIGURE

A-1

GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles		3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse	3/4 -3 in. (19 - 76.2 mm.)	3/4 -3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine	#4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine	#200 - #40	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller



SECONDARY CONSTITUENT

	AMOUNT	
Term of Use	Secondary Constituent is Fine Grained	Secondary Constituent is Coarse Grained
Trace	<5%	<15%
With	≥5 to <15%	≥15 to <30%
Modifier	≥15%	≥30%

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	SPT - N_{60} (# blows / ft)	Pocket Pen (tsf)	UNCONFINED COMPRESSIVE STRENGTH (Q_u)(psf)	VISUAL / MANUAL CRITERIA
Very Soft	<2	PP < 0.25	<500	Thumb will penetrate more than 1 inch (25 mm). Extrudes between fingers when squeezed.
Soft	2 - 4	0.25≤ PP <0.5	500 - 1000	Thumb will penetrate soil about 1 inch (25 mm). Remolded by light finger pressure.
Medium Stiff	4 - 8	0.5≤ PP <1	1000 - 2000	Thumb will penetrate soil about 1/4 inch (6 mm). Remolded by strong finger pressure.
Stiff	8 - 15	1≤ PP <2	2000 - 4000	Can be imprinted with considerable pressure from thumb.
Very Stiff	15 - 30	2≤ PP <4	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail.
Hard	>30	4≤ PP	>8000	Thumbnail will not indent soil.

FROM TERZAGHI AND PECK, 1948; LAMBE AND WHITMAN, 1969; FHWA, 2002; AND ASTM D2488

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N_{60} (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

FROM TERZAGHI AND PECK, 1948

PLASTICITY

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit.
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit.

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness.
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensided	Fracture planes appear polished or glossy, sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness.

ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Particles are similar to angular description but have rounded edges.
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and no edges.

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SOIL DESCRIPTION KEY

Outlook Boulevard Sewer Line
South of Dillon Drive
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FIGURE

A-2

INFILLING TYPE

NAME	ABBR	NAME	ABBR
Albite	Al	Muscovite	Mus
Apatite	Ap	None	No
Biotite	Bi	Pyrite	Py
Clay	Cl	Quartz	Qz
Calcite	Ca	Sand	Sd
Chlorite	Ch	Sericite	Ser
Epidote	Ep	Silt	Si
Iron Oxide	Fe	Talc	Ta
Manganese	Mn	Unknown	Uk

DENSITY/SPACING OF DISCONTINUITIES

DESCRIPTION	SPACING CRITERIA
Unfractured	>6 ft. (>1.83 meters)
Slightly Fractured	2 - 6 ft. (0.061 - 1.83 meters)
Moderately Fractured	8 in - 2 ft. (203.20 - 609.60 mm)
Highly Fractured	2 - 8 in (50.80 - 203.30 mm)
Intensely Fractured	<2 in (<50.80 mm)

ADDITIONAL TEXTURAL ADJECTIVES

DESCRIPTION	RECOGNITION
Pit (Pitted)	Pinhole to 0.03 ft. (3/8 in.) (>1 to 10 mm.) openings
Vug (Vuggy)	Small openings (usually lined with crystals) ranging in diameter from 0.03 ft. (3/8 in.) to 0.33 ft. (4 in.) (10 to 100 mm.)
Cavity	An opening larger than 0.33 ft. (4 in.) (100 mm.), size descriptions are required, and adjectives such as small, large, etc., may be used
Honeycombed	If numerous enough that only thin walls separate individual pits or vugs, this term further describes the preceding nomenclature to indicate cell-like form.
Vesicle (Vesicular)	Small openings in volcanic rocks of variable shape and size formed by entrapped gas bubbles during solidification.

ADDITIONAL TEXTURAL ADJECTIVES

DESCRIPTION	CRITERIA
Unweathered	No evidence of chemical / mechanical alternation; rings with hammer blow.
Slightly Weathered	Slight discoloration on surface; slight alteration along discontinuities; <10% rock volume altered.
Moderately Weathered	Discoloring evident; surface pitted and alteration penetration well below surface; Weathering "halos" evident; 10-50% rock altered.
Highly Weathered	Entire mass discolored; Alteration pervading most rock, some slight weathering pockets; some minerals may be leached out.
Decomposed	Rock reduced to soil with relic rock texture/structure; Generally molded and crumbled by hand.

