

**CONTRACT DOCUMENTS &
SPECIFICATIONS**

**2017 Sanitary Sewer
Capital Improvements Project
- Cured in Place Pipe -**

Job Number 17-020

PREPARED FOR:
CHERRY HILLS NORTH METROPOLITAN DISTRICT
PO Box 3110
Parker, CO 80134
Phone: 303.841.3474

PREPARED BY:



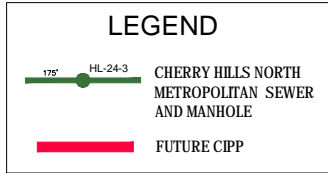
1299 Washington Avenue, Suite 280
Golden, CO 80401
Phone: 303.981.8502
Fax: 303.957.2224

LS NORTH METROPOLITAN DISTRICT

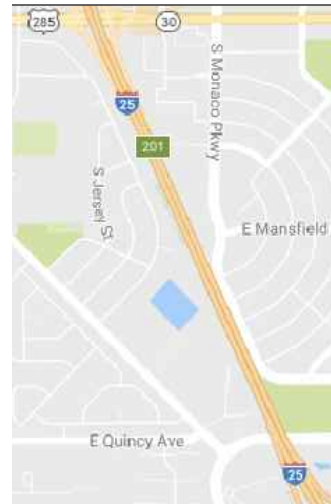
CAPITAL IMPROVEMENTS PROJECT



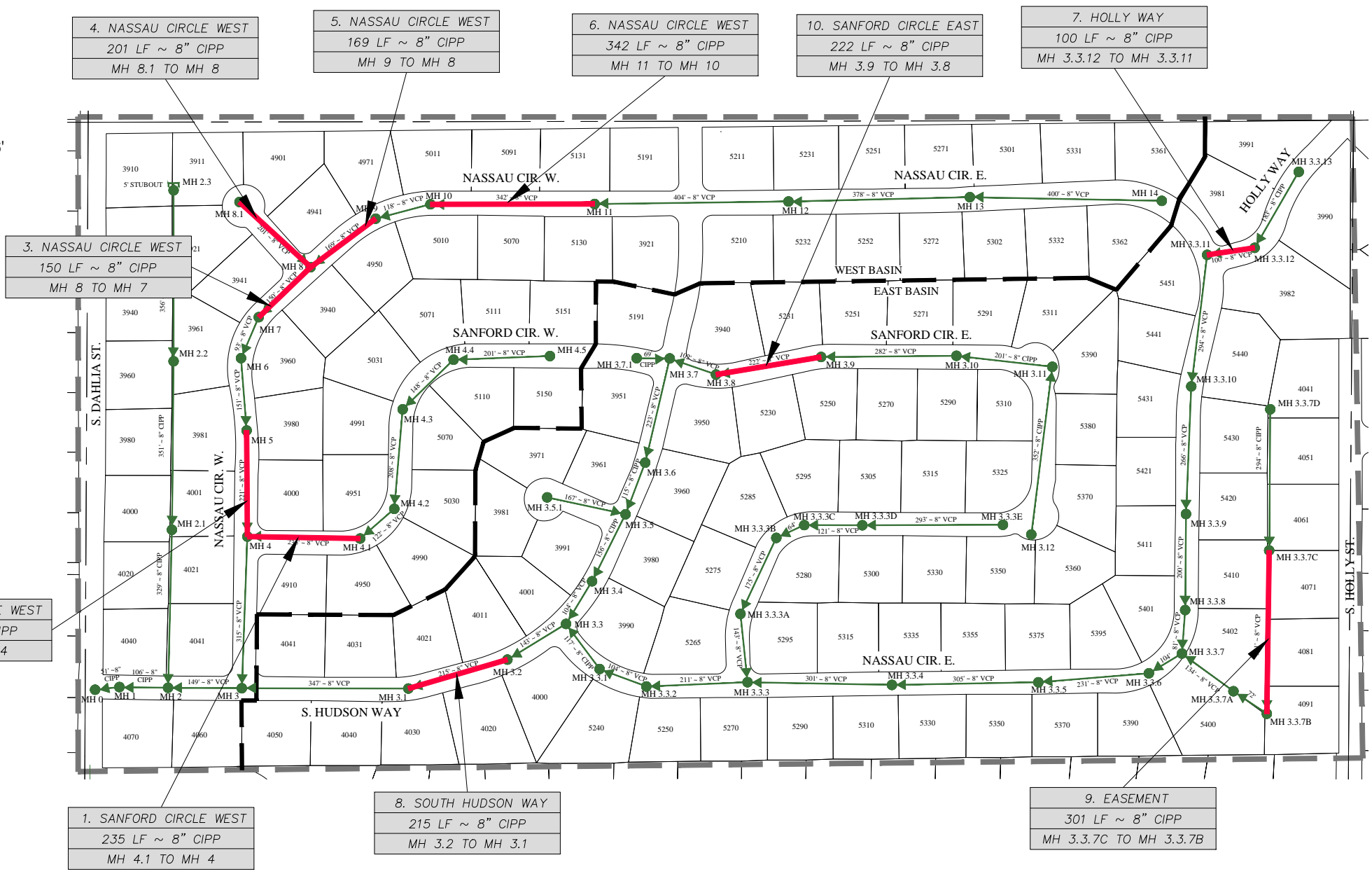
Know what's below.
Call before you dig.



	SSMH	PIPE LENGTH
TO	MH 4	235'
TO	MH 4	221'
TO	MH 7	150'
TO	MH 8	201'
TO	MH 8	169'
TO	MH 10	342'
12 TO	MH 3.3.11	100'
TO	MH 3.1	215'
7C TO	MH 3.3.7B	301'
TO	MH 3.8	222'
		2156'



AP



4. NASSAU CIRCLE WEST
201 LF ~ 8" CIPP
MH 8.1 TO MH 8

5. NASSAU CIRCLE WEST
169 LF ~ 8" CIPP
MH 9 TO MH 8

6. NASSAU CIRCLE WEST
342 LF ~ 8" CIPP
MH 11 TO MH 10

10. SANFORD CIRCLE EAST
222 LF ~ 8" CIPP
MH 3.9 TO MH 3.8

7. HOLLY WAY
100 LF ~ 8" CIPP
MH 3.3.12 TO MH 3.3.11

3. NASSAU CIRCLE WEST
150 LF ~ 8" CIPP
MH 8 TO MH 7

2. NASSAU CIRCLE WEST
221 LF ~ 8" CIPP
MH 5 TO MH 4

1. SANFORD CIRCLE WEST
235 LF ~ 8" CIPP
MH 4.1 TO MH 4

8. SOUTH HUDSON WAY
215 LF ~ 8" CIPP
MH 3.2 TO MH 3.1

9. EASEMENT
301 LF ~ 8" CIPP
MH 3.3.7C TO MH 3.3.7B

REVISION	DATE	BY

2017 KEY MAPS
CHERRY HILLS NORTH
METROPOLITAN DISTRICT

PURRINGTON CIVIL LLC
1299 WASHINGTON AVENUE
SUITE 280
GOLDEN, CO 80401
Phone: 303.981.8502
Fax: 303.957.2924
www.PurrringtonCivil.com

OVERALL CIPP
REHABILITATION
PLAN

SCALE: N.T.S.