RELATIVE HARDNESS / STRENGTH DESCRIPTIONS

GRADE		UCS (Mpa)	FIELD TEST
R0	Extremely Weak	0.25 - 1.0	Indented by thumbnail
R1	Very Weak	1.0 - 5.0	Crumbles under firm blows of geological hammer, can be peeled by a pocket knife.
R2	Weak	5.0 - 25	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer.
R3	Medium Strong	25 - 50	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with a single firm blow of a geological hammer.
R4	Strong	50 - 100	Specimen requires more than one blow of geological hammer to fracture it.
R5	Very Strong	100 - 250	Specimen requires many blows of geological hammer to fracture it.
R6	Extremely Strong	> 250	Specimen can only be chipped with a geological hammer.

ROCK QUALITY DESIGNATION (RQD)

DESCRIPTION	RQD (%)
Very Poor	0 - 25
Poor	25 - 50
Fair	50 - 75
Good	75 - 90
Excellent	90 - 100

APERTURE

DESCRIPTION	CRITERIA [in (mm)]
Tight	<0.04 (<1)
Open	0.04 - 0.20 (1 - 5)
Wide	>0.20 (>5)

BEDDING CHARACTERISTICS

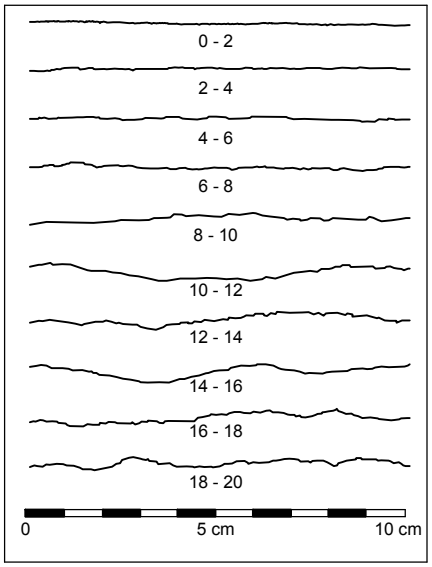
DESCRIPTION	Thickness [in (mm)]
Very Thick Bedded	>36 (>915)
Thick Bedded	12 - 36 (305 - 915)
Moderately Bedded	4 - 12 (102 - 305)
Thin Bedded	1 - 4 (25 - 102)
Very Thin Bedded	0.4 - 1 (10 - 25)
Laminated	0.1 - 0.4 (2.5 - 10)
Thinly Laminated	<0.1 (<2.5)

Bedding Planes — Planes dividing the individual layers, beds, or stratigraphy of rocks.

Joint — Fracture in rock, generally more or less vertical or traverse to bedding.

Seam — Applies to bedding plane with unspecified degree of weather.

JOINT ROUGHNESS COEFFICIENT (JRC)



From Barton and Choubey, 1977

RQD — Rock-quality designation (RQD) Rough measure of the degree of jointing or fracture in a rock mass, measured as a percentage of the drill core in lengths of 10 cm. or more.

CORE SAMPLER TYPE GRAPHICS

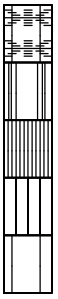
CORE SAMPLER

AQ CORE BARREL (1.067 in. (27.1 mm.) core diameter)

AX CORE BARREL (1.185 in. (30.1 mm.) core diameter)

BQ CORE BARREL (1.433 in. (36.4 mm.) core diameter)

CONTINUOUS CORE SAMPLE (2.000 in. (50.8 mm.) core diameter)



EX CORE BARREL (0.846 in. (21.5 mm.) core diameter)

HQ CORE SAMPLE (2.500 in. (63.5 mm.) core diameter)

NQ CORE SAMPLE (1.874 in. (47.6 mm.) core diameter)

NO RECOVERY CORE SAMPLE

NX CORE SAMPLE (2.154 in. (54.7 mm.) core diameter)

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ROCK DESCRIPTION KEY

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

FIGURE

A-3

BORING LOG SL-B-1

Date Begin - End:	12/29/2016	**Drilling Company:**	Custom Auger		
Logged By:	C. Miller	**Drill Crew:**	Nick & Rueben		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	40s, Sunny	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Northing: 1607332.6900
Easting: 3250683.2800
Surveyed Ground Surface Elevation (ft.): 4,924.51
Surface Condition: Bare Earth

Surveyed Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
4920	5		**Lean CLAY (CL)**: low to medium plasticity, brown with white mottling, moist, stiff to hard		BC=19 20 21	18"								
4915	10		- interbedded white calcareous fine and medium-grained sand layers below 10 feet		BC=21 22 24	18"	CL	14.6			94	47	20	
4910	15		**SHALE**: black and yellow, highly weathered, extremely to very weak, highly oxidized, low to medium plasticity		BC=37 50/6" BC=50/3"	12" 3"								
4905	20				BC=30 50/4"	14"								
4900	25				BC=50/2"	NR								
4895	30													
4890														

The boring was terminated at approximately 25 ft. below ground surface. The boring was backfilled with auger cuttings on December 29, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The exploration location and elevation were surveyed by NorthStar Engineering & Surveying.

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BORING LOG SL-B-1

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

BORING

SL-B-1

PAGE: 1 of 1

Date Begin - End:	12/29/2016	**Drilling Company:**	Custom Auger	**BORING LOG SL-B-2**	
Logged By:	C. Miller	**Drill Crew:**	Nick & Rueben		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	30s, Sunny	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Northing: 1607644.5412
Easting: 3250547.9563
Surveyed Ground Surface Elevation (ft.): 4,925.96
Surface Condition: Bare Earth and Grass

Surveyed Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)
4925			**Lean CLAY (CL)**: medium plasticity, light brown, moist, stiff		BC=19 17 20	13"
	5				BC=17 30	3"
4920			- low plasticity, loosely cemented, highly weathered limestone gravel in matrix below 8 feet			
	10		**SILT (ML)**: medium to high plasticity, brown to yellow to dark gray, moist, stiff		BC=14 19	9"
4915			**SHALE**: dark gray to yellow, moderately to highly weathered, extremely to very weak, highly oxidized, low to medium plasticity			
	15				BC=50/6"	3"
4910						
	20				BC=50/3"	3"
4905						
	25				BC=50/5"	
4900						
	30					
4895						

LABORATORY RESULTS

USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	14.8	84.8			50	20	**Expansion/Compression=** Expansion= 1.2% under 0.2 ksf when wetted. Increased drill resistance below 11 feet

The boring was terminated at approximately 25.5 ft. below ground surface. The boring was backfilled with auger cuttings on December 29, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The exploration location and elevation were surveyed by NorthStar Engineering & Surveying.

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BORING LOG SL-B-2

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

BORING
SL-B-2
PAGE: 1 of 1

BORING LOG SL-B-3

Date Begin - End:	12/29/2016	**Drilling Company:**	Custom Auger		
Logged By:	C. Miller	**Drill Crew:**	Nick & Rueben		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	30s, Sunny	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Northing: 1608015.3051
Easting: 3250410.3431
Surveyed Ground Surface Elevation (ft.): 4,927.34
Surface Condition: Grass and Weeds

Surveyed Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
4925			**Fat CLAY (CH)**: trace fine-grained sand, high plasticity, light brown, moist, stiff											
	5				BC=13 10 14	14"								
4920														
	10				BC=10 13 19	14"	CH	14.9			93	66	40	
4915														
	15		**SHALE**: dark gray to yellow, highly weathered, extremely to very weak, highly oxidized, low to medium plasticity		BC=40 50/3"	4"		16.9	112.6					**Expansion/Compression=** Expansion= 10.2% under 0.2 ksf when wetted.
4910														
	20				BC=24 50/6"	12"								
4905														
	25				BC=40 50/3"	3"								
4900			The boring was terminated at approximately 26 ft. below ground surface. The boring was backfilled with auger cuttings on December 29, 2016.											
	30													
4895														

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The exploration location and elevation were surveyed by NorthStar Engineering & Surveying.

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BORING LOG SL-B-3

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

BORING
SL-B-3
PAGE: 1 of 1

BORING LOG SL-B-4

Date Begin - End:	12/29/2016	**Drilling Company:**	Custom Auger		
Logged By:	C. Miller	**Drill Crew:**	Nick & Rueben		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	30s, Sunny	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Northing: 1608132.7372
Easting: 3250750.6324
Surveyed Ground Surface Elevation (ft.): 4,921.12
Surface Condition: Bare Earth