C.1

CHERRY HILLS NORTH METROPOLITAN DISTRICT

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CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 00 21 00

INSTRUCTIONS TO BIDDERS

1. **RECEIPT AND OPENING OF BIDS:** Bids for the **2017 Sanitary Sewer Capital Improvements Project** will be received by the Cherry Hills North Metropolitan District (Owner) via email to Purrington Civil, LLC (chris@purringtoncivil.com) until **5:00 pm on Thursday, July 13, 2017**. Bids shall be made on the forms furnished by the Owner and shall be emailed with the title '**2017 Sanitary Sewer Capital Improvements Project**'.

Attention is called to the fact that bidders not only offer to assume the obligations and liabilities imposed upon the Contractor in the form of Contract, but expressly make certain of the representations and warranties made therein. No effort is made to emphasize any particular provisions of the Contract, but bidders must familiarize themselves with every provision and its effect.

2. **TIME OF COMPLETION:** The Contractor shall complete the Contract no later than **30 calendar days** after the date required to commence work. In the event of failure to complete the work within the time specified, liquidated damages will be assessed as stated in the Agreement.
3. **PREPARATION OF PROPOSAL:** The bidder must submit his Proposal on the forms furnished by the Owner. All blank spaces in the proposal forms 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, both in words and numerals) for which he proposes to do each item of the work contemplated or furnish each item of the materials required. In case of conflict between words and numerals, the words, unless obviously incorrect, will govern.

The bidder shall sign his proposal in the blank space provided therefore. If this proposal is made by a partnership or corporation, the name and address of the partnership or corporation shall be shown, together with the names and addresses of the partners or officers. If the proposal is made by a partnership, it must be acknowledged by one of the partners; or by one of the officers of the corporation.

4. **ADDENDA:** All questions are to be submitted to the District Engineer. Bidder questions are to be submitted by **5:00 pm on Tuesday, July 11, 2017**. Questions will be answered via email by **Wednesday, July 12, 2017**. Send bidder questions to Chris Purrington at chris@purringtoncivil.com or call 303.981.8502.
5. **EQUIPMENT AND LABOR RATES:** The bidder must submit hourly rates for all equipment and labor that the bidder intends to use in performing the work. Hourly rates for equipment in use and for equipment in standby shall be submitted. The hourly rates of equipment and labor are intended to be used for determining the cost of additional work, if such work is required. The hourly rates will be considered in determining qualification of low bidder. All information will be kept confidential.

CHERRY HILLS NORTH METROPOLITAN DISTRICT

6. RIGHT TO ACCEPT AND REJECT BIDS: The Owner reserves the unqualified right, in its sole and absolute discretion to reject any and all bids, or to accept that bid or combination of bids, if any, which in its sole and absolute judgment will under all circumstances best serve the Owner's interests. In the event that the successful bidder fails to execute the Contract upon his part or to furnish satisfactory surety upon the bond, the Owner, reserves the option to accept the bid of any other bidder within ten (10) days from such default, in which case such acceptance shall have the same effect as to such bidder though he were the originally successful bidder.

CHERRY HILLS NORTH METROPOLITAN DISTRICT

PROPOSAL

TO: Cherry Hills North Metropolitan District

GENTLEMEN:

The undersigned (hereafter called the Bidder), a _____ Corporation _____
(Corporation, Partnership, Individual)
organized and/or doing business under the laws of the State of Colorado, hereby
proposes and agrees to furnish all the necessary labor, materials, equipment, tools and
services necessary for the construction of the **2017 Sanitary Sewer Capital Improvements
Project** for the Cherry Hills North Metropolitan District in accordance with the Drawings,
Specifications, and other Contract Documents prepared by Purrington Civil, LLC for the sum of:
Sixty one thousand, eight hundred seventy six dollars and zero cents (\$61,876.00), plus
any and all sums to be added and/or deducted resulting from all extra and/or omitted work in
accordance with the unit and/or lump sum prices stated in the itemized Proposal form attached
thereto.

The undersigned has examined the location of the proposed work, the Drawings,
Specifications and other Contract Documents and is familiar with the local conditions at the
place where the work is to be performed.

Within ten (10) days after being awarded the Contract, the undersigned agrees to execute the
form of Agreement included as one of the Contract Documents, and to furnish a Performance
and Payment Bond in an amount equal to one hundred percent (100%) of the Contract Amount.

CHERRY HILLS NORTH METROPOLITAN DISTRICT

The undersigned hereby acknowledges receipt of the following Addenda:

Addendum No(s).	Dated
_____	_____
_____	_____
_____	_____

If awarded the Contract, the undersigned agrees to complete the work within 30 calendar days of the commencement of the Contract Time as defined in the General Conditions of the Contract.

The undersigned understands that the Owner reserves the right to reject any or all Proposals or to waive any formality or technicality in any Proposal in the interest of the Owner:

RESPECTFULLY SUBMITTED BY:

(CONTRACTOR)

(BY) (TITLE)

(BUSINESS ADDRESS) (CITY)

(STATE) (ZIP) (DATE)

(TELEPHONE NUMBER)

CHERRY HILLS NORTH METROPOLITAN DISTRICT

BID FORM
for
2017 Capital Improvements Project
BASE BID

ITEM	QUANTITY	UNIT	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
1	1	LS	8" CIPP - Standford Cir. W.; MH 4.1 to MH 4 (+/- 235 LF)	<u>5,300.00</u>	<u>5,300.00</u>
2	1	LS	8" CIPP - Nassau Cir. W.; MH 5 to MH 4 (+/- 221 LF)	<u>5,300.00</u>	<u>5,300.00</u>
3	1	LS	8" CIPP - Nassau Cir. W.; MH 8 to MH 7 (+/- 150 LF)	<u>4,050.00</u>	<u>4,050.00</u>
4	1	LS	8" CIPP - Nassau Cir. W.; MH 8.1 to MH 8 (+/- 201 LF)	<u>6,400.00</u>	<u>6,400.00</u>
5	1	LS	8" CIPP - Nassau Cir. W.; MH 9 to MH 8 (+/- 169 LF)	<u>4,050.00</u>	<u>4,050.00</u>
6	1	LS	8" CIPP - Nassau Cir. W.; MH 11 to MH 10 (+/- 342 LF)	<u>8,800.00</u>	<u>8,800.00</u>
7	1	LS	8" CIPP - Holly Way; MH 3.3.12 to MH 3.3.11 (+/- 100 LF)	<u>4,400.00</u>	<u>4,400.00</u>

CHERRY HILLS NORTH METROPOLITAN DISTRICT

ITEM	QUANTITY	UNIT	DESCRIPTION AND UNIT PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
8	1	LS	8" CIPP - S. Hudson Way; MH 3.2 to MH 3.1 (+/- 215 LF)	<u>6,500.00</u>	<u>6,500.00</u>
9	1	LS	8" CIPP - EASEMENT MH 3.3.7C to MH 3.3.7B (+/- 301 LF)	<u>7,776.00</u>	<u>7,776.00</u>
10	1	LS	8" CIPP - Sanford Cir. E.; MH 3.9 to MH 3.8 (+/- 222 LF)	<u>6,400.00</u>	<u>6,400.00</u>
11	1	LS	Mobilization / Permits	<u>1,000.00</u>	<u>1,000.00</u>
12	1	LS	Traffic Control	<u>300.00</u>	<u>300.00</u>
13	1	LS	Bypass Pumping	<u>600.00</u>	<u>600.00</u>
14	1	LS	Pre-Construction Video	<u>1,000.00</u>	<u>1,000.00</u>

TOTAL BID ITEMS 1 THROUGH 14 INCLUSIVE:

Sixty-one thousand, eight hundred seventy six ^{dollars} \$61,876.00
 (Written in Words) (In Figures)

Insitnform Technologies, LLC
 (Contractor)

SUBMITTED BY: Leanne Goodhue
 (Signature of Bidder - Name)

Business Development Manager
 (Title)

9654 Titan Court
 (Address)

720-355-4135
 (Telephone No.)

Littleton CO 80125
 (City) (State) (Zip)

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 00 51 00

NOTICE OF AWARD

Arapahoe County, Colorado

12 September, 2017
(DATE)

TO: Insituform Technologies, LLC
(NAME OF CONTRACTOR)

17988 Edison Avenue

Chesterfield MO 63005
(CITY) (STATE) (ZIP)

The OWNER, having duly considered the Proposal submitted on 12 September, 2017, for the work covered by the Contract Documents titled and numbered **2017 Sanitary Sewer Capital Improvements Project**, and it appearing that your Proposal is fair, equitable and to the best interest of the OWNER; said Proposal is hereby accepted at the bid prices contained herein.

In accordance with the terms of the Contract Documents, you are required to execute the Contract and Performance Bond in four (4) counterparts within ten (10) consecutive days from and including the date of this Notice. In addition, you are requested to furnish at the same time certificates of insurance evidencing compliance with the requirements for insurance stated in the Contract Documents.

By: 

Title: Principal, Perrington Civil, LLC

ATTEST:

By: 

Title: E.I., Perrington Civil, LLC

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 00 52 00

AGREEMENT

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

THIS AGREEMENT AND FORMAL CONTRACT, made and entered into this _____ day of _____, 2017, by and between **Cherry Hills North Metropolitan District**, party of the first part, hereinafter called the "Owner," and Insituform Technologies, LLC, County of St. Louis, of the City of Chesterfield, a _____ Corporation, hereinafter called the "Contractor,"
(Individual, Partnership, or Corporation)

party of the second part,

WITNESSETH, that whereas the Owner intends to construct the **2017 Sanitary Sewer Capital Improvements Project**, hereinafter called the Project, in accordance with the Drawings, Specifications and other Contract Documents prepared by Purrington Civil, LLC.

NOW, THEREFORE, the Owner and Contractor for the considerations hereinafter set forth, agree as follows:

I. THE CONTRACTOR AGREES to furnish all the necessary labor, materials, equipment, tools and services necessary to perform and complete in a workmanlike manner all work required for the construction of the Project, in strict compliance with the Contract Documents herein mentioned, which are hereby made a part of the Contract, including the following Addenda:

Addendum No(s).	Dated
_____	_____
_____	_____
_____	_____

(a) Contract Time: The Contractor agrees to commence work under this Contract upon written notice to proceed, and to complete the work ready for use and operation by 30 calendar days of the commencement of the Contract Time as defined in the General Conditions of the Contract.

CHERRY HILLS NORTH METROPOLITAN DISTRICT

(b) Sub-Contractors: The Contractor agrees to bind every subcontractor by the terms of the Contract Documents. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the Owner.

II. THE OWNER AGREES to pay, and the Contractor agrees to accept, in full payment for the performance of this Contract, the Contract amount of: Sixty one thousand, eight hundred seventy six dollars and zero cents (\$61,876.00) plus any and all sums to be added and/or deducted resulting from all extra and/or omitted work in connection therewith, as authorized under the terms as stated in the General Conditions and Supplementary Conditions of the Contract, all in accordance with the terms as stated in the Contract Documents.

(a) Progress Payments will be made in accordance with the General Conditions of the Contract.

III. CONTRACT DOCUMENTS: It is hereby mutually agreed that the following list of instruments, plans, specifications and documents which are attached hereto, bound herewith or incorporated herein by reference shall constitute the Contract Documents, all of which are made a part hereof, and collectively evidenced and constitute the Contract between the parties hereto, and they are fully a part of this Agreement as if they were set out verbatim and in full herein, and are designated as follows:

- a. Instructions to Bidders
- b. Proposal
- c. Notice of Award
- d. Agreement
- e. Performance and Payment Bond
- f. Notice to Proceed
- g. Acceptance of Notice
- h. General Conditions
- i. Supplementary Conditions
- j. Technical Specifications
- k. Plans
- l. Addendum (Addenda)

IV. SUCCESSORS AND ASSIGNS: This Agreement and all of the covenants hereof shall insure to the benefit of and be binding upon the Owner and the Contractor respectively and his partners, successors, assigns and legal representatives.

Neither the Owner nor the Contractor shall have the right to assign, transfer or sublet his interests or obligations hereunder without written consent of the other party.

V. LIQUIDATED DAMAGES: Owner and Contractor recognize that time is of the essence in this Agreement and that Owner will suffer financial loss if the Work is not complete within the time specified in Paragraph I(a) above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense and difficulties involved in proving, in a legal proceeding, the actual loss suffered by Owner if the Work is not complete on

CHERRY HILLS NORTH METROPOLITAN DISTRICT

time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500 for each day that expires after the time specified in Paragraph I(a) for completion until the Work is complete.

VI. CONTRACT BINDING: It is agreed that the Contract shall be binding on and insure to the benefit of the parties hereto, their heirs, executors, administrators, assigns and successors.

It is hereby mutually agreed by and between the parties hereto that no mechanic, contractor, sub-contractor, material man or other person can or will contract for or in any other manner have or acquire any lien upon the building or works covered by this Contract, or the land upon which the same is situated.

IN WITNESS WHEREOF, the Parties to these presents have executed this Contract in four (4) counterparts, each of which will be deemed an original, in the year and day first above written.

Cherry Hills North
Metropolitan District

(OWNER)

(CONTRACTOR)

(BY)

(BY)

(TITLE)

(TITLE)

(SECRETARY)

(SECRETARY)

(SEAL)

(SEAL)

PO Box 3110
(BUSINESS ADDRESS)

(BUSINESS ADDRESS)

Parker Colorado 80134
(CITY) (STATE) (ZIP)

(CITY) (STATE) (ZIP)

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 00 55 00

NOTICE TO PROCEED

TO: _____

DATE: _____

Project: _____

(Address)

(City) (State) (Zip)

You are hereby notified to commence work in accordance with the Agreement dated _____, 20____, on or before _____, 20____, and you are to complete the WORK by _____, **2017**.

The date of completion of all WORK is therefore, _____, 20____.

CHERRY HILLS NORTH METROPOLITAN DISTRICT REPRESENTATIVE

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

this the ____ day of _____, 20____.

BY: _____

TITLE: _____

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 00 61 00

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____, hereinafter called "Contractor," and _____, a corporation organized under _____ (Name of Surety) the laws of the State of _____, and authorized to transact business in the State of Colorado, as Surety, are held and firmly bound unto the **Cherry Hills North Metropolitan District** an Obligee, hereinafter called "Owner," for the use and benefit of claimants as hereinafter defined, in the amount of _____ (\$ _____), for the payment whereof the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has written agreement dated _____, 20____, entered into a contract with Owner for **2017 Sanitary Sewer Capital Improvements Project** in accordance with drawings and specifications prepared by Purrington Civil, LLC, which contract is by reference made a part hereof, and is hereinafter referred to as the "Contract."