LABORATORY RESULTS

Surveyed Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
4920			**Lean CLAY (CL)**: low to medium plasticity, light brown to brown, moist, stiff		BC=10 17 22	14"								
	5		**Fat CLAY with Sand (CH)**: fine-grained sand, high plasticity, light brown to tan, moist, hard		BC=17 22 31	14"								
4915					BC=15 30	9"	CH	25.9	99.6		80	73	40	
			- loosely cemented, calcareous from 8 to 11 feet											
	10													
4910														
			SHALE: dark brown to dark gray to yellow, highly weathered, extremely to very weak, highly oxidized, medium plasticity		BC=50/4"	4"								
	15													
4905														
			- decomposed shale at 19 feet		BC=19 14 16	18"								
	20													
4900			- wet below 21 feet											
								14.7	121.4					**Expansion/Compression=** Expansion= 4.3% under 0.2 ksf when wetted.
	25				BC=30 50/6"									
4895														
			The boring was terminated at approximately 26 ft. below ground surface. The boring was backfilled with auger cuttings on December 29, 2016.											
	30													
4890														

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:
The exploration location and elevation were surveyed by NorthStar Engineering & Surveying.

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BORING LOG SL-B-4

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

BORING
SL-B-4
PAGE: 1 of 1

BORING LOG SL-B-5

Date Begin - End:	12/29/2016	**Drilling Company:**	Custom Auger		
Logged By:	C. Miller	**Drill Crew:**	Nick & Rueben		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	40s, Sunny	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Northing: 1608234.7784
Easting: 3251075.3036
Surveyed Ground Surface Elevation (ft.): 4,915.76
Surface Condition: Grass

Surveyed Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
4915			**Poorly graded SAND with Clay (SP-SC)**: fine and medium-grained sand, low to medium plasticity, brown to tan, moist, dense, calcareous											
4910	5		**Fat CLAY with Sand (CH)**: fine and medium-grained sand, high plasticity, brown, moist, hard		BC=18 50/6"	17"	CH	12.7			85	55	32	
4905	10		**Lean CLAY with Sand (CL)**: medium-grained sand, medium plasticity, brown to white, moist, stiff to hard, calcareous		BC=13 22 38	18"								
4900	15				BC=21 42	6"								
4895	20				BC=21 24	6"								
4890	25		**SHALE**: dark gray to yellow, highly weathered, extremely to very weak, highly oxidized, low to medium plasticity		BC=26 50/6"	12"								
4885	30				BC=50/5"	5"								

The boring was terminated at approximately 25.5 ft. below ground surface. The boring was backfilled with auger cuttings on December 29, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:
The exploration location and elevation were surveyed by NorthStar Engineering & Surveying.

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BORING LOG SL-B-5

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

BORING

SL-B-5

Date Begin - End:	12/29/2016	**Drilling Company:**	Custom Auger	**BORING LOG SL-B-6**	
Logged By:	C. Miller	**Drill Crew:**	Nick & Rueben		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Cathead - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	40s, Sunny	**Exploration Diameter:**	4 in. O.D.		

FIELD EXPLORATION

Northing: 1608462.2976
Easting: 3251015.4591
Surveyed Ground Surface Elevation (ft.): 4,926.42
Surface Condition: Bare Earth

Surveyed Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
4925	0		**Fill** **Lean CLAY**: minor gravel inclusions, low to medium plasticity, brown, moist, stiff		BC=12 18 18	14"								
4920	5		- brown to gray below 5 feet		BC=9 10 11	11"								
4915	10		- gray to dark gray below 10 feet		BC=20 23 25	7"								
4910	15		**Fat CLAY with Gravel (CH)**: medium-grained sand, low to medium plasticity, light brown, moist, hard, calcareous		BC=23 50/5"	11"	CH	12.9			81	52	32	
4905	20		- stiff to hard from 20 to 25 feet		BC=20 45 36	18"								
4900	25				BC=20 37 50/6"	18"								
4895	30				BC=50/5"	5"								

The boring was terminated at approximately 30.5 ft. below ground surface. The boring was backfilled with auger cuttings on December 29, 2016.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The exploration location and elevation were surveyed by NorthStar Engineering & Surveying.