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Contractor shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect, subject, however, to the following conditions:

- (a) The Surety hereby waives the notice of any alteration or extension of time made by the Owner.
- (b) Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default or shall promptly:
 - 1. Complete the Contract in accordance with its terms and conditions, or
 - 2. Obtain a bid or bids for submission to Owner for completing the contract in accordance with its terms and conditions, and upon determination by Owner and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount

CHERRY HILLS NORTH METROPOLITAN DISTRICT

payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

(c) Any suit under this bond, except for claims for payment of labor and material, must be instituted before the expiration of two (2) years from the date on which final payment under the Contract fall due.

(d) A "Claimant" is defined as one having a direct contract with the Contractor or with a sub-contractor of the Contractor for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment directly applicable to the Contract.

(e) The above-named Contractor and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due Claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

(f) No suit of action shall be commenced hereunder by any claimant,

1. Unless claimant, other than one having a direct contract with the Contractor, shall have given written notice to any two of the following: The Contractor, the Owner or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage pre-paid, in an envelope addressed to the Contractor, Owner or Surety at any place where an office is regularly maintained for the transaction of business, or served in any manner which the aforementioned project is located, save that such service need not be made by a public officer.
2. After the expiration of one (1) year following the date on which Contractor ceased work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.
3. Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SIGNED AND SEALED THIS _____ day of _____, 20____.

In the presence of:

CONTRACTOR

(SEAL)

WITNESS

TITLE

SURETY

(SEAL)

WITNESS

TITLE

(Accompany this Bond with Attorney-in-fact's authority from the Surety to execute the Bond, certified to include the date of the Bond.)

APPROVED FOR THE OWNER:

BY: _____ TITLE: _____

BY: _____ TITLE: _____

DATE: _____

NAME OF LOCAL SURETY: _____

AGENT: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

CHERRY HILLS NORTH METROPOLITAN DISTRICT

GENERAL CONDITIONS

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CHERRY HILLS NORTH METROPOLITAN DISTRICT

GENERAL CONDITIONS

ARTICLE 1

DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms, or pronouns in place of them, have the meanings indicated which are applicable to both the singular and plural thereof:

- 1.1 A.A.S.H.O.: The American Association of State Highway Officials.
- 1.2 A.S.A.: The American Standards Association.
- 1.3 A.S.T.M.: The American Society for Testing Materials.
- 1.4 A.W.W.A.: The American Water Works Association.
- 1.5 ADDENDA: Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.
- 1.6 APPLICATION FOR PAYMENT: The form accepted by Engineer which is to be used by Contractor in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.
- 1.7 BID: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- 1.8 BIDDER: Any individual, firm or corporation, submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.
- 1.9 BONDS: Bid, performance and payment bonds and other instruments of security.
- 1.10 CHANGE ORDER: A written order to Contractor signed by Engineer and Owner authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after the effective date of the Formal Contract.
- 1.11 COMPLETION: The Work or a portion thereof, has progressed to a point where, in the opinion of the Engineer and the Owner it is totally complete, and the Engineer certifies that the Work is generally in accordance with the Contract Documents.
- 1.12 CONTRACT OR CONTRACT DOCUMENTS: The written agreement executed between the Owner and the successful bidder, covering the performance of the work and the furnishing of labor and materials, by which the Contractor is bound to perform the work and

CHERRY HILLS NORTH METROPOLITAN DISTRICT

furnish the labor and materials, and by which the Owner is obligated to compensate him therefore at the mutually established and accepted rate or price. The Contract Documents shall include the Instructions to Bidder, Formal Contract, Notice of Award, Addenda (which pertain to the Contract Documents), Contractor's Bid Proposal (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award), the Bonds, these General Conditions, the Special Conditions, the Technical Specifications, the Drawings as the same are more specifically identified in the Formal Contract together with all Modifications issued after the execution of the Formal Contract.

1.13 **CONTRACT PRICE:** The moneys payable by Owner to Contractor under the Contract Documents as stated in the Formal Contract.

1.14 **CONTRACT TIME:** The number of days (computed as provided in paragraph 14.2 or the date stated in the Agreement) for the completion of the Work.

1.15 **CONTRACTOR:** The individual, partnership, firm, or corporation with whom Owner has entered into the Formal Contract, acting directly or through lawful agents or employees, primarily liable for the acceptable performance of the work for which contracted, and also for the payment of all legal debts pertaining to the Work.

1.16 **DAY:** A calendar day of twenty-four hours measured from midnight to the next midnight.

1.17 **DEFECTIVE:** An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to final payment.

1.18 **DISTRICT:** A legally constituted group of individuals who have joined together in order to facilitate construction of utility systems within the limits of their property. The district shall be represented by its authorized Board of Directors in accordance with its statutory powers.

1.19 **DRAWINGS:** The contract drawings which show the character and scope of the Work to be performed and which have been prepared or approved in concept by Engineer and are referred to in the Contract Documents.

1.20 **EFFECTIVE DATE OF THE FORMAL CONTRACT:** The date indicated in the Formal Contract on which it becomes effective, but if no such date is indicated it means the date on which the Formal Contract is signed and delivered by the last of the two parties to sign and deliver.

1.21 **ENGINEER:** Purrington Civil, LLC

1.22 **EQUIPMENT:** All machinery, together with the necessary parts supplied for upkeep and maintenance, and also all tools and apparatus necessary for the proper

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construction and acceptable completion of the work.

1.23 **FEDERAL SPECIFICATIONS:** The Federal Specifications and Standards, and supplements, amendments, and indices thereto, are prepared and issued by the General Services Administration of the Federal Government. These may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20025.

1.24 **FIELD ADMINISTRATOR:** The authorized Owner's representative employed by the Engineer who is assigned to the site or any part thereof.

1.25 **FINAL COMPLETION:** A point where final cleanup is complete and all of the punchlist items, in the opinion of the Owner, the Owner's representative, and the City or County, have been sufficiently completed in accordance with the Contract Documents and the Construction Permit.

1.26 **FORMAL CONTRACT:** The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Formal Contract and made a part thereof as provided therein.

1.27 **INTENTION OF TERMS:** Whenever in these Specifications or upon the Plans, the words "directed", "required", "permitted", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved", "acceptable", "satisfactory", or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner. Any reference to a paragraph or subparagraph within a section shall include the general provision of the section or sections and paragraph pertinent thereto.

1.28 **LABORATORY:** The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer.

1.29 **MODIFICATION:** (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Supplemental Agreement. A Modification may only be issued after the effective date of the Formal Contract.

1.30 **NOTICE OF AWARD:** The written notice by Owner to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, Owner will sign and deliver the Formal Contract.

1.31 **NOTICE TO PROCEED:** A written notice given by Owner to Contractor (with a copy to Engineer) fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform his obligation under the Contract Documents.

1.32 **OWNER:** Cherry Hills North Metropolitan District.

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1.33 **PAYMENT BOND:** The approved form of security furnished by the Contractor and his surety as a guarantee that he will pay in full all bills and accounts for materials and labor used in the construction of the work, as provided by law.

1.34 **PERFORMANCE BOND:** The approved form of security furnished by the Contractor and his surety as a guarantee of good faith and ability on the part of the Contractor to execute the work in accordance with the terms of the plans, specifications and contract.

1.35 **PLANS:** The official plans, working drawings, or supplemental drawings or exact reproductions thereof, prepared by or approved in concept by the Engineer which show the location, character, dimensions, and details of the work to be done and which are to be considered as part of the Contract, supplementary to these Specifications.

1.36 **PROJECT:** The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.37 **PROPOSAL:** The written offer of Owner to the bidder, to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and these Specifications.

1.38 **SHOP DRAWINGS:** All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by Contractor, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by Contractor to illustrate material or equipment for some portion of the Work.

1.39 **SPECIFICATIONS:** The directions, provisions, and requirements contained herein, supplemented by Special Conditions pertaining to the method and manner of performing the Work, or to the quantities or the qualities of materials to be furnished under the Contract.

1.40 **SUBCONTRACTOR:** An individual, firm or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

1.41 **SUBSTANTIAL COMPLETION:** The Work (or a specified part thereof) has progressed to the point where, in the opinion of the Engineer as evidenced by a written opinion as to Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part thereof) can be utilized or partially utilized for the purposes for which it was intended; or if there be no such written opinion issued, when final payment is due in accordance with paragraph 11.19. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

1.42 **SUPERINTENDENT:** Executive representative for the Contractor present on the

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work at all times, authorized to receive and fulfill instructions from the Engineer and capable of superintending the work efficiently.

1.43 SUPPLEMENTAL AGREEMENT: A written proposal and agreement executed by the Contractor and by the Owner with the consent of the Contractor's surety, covering work not included in the Plans and Proposal or as specified in paragraph 6.3 which is necessary or desirable to the proper completion of the project.

1.44 SPECIAL CONDITIONS: The specific clauses setting forth conditions or requirements peculiar to the project under consideration, covering work or materials involved in the Proposal and Estimate, which are not thoroughly or satisfactorily stipulated in the General Conditions or Technical Specifications.

1.45 SURETY: The corporate body or individuals who are bound by the Performance Bond and the Payment Bond with and for the Contractor, and which engage to be responsible for the entire and satisfactory fulfillment of the Contract and for the payment of all debts incurred in fulfilling the Contract.

1.46 WORK: The term "Work" shall be understood to mean the furnishing of all labor, materials, equipment, and other incidentals necessary or convenient to the successful completion of the Project and the carrying out of all the duties and obligations imposed by the Contract Documents and the entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents.

ARTICLE 2

PRELIMINARY MATTERS

Proposal Requirements and Conditions

Instructions to Bidders:

2.1 An official notice to contractors stating the time and place for the submission of sealed proposals upon designated projects or proposed work. This notice will contain a description of the proposed work, instructions to the bidder regarding proposal forms, Proposal Guaranty, Plans, Specifications, and the reservation of the right of the Owner to reject any or all bids.

Contents of Proposal Form:

2.2 The Owner will furnish to Bidders, Proposal forms which will state the location and description of the project; approximate estimates for the various quantities of work to be performed and materials to be furnished; the date, place and time of opening Proposals; the amount of Proposal Guaranty; the time in which the work must be completed and Special Conditions. All papers bound with or attached to the Proposal form shall be considered a part thereof and must not be detached or altered.

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Interpretation of Approximate Estimate:

2.3 Bidders are cautioned that the estimate of quantities attached to the Proposal form is approximate only and is prepared for the comparison of bids. The basis of payment will be actual quantities of work performed and accepted. If, upon the completion of the project, the actual quantities show either increase or decrease from the quantities shown in the approximate estimate, the unit price mentioned in the Proposal will still prevail.

Examination of Plans, Specifications, Special Conditions and Site of Work:

2.4 The Bidder is required to examine carefully the site of the proposed work, the Proposal, Plans, Specifications, and Contract forms and familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work. He shall satisfy himself as to the character, quality, and quantities of Work to be performed, materials to be furnished, and as to the requirements of those Specification, Special Conditions and Contract. The submission of a proposal shall be prima facie evidence that the Bidder has made such an examination. Any information shown on the Plans as to the soil or material borings or tests of existing materials is for the convenience of the Contractor. The information is not guaranteed, and no claims for extra work or damages will be considered if it is found during construction that the actual soil or material conditions vary from those indicated by the borings.

Interpretations:

2.5 All questions about the meaning or intent of the Contract Documents shall be submitted to Engineer in writing. Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

Preparation of Proposal:

2.6 The Bidder must submit his Proposal on the forms furnished by the Owner. All blank spaces in the Proposal forms 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, both in words and numerals) for which he proposed to do to each item of the work contemplated or furnish each item of the materials required. In case of conflict between words and numerals, the words, unless obviously incorrect, will govern. 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, titles, and business address of the President, Secretary and the Treasurer. Anyone signing a Proposal as agent must file legal

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evidence of his authority to do so, and that the signature is binding upon the firm or corporation.

Substitution of Equipment and Materials:

2.7 Where items of equipment and/or materials are specifically identified by a manufacturer's name, model or catalog number, only such specific items may be used in the bid unless prior written approval of other material has been obtained from the Engineer. Applications for such approval shall be submitted in duplicate at least five working days prior to bid opening date. Applications for approval shall be accompanied by a typewritten listing of the specified manufacturer and catalog number and shall also state in typewritten detail any and all significant details in which each item requested for approval differs from the item specified. Failure to so list such information shall not relieve the Contractor from providing properly functioning or fitting materials, regardless of the approval action taken by the Engineer.

Rejection of Irregular Proposals:

2.8 Proposals containing any omission, alterations of form, addition or conditions not called for, conditional or alternate bids unless called for, incomplete bids, or proposals otherwise regular which are not accompanied by a Bid Bond, Certified Check or acceptable collateral will be considered irregular and may be rejected. The Owner reserves the right to waive technicalities as to changes, alterations or reservations, and make the award to the best interest of the Owner.

Proposal Guaranty:

2.9 Each separate Proposal shall be accompanied by a Bid Bond, Certified Check or acceptable collateral in the amount of ten percent (10%) of the total amount bid, made payable to the Owner.

Delivery of Proposal:

2.10 Each Proposal and all papers bound and attached thereto, shall be placed in an envelope, securely sealed therein, and the envelope shall be so marked as to clearly indicate its contents without requiring opening. This envelope shall be addressed as indicated in the Instructions to Bidders. Proposals may be delivered either in person or by mail. No Proposal will be considered unless filed on or before the time and at the place designated in the advertisement or Instructions to Bidders. In the discretion of Owner, a proposal may be considered if it has been mailed so as to be delivered on time and had been delayed in the mail through no fault of the Contractor.

Withdrawal of Modification of Proposals:

2.11 Any Bidder, upon his or his authorized representative's written request, will be given permission to withdraw or modify his Proposal without prejudice to himself, at any time

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before the hour set for opening the bids.

Public Opening of Proposals:

2.12 Proposals will be publicly opened at the time and place mentioned in the Instructions to Bidders, and Bidders are invited to be present at the opening. Proposals received after the time and date set for the opening will be returned unopened to the Bidder.

Competency of Bidder:

2.13 The Owner may require the Bidder to present satisfactory evidence that he has had sufficient experience and that he is fully prepared with the necessary capital, materials, machinery and skilled workmen to carry out the Contract, and that he has authority to conduct business in the jurisdiction where the Project is located. When so requested, Bidders shall furnish a statement covering experience on similar work, a list of machinery, plant, other equipment available for proposed work, and a statement on financial resources, dated within 30 days prior to the date of the opening of the bids. The Owner reserves the right to make such investigation of information submitted as is deemed necessary before a contract is awarded and to disqualify any contractor if deemed in the best interest of the Owner. The financial statement submitted, dated within 30 days prior to the date of opening of the bids, shall show the financial condition of the Bidder as of December 31 of the year preceding the date of the call for bids, or as of the end of the fiscal operating year, qualified by sufficient supplementary information to show approximately the condition at the time of submitting the statement. If no important change has occurred, the Bidder shall certify on the statement that his financial condition has remained substantially unchanged since the date of the annual statement.