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BORING LOG SL-B-6

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

BORING
SL-B-6
PAGE: 1 of 1

APPENDIX B

LABORATORY TEST RESULT SUMMARY

KLEINFELDER 4815 List Drive, Unit 115, Colorado Springs, CO 80919 **p|** 719.632.3593 **f|** 719.632.2648

Exploration ID	Depth (ft.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
SL-B-1	10.0	LEAN CLAY (CL)	14.6				94	47	27	20	
SL-B-2	10.0	SILT (ML)	14.8	84.8				50	30	20	**Expansion/Compression=**
											Expansion= 1.2% under 0.2 ksf when wetted.
SL-B-3	10.0	FAT CLAY (CH)	14.9				93	66	26	40	
SL-B-3	14.0	FAT CLAY (CH)	16.9	112.6							**Expansion/Compression=**
											Expansion= 10.2% under 0.2 ksf when wetted.
SL-B-4	7.0	FAT CLAY WITH SAND (CH)	25.9	99.6			80	73	33	40	
SL-B-4	24.0	SHALE	14.7	121.4							**Expansion/Compression=**
											Expansion= 4.3% under 0.2 ksf when wetted.
SL-B-5	5.0	FAT CLAY WITH SAND (CH)	12.7				85	55	23	32	
SL-B-6	15.0	FAT CLAY WITH SAND (CH)	12.9				81	52	20	32	

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.
NP = NonPlastic

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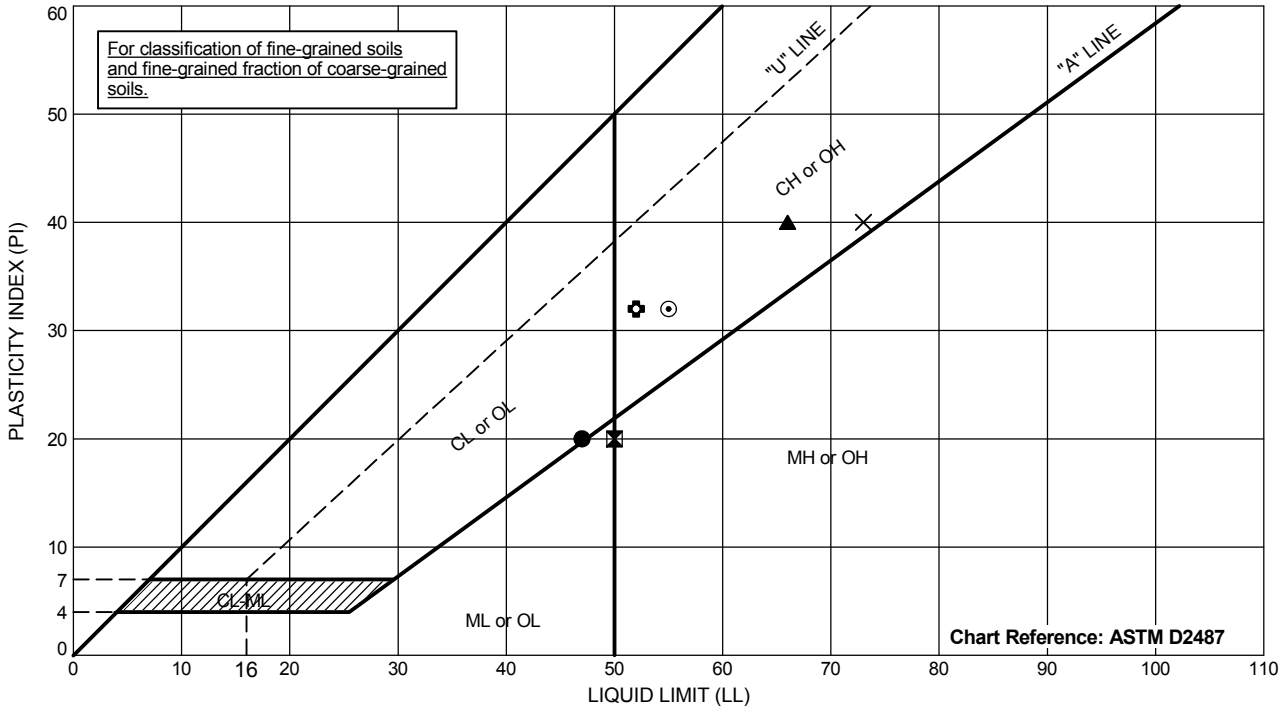
LABORATORY TEST RESULT SUMMARY

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

TABLE
B-1



Exploration ID		Depth (ft.)	Sample Description	Passing #200	LL	PL	PI
●	SL-B-1	10	LEAN CLAY (CL)	94	47	27	20
⊠	SL-B-2	10	SILT (ML)	NM	50	30	20
▲	SL-B-3	10	FAT CLAY (CH)	93	66	26	40
×	SL-B-4	7	FAT CLAY with SAND (CH)	80	73	33	40
⊙	SL-B-5	5	FAT CLAY with SAND (CH)	85	55	23	32
✿	SL-B-6	15	FAT CLAY with SAND (CH)	81	52	20	32

Testing perfomed in general accordance with ASTM D4318.
NP = Nonplastic
NM = Not Measured

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PROJECT NO.:	20170699
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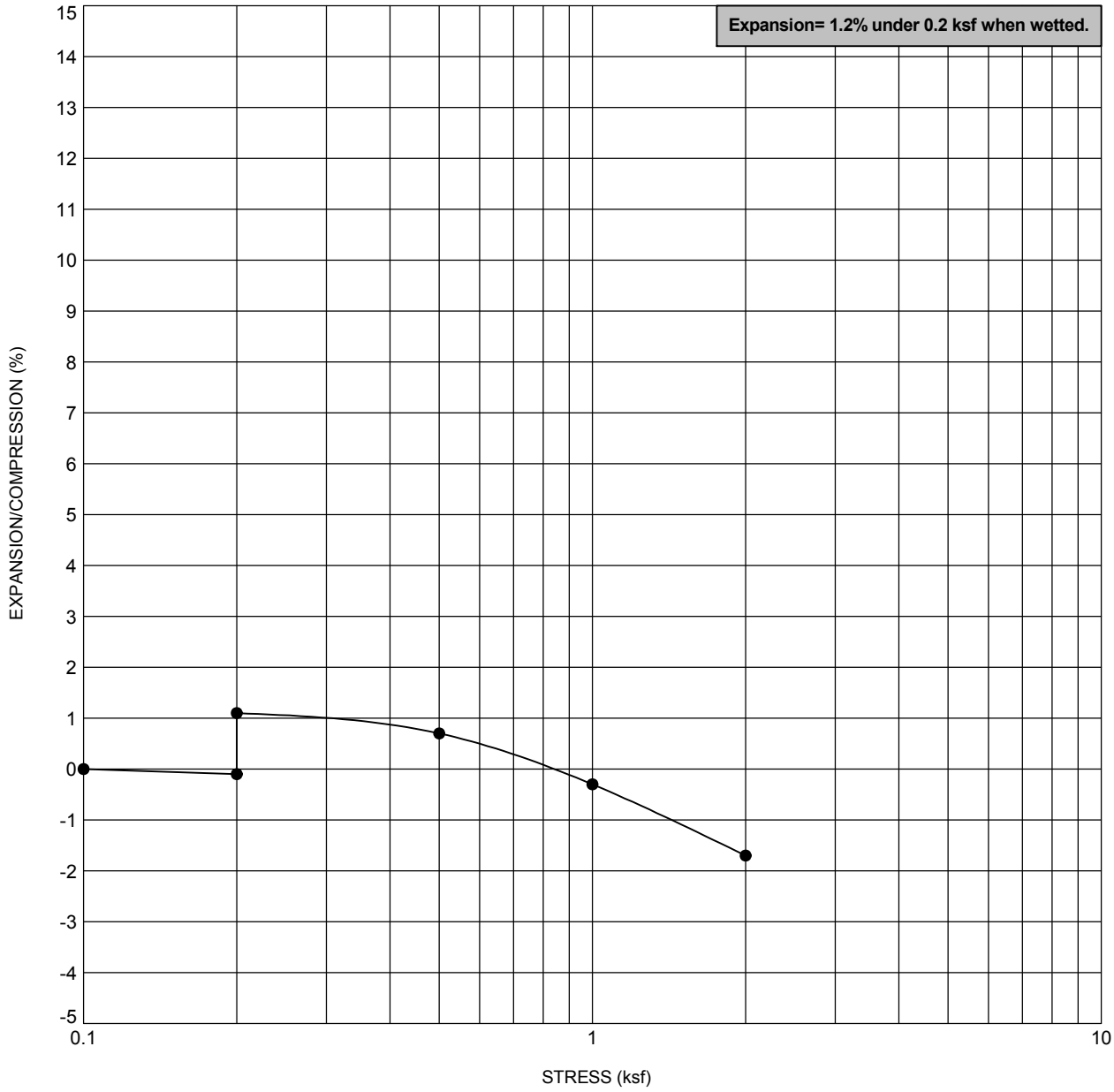
ATTERBERG LIMITS

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-2



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
SL-B-2	10	SILT (ML)	14.8	84.8	27.1	84.8

Testing perfomed in general accordance with ASTM D4546 Method C.