Disqualification of Bidders:

2.14 Any one or more of the following causes may be considered as sufficient for the disqualification of Bidder and the rejection of his bid or bids:

- a) More than one Proposal for the same work from an individual, firm, partnership, or corporation under the same or different names.
- b) Evidence of collusion among bidders. Participants in such collusion may receive no recognition as bidders for any future work.
- c) Unbalanced Proposals in which the prices for some items are out of proportion to the prices for other items.
- d) Failure to submit a unit price for each item of work for which a bid price is required by the Proposal.
- e) Lack of competency as revealed by the financial statement, experience, plant and equipment statements submitted.

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- f) Lack of responsibility as shown by past work judged from the standpoint of workmanship and progress.
- g) Uncompleted work which, in the judgement of the Owner, might hinder or prevent the prompt completion of additional work if awarded.
- h) For being in arrears on existing contracts, in litigation with the Owner, or having defaulted on a previous contract.
- i) Any other reason which in the discretion of Owner, renders Bidder unfit to perform the Work or gives the Owner cause to believe there is substantial likelihood that Bidder will default on the Contract and it is therefore not in Owner's best interest to make such an award.

Material Guaranty:

2.15 Before any Contract is awarded, Bidders may be required to furnish a complete statement of the origin, composition and manufacture of all or any materials to be used in the construction of the Work, together with samples, which samples may be subjected to the tests provided for in the Specifications to determine their quality and fitness for the Work.

Award and Execution of Contract

Consideration of Proposals:

2.16 After the proposals have been opened and read, the quantities will be extended and totaled in accordance with the bid prices of the accepted proposals, and the results of the prices will be made public. Until the final award of the contract, the Owner reserves the right to reject any or all proposals, to waive technicalities and to advertise for new proposals, or proceed to do the work otherwise when the best interests of the Owner will be promoted thereby.

Award of Contract:

2.17 Award of Contract will be made by the Owner, upon the recommendation of the Engineer, to the lowest responsible bidder meeting the requirements of the Owner, and will be made within sixty (60) days after the opening of the proposal. The Engineer will notify the successful Bidder by letter, mailed to the address shown on the Proposal, that he has been awarded the Contract.

Return of the Proposal Guaranty:

2.18 As soon as the bid prices have been compared, the Engineer will return the Proposal Guaranties accompanying the Proposals of all except the three (3) lowest bidders. The Proposal Guaranties of the three (3) lowest bidders will be held until the Contract is

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awarded, provided this period does not exceed sixty (60) days. When the Contract is awarded, the Proposal Guaranties of the two (2) remaining unsuccessful bidders will be returned. The award of Contract will be made or bids rejected within sixty (60) days after opening the bids, excepting that as mutually agreed between the Owner and the low bidder, this time limit may be waived. The Proposal Guaranty of the successful bidder will be returned after the Contract and Performance and Payment Bond have been executed.

Requirements of Performance and Payment Bond:

2.19 The Bidder to whom the Contract is awarded at the time of the execution of the Contract, must deposit with the Owner performance and payment bonds each in a sum equal to 100 percent (100%) of the amount of the Contract awarded, guaranteeing faithful performance of the Contract, and the payment of all labor, materials, rentals, etc. The surety shall be acceptable to the Owner and shall comply with the requirements of paragraph 5.8 of the General Conditions.

Execution of Contract:

2.20 The individual, firm, partnership, or corporation to whom or to which the Contract has been awarded, shall sign the necessary agreements in at least four counterparts entering into a contract with the Owner and return them to the office of the Owner within ten (10) days after the date of the Notice of Award.

Approval of Contract:

2.21 No Contract is binding upon the Owner until it has been executed by the Owner and delivered to the Contractor.

Failure to Execute Contract:

2.22 Failure to comply with any of the requirements of the Proposal to execute the Contract within ten (10) days after the date of the Notice of Award or to furnish Bonds, Certificates of Insurance and other documents as required, shall be just cause for the annulment of the award. In the event of such annulment of the award, the amount of Proposal Guaranty shall become the property of the Owner, not as a penalty but as liquidated damages. Award may then be made to the next qualified bidder, or the Work re-advertised, or handled as the Owner may elect.

OTHER PRELIMINARY MATTERS

Copies of Documents:

2.23 Owner shall furnish to Contractor up to two copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

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Commencement of Contract Time; Notice to Proceed:

2.24 The Contract Time will commence to run in accordance with the Notice to Proceed which shall be issued no later than thirty days after the date of the Formal Contract.

Starting the Project:

2.25 Contractor shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.26 Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error or discrepancy which Contractor may discover; however, Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error or discrepancy in the Drawings or Specifications, unless Contractor had actual knowledge thereof or should reasonably have known thereof.

2.27 Within three days after the effective date of the Formal Contract (unless otherwise specified in the Special Conditions), Contractor shall submit to Engineer for review an initial schedule indicating the starting and completion dates of the various stages of the Work, a preliminary schedule of Shop Drawing submissions, and an initial schedule of values of the Work where applicable.

2.28 Before any Work at the site is started, Contractor shall deliver to Owner, with a copy to Engineer, certificates (and other evidence requested by Owner) of insurance which Contractor is required to purchase and maintain in accordance with Article 5.

Preconstruction Conference:

2.29 Within five days after the effective date of the Formal Contract, but before Contractor starts the Work at the site, a conference will be held for review of the schedules referred to in paragraph 2.27, to establish procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish such working understandings among the parties as to the Work as are not inconsistent with the Contract Documents.

ARTICLE 3

CONTRACT DOCUMENTS: INTENT AND REUSE

Intent:

3.1 It is the intent of this Contract to describe a complete project which may be utilized for its intended purpose(s) as more fully described in the Special Conditions. The Contract Documents comprise the entire agreement between Owner and Contractor concerning the Work. They may be altered only by a Modification.

3.2 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If, during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, he shall report it to Engineer in writing at once and before proceeding with the Work affected thereby; however, Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error or discrepancy in the Specifications or Drawings unless Contractor had actual knowledge thereof or should reasonably have known thereof.

3.3 It is the intent of the Specifications and Drawings to describe a complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment, such words shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the code of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code in effect at the time of opening of Bids (or, on the effective date of the Formal Contract if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of Owner, Contractor or Engineer, or any of their agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided for in paragraph 7.6.

3.4 The Contract Documents will be governed by the law of the State of Colorado.

Reuse of Documents:

3.5 Neither Contractor nor any Subcontractor, manufacturer, fabricator, supplier or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer; and they shall not reuse any of them on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adoption by Engineer.

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ARTICLE 4

PHYSICAL CONDITIONS

Physical Conditions--Investigations and Reports:

4.1 Reference is made to the Special Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by Engineer in preparation of the Drawings and Specifications. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents.