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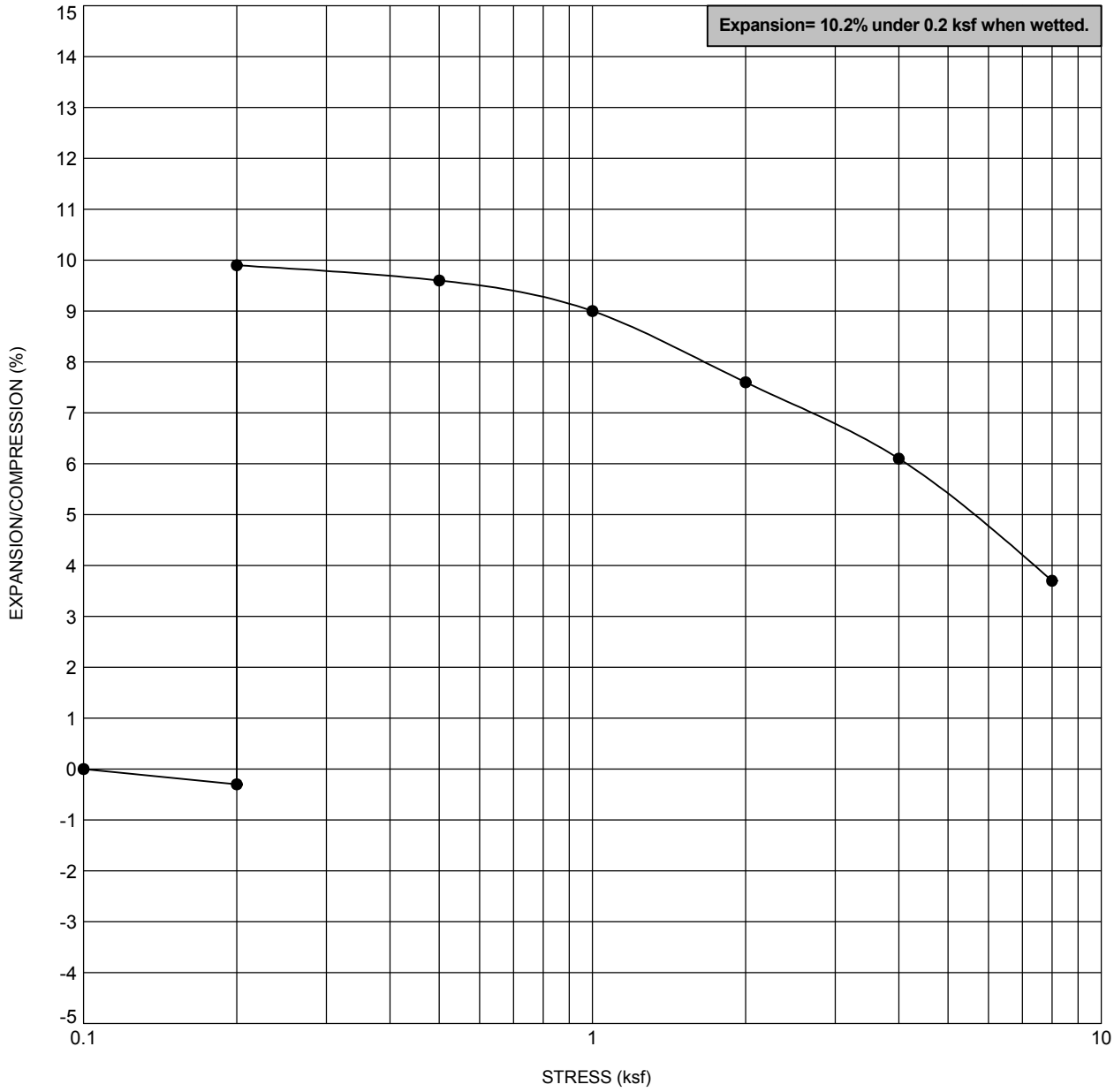
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-3



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
SL-B-3	14	FAT CLAY (CH)	16.9	112.6	22.4	112.6

Testing perfomed in general accordance with ASTM D4546 Method C.