Unforeseen Physical Conditions:

4.2 Contractor shall promptly notify Owner and Engineer in writing of any subsurface or latent physical conditions at the site or in any existing structure differing materially from those indicated or referred to in the Contract Documents. Engineer will promptly review those conditions and advise Owner in writing if further investigation or tests are necessary. Promptly thereafter, Owner shall obtain the necessary additional investigations and tests and furnish copies to Engineer and Contractor. If Engineer and Owner find that the results of such investigations or test indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by Contractor after personal investigation and testing, a Change Order shall be issued incorporating the necessary revisions.

ARTICLE 5

BONDS AND INSURANCE REQUIREMENTS

General:

5.1 The Contractor shall not commence work under this Contract until he has obtained all insurance required by these Specifications, and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on this project until all similar insurance required of the subcontractor has been obtained and approved. The Contractor shall add the Owner to all relevant insurance policies as an additional names insured.

Workman's Compensation Insurance:

5.2 The Contractor shall obtain and maintain during the life of this Contract adequate Workmen's Compensation Insurance as prescribed by the Workmen's Compensation Act, as amended, of the State of Colorado. This insurance shall cover all of his employees employed at the site of the project. If any of the work is sublet, the Contractor shall require each of his subcontractors to provide similar coverage for all of the latter's employees to be engaged in

such work.

Public Liability and Property Damage Insurance:

5.3 The Contractor shall be required to carry Comprehensive General Liability/Auto Liability insurance to protect himself, his subcontractors and the Owner, including any office or agent of said Owner, from claims for public liability or property damage which may arise from operations under this Contract, whether such operations be by himself or any subcontractor or anyone directly or indirectly employed by either of them. Any subcontractor will be required to carry Comprehensive General Liability and Automobile Liability insurance in an amount equal to that required by the Contractor. The limits of liability for this insurance shall be \$5,000,000 per occurrence and \$5,000,000 aggregate for both Bodily Injury and Property Damage.

Contractor agrees that it will indemnify and hold harmless the Owner and the Owner's agents and employees from any loss, cost, damage, expense and liability including attorneys' fees, by reason of property damage, personal injury, or both, such damage and injury of whatsoever nature of kind arising out of or as a result of the construction of the Work under this Contract, or any negligent act or negligent failing to act, or on account of the use of any improper or defective materials, or on account of any poor workmanship or on account of any act of omission or commission in connection with the performance of the work by Contractor, its employees, agents and subcontractors, and contractor agrees that the Comprehensive General Liability and Property Damage Insurance (including Automobile Liability and Property Damage Insurance), which is required to maintain pursuant to the article hereof entitled "Insurance" shall cover the obligations set forth above. The Comprehensive General Liability insurance shall include broad form property damage coverage, broad form contractual liability coverage and completed operations insurance.

Property Insurance:

5.4 Contractor shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof. This insurance shall include the interests of Owner, Contractor and Subcontractors in the Work, shall insure against the perils of fire, earthquake, flood and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Special Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Special Conditions, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

Proof of Insurance:

5.5 Prior to the commencement of any work under this Contract, the Contractor shall furnish to the Owner certificates of insurance to prove that all required insurance is in force, and shall require any subcontractor to submit similar evidence before undertaking work under this

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Contract. Each insurance policy shall contain a clause providing that it shall not be cancelled or materially altered without ten (10) days' written notice to the Owner. Insurance obtained by the Contractor shall be subject to approval by the Owner for adequacy of protection. Neither approval by the Owner of any insurance supplied by a Contractor or subcontractor, nor failure to disapprove such insurance shall relieve the Contractor or subcontractors of their obligation to maintain in full force during the life of the Contract all required insurance as set forth in this Article and in the Special Conditions.

Receipt and Application of Proceeds of Insurance:

5.6 Any insured loss under the policies of insurance required by this Article or the Special Conditions shall be adjusted with Owner and made payable to Owner as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.7. Owner shall deposit in a separate account any money so received, and he shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the Cost thereof covered by an appropriate Change Order.

Adjustment and Settlement of Insurance Claims:

5.7 Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as trustee shall only make settlement with the insurers in accordance with such agreement as the parties in interest may reach.

Performance and Payment and Other Bonds:

5.8 Contractor shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date of final payment. Contractor shall also furnish such other Bonds as are required by the Special Conditions. All Bonds shall be in the forms prescribed by the bidding documents or Special Conditions and be executed by such Sureties as (i) are licensed to conduct business in the State of Colorado and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Fiscal Service, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.9 If the Surety on any Bond furnished by Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of clauses (i) and (ii) of paragraph 5.8, Contractor shall within five days thereafter substitute another Bond and Surety, both of which shall be acceptable to Owner.

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Changes in Work; Notice:

5.10 If notice of any change affecting the general scope of Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be Contractor's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. Contractor shall furnish proof of such adjustment to Owner.

Term of Insurance Required:

5.11 All insurance policies required pursuant to these Contract Documents shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work in accordance with Paragraph 12.5.

ARTICLE 6

SCOPE OF WORK

Intent of Plans and Specifications:

6.1 The intent of the Plans and Specifications is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the Plans, Specifications, Proposal and Contract, together with any authorized alterations, Special Conditions and Modifications. The Contractor shall perform all items of work covered and stipulated in the Contract Documents together with any authorized alternations, all in accordance with the lines, grades, cross sections and dimensions shown on the Plans. The Contractor shall furnish, unless otherwise provided in the Specifications, all materials, equipment, implements, labor, transportation of construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

6.2 Should any construction or conditions which are not thoroughly or satisfactorily stipulated or set forth by the Specifications be anticipated on any proposed project, Special Conditions for such work may be prepared and attached to the Proposal Form and Contract, and shall be considered as part of the Specifications, the same as though contained fully therein. Should any Special Condition conflict with the General Conditions, the Special Condition will govern.

Changes and Increased or Decreased Quantities of Work:

6.3 The Owner through the Engineer reserves and shall have the right to make such changes, from time to time, in the Plans, the character or quantity of the work as may be considered necessary or desirable to complete fully and acceptably the proposed construction in a satisfactory manner, provided such alterations do not change the total cost of the project, based on the originally estimated quantities and the unit prices bid or lump sum bid, by more

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than twenty-five (25%) percent, and provided further that such alternations do not change the total cost of any major item, based on the originally estimated quantities and the unit prices bid or schedule of values, by more than twenty-five percent (25%). (A major item shall be construed to be any item, the total cost of which is equal to or greater than ten percent (10%) of the total Contract amount, computed on the basis of the Proposal quantity and the Contract unit prices or schedule of values amount.) Should it become necessary, for the best interest of the Owner, to make changes in excess of that herein specified, the same shall be covered by Supplemental Agreement. The Contractor shall not start work on any alteration requiring a Supplemental Agreement until the Agreement setting forth the adjusted prices shall be executed by the Engineer, Owner and Contractor. In case a satisfactory adjustment in price cannot be reached for any item requiring a Supplemental Agreement, the Owner reserves the right to terminate the Contract as it applies to the items in question and make such arrangements as may be deemed necessary to complete the work as altered or decreased. Engineer may authorize minor changes in the work not involving an adjustment of Contract Price or Contract Time, which are consistent with the overall intent of the Contract Documents. Said minor changes shall be binding on Owner and Contractor, and shall be performed promptly by Contractor.

Deleted Items:

6.4 The Engineer may, in writing, order deleted from the work any item other than major items found unnecessary to the project and such deletion shall not be a waiver of any condition of the Contract nor invalidate any of the provisions thereof. Major items may be deleted by Supplemental Agreements. The Contractor will be paid for all work done toward the completion of the item prior to such deletion as provided in paragraph 11.5.