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PROJECT NO.:	20170699
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DATE:	1/18/2017
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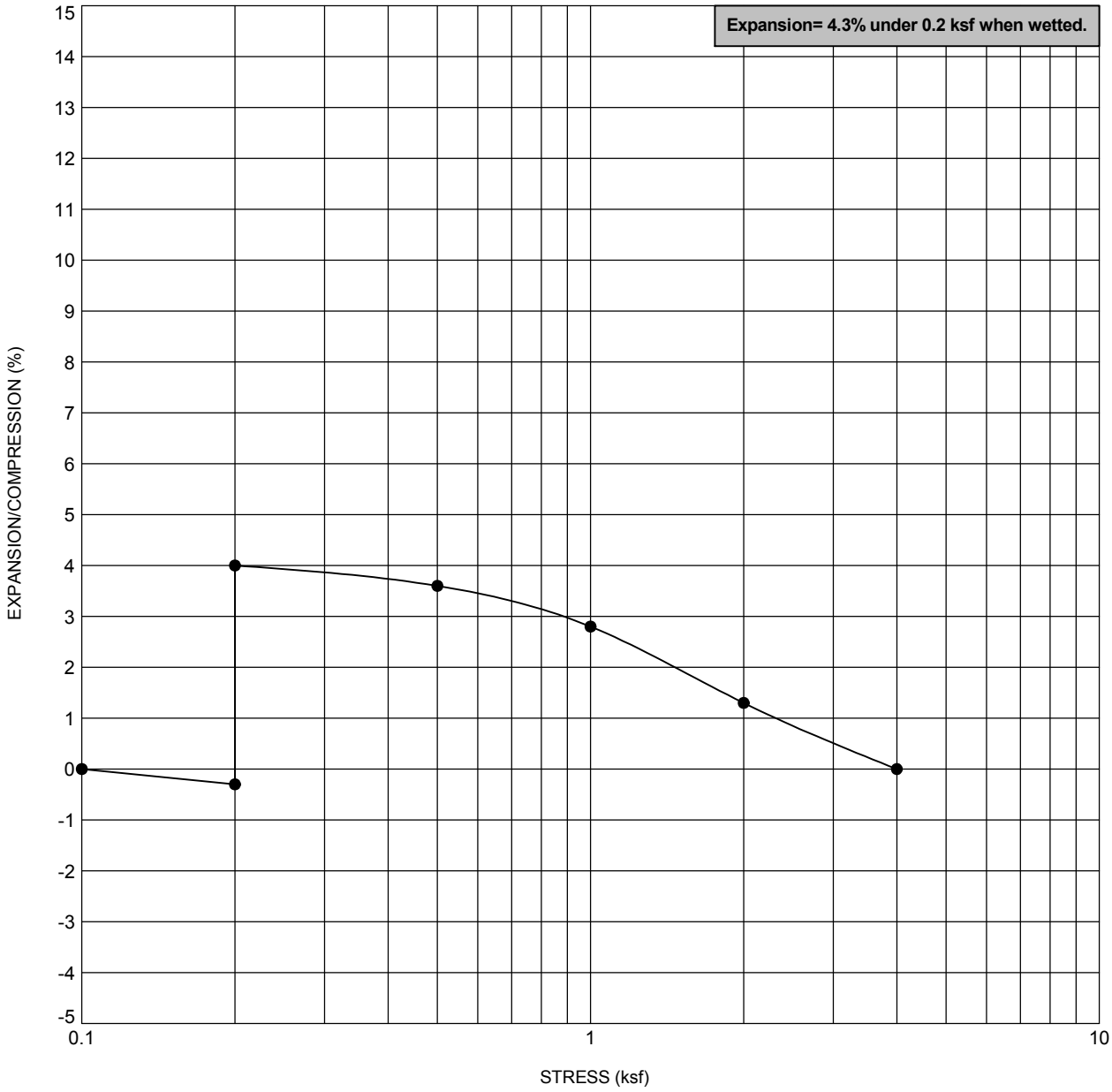
ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-4



Exploration ID	Depth (ft.)	Sample Description	Initial Water Content (%)	Initial Dry Unit Wt. (pcf)	Final Water Content (%)	Final Dry Unit Wt. (pcf)
SL-B-4	24	SHALE	14.7	121.4	16.9	121.4

Testing perfomed in general accordance with ASTM D4546 Method C.

KLEINFELDER
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PROJECT NO.:	20170699
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ONE-DIMENSIONAL EXPANSION OR COMPRESSION OF COHESIVE SOILS

Outlook Boulevard Sewer Line
South of Dillon Drive
Pueblo, Colorado

FIGURE

B-5