Extra Work:

6.5 When work is necessary to the proper completion of the project for which no quantities or prices were given in the Proposal or Contract, the same shall be called extra work and shall be performed by the Contractor when so authorized in writing by the Engineer. Extra work shall be performed by the Contractor in accordance with the Contract Documents in a proper and workmanlike manner and as may be authorized by the Engineer. Prices for extra work shall be itemized and covered by a Modification submitted by the Contractor and approved by the Owner and Engineer prior to the actual starting of such work. Should the parties be unable to agree on unit prices or a lump sum for the extra work, or if this method is impractical, the Engineer may instruct the Contractor to proceed with the work on the basis of the Cost of the Work as hereinafter provided in Section 11.6. Claims for extra work not authorized in writing by the Engineer prior to the work being done will be rejected.

Maintenance of Traffic:

6.6 Unless the Contract specifically provides for the closing to traffic of any local road or highway while construction is in progress, such road or highway shall be kept open to all traffic by the Contractor. The Contractor shall also provide and maintain in a safe condition

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temporary approaches, crossings, or intersections with roads and highways. The Contractor shall bear all expense of maintaining traffic over the section of road affected by the work to be done under this Contract, and of constructing and maintaining such approaches, crossings, intersections and any accessory features without direct compensation, except as otherwise provided.

Removal and Disposal of Structures and Obstructions:

6.7 All structures or obstructions found on the site and shown on the Contract Drawings which are not to remain in place or which are not to be used in the new construction shall be removed to the satisfaction of the Engineer. Unless specified in the Proposal, this Work will not be paid for separately but will be included in the price bid for that portion of the Work requiring the removal of the obstruction. All material found on the site or removed therefrom shall remain the property of the Owner unless otherwise indicated.

Use of Materials Found on the Work:

6.8 The Contractor, with the consent of the Engineer, may use in the proposed construction any stone, sand, or gravel found on the site. The Contractor will not be paid for such excavation unless specifically stated in the Proposal, and he shall replace with other suitable material, without compensation, all of that portion of the material so removed and used. If it was intended by the Engineer and indicated in the Specifications that any or all of the material so excavated and used was to have been wasted, then the Contractor will not be required to replace it. The Contractor shall not excavate any material from the site which is not within the excavation as indicated by the slope and grade lines, without prior consent by the Engineer.

Final Cleaning Up:

6.9 Upon completion of the Work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus, and discarded materials, rubbish, temporary structures, and stumps or portions of trees. He shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on property adjacent, will not be considered as having been disposed of satisfactorily. The Contractor shall leave the construction site in a condition generally comparable to the original condition or as specified elsewhere in the Specifications.

ARTICLE 7

PROSECUTION OF THE WORK

Authority of Engineer:

7.1 The Engineer shall decide any and all questions which may arise as to the quality and acceptability of the materials furnished, the work performed, the manner of performance

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and the rate of progress of the work. He shall decide all questions which may arise as to the interpretation of the Plans, General Conditions and Specifications, all questions as to acceptable fulfillment of the Contract, all disputes and mutual rights by the Contractors, if there be more than one Contractor on the work, and all questions as to compensation. The decision of the Engineer shall be final and he shall have executive authority to make effective such decisions and to request the Contractor to carry out all orders promptly.

Plans and Shop Drawings:

7.2 The Approved Plans will show details of all structures; lines and grades of roadways and utility systems, typical cross-sections of roadways; character of foundation; location and designation of all structures; and the general arrangement of circuits and outlets, location of switches, panelboards and other work. Drawings and specifications are complementary each to the other, and what is called for by one shall be as binding as if called for by both. Data presented on these drawings are as accurate as planning can determine, but accuracy is not guaranteed and field verification of all dimensions, locations, levels, etc., to suit field conditions is directed. The Contractor shall review all structural and mechanical plans and adjust all work to conform to all conditions shown therein. The mechanical drawings shall take precedence over all other drawings. Discrepancies between different plans, or between plans and specifications, or regulations and codes governing the installation shall be brought to the attention of the Engineer in writing as soon as said discrepancies are noticed. In the event such discrepancies exist and the Engineer is not so notified, the Engineer shall reserve the right to exercise sole authority in making final decisions in resolution of such a conflict. It is mutually agreed that all authorized alterations affecting the requirements and information given on the Approved Plans shall be in writing and approved by the Engineer. When at any time reference is made to "The Plans", the interpretation shall be the Plans as affected by all authorized alterations then in effect. Plans will be supplemented by such shop drawings to be prepared by Contractor as are necessary to adequately control the work.

7.2.1 After checking and verifying all field measurements and approving of shop drawings, Contractor shall submit to Engineer for review, in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.28), six copies (unless otherwise specified in the Special Conditions) of all Shop Drawings, which shall have been checked by and stamped with the approval of Contractor and identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and like information to enable Engineer to review the information as required.

7.2.2 At the time of each submission, Contractor shall in writing call Engineer's attention to any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.

7.2.3 Engineer will review with reasonable promptness Shop Drawings and samples, but Engineer's review shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, sequences, techniques or procedures of

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construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make any corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and resubmit new samples for Engineer's review. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that Contractor has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

7.2.4 Where a Shop Drawing or sample is required by the Specifications, no related Work shall be commenced until the submittal has been reviewed by engineer.

7.2.5 Engineer's review of Shop Drawings or samples shall not relieve Contractor from responsibility for any deviations from the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has given written concurrence and approval to the specific deviation, nor shall any concurrence or approval by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings.

7.2.6 The cost of furnishing all shop drawings shall be borne by the Contractor.

Operating Manuals and Parts Lists:

7.3 The Contractor shall submit five (5) complete Operating Manuals and Parts Lists to the Engineer for all items of mechanical and electrical equipment incorporated into the Work, unless specified otherwise in the Special Conditions or Technical Specifications.

As-Built Drawings:

7.4 A contract set of drawings shall be maintained at the site, with all changes or deviations from the original drawings neatly marked thereon in brightly contrasting color. This shall be a separate set of drawings, not used for construction purposes, which shall be kept up to date as the job progresses and shall be made available for inspection by the Engineer at all times. Upon completion of the contract, this set of drawings shall be delivered to the Engineer.

Conformity with Plans and Allowable Deviations:

7.5 Finished surfaces in all cases shall conform with lines, grades, cross-sections and dimensions shown on the Approved Plans. Any deviation from the Plans and working drawings, as may be required by the demands of construction, will in all cases be determined by the Engineer and authorized in writing.

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Coordination of Plans and Specifications:

7.6 The Plans and Specifications, and all supplementary plans and documents, are essential parts of the contract, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be cooperative to describe and provide for a complete work. The Contractor shall not take advantage of any apparent error or omission in the Plans or Specifications. In the event the Contractor discovers any apparent conflict, error or discrepancy, he shall immediately call upon the Engineer for his interpretation and decision, and such decision shall be final. Any apparent error or discrepancy must be resolved before Contractor proceeds with the work affected thereby.

7.6.1 In resolving such conflicts, errors and discrepancies, the documents shall be given preference in the following order (unless it would clearly be erroneous to do so): (1) Formal Contract; (2) Specifications; (3) Drawings.

7.6.2 Within the specifications the order of precedence is as follows: (1) Addenda; (2) Special Conditions; (3) Instructions to Bidders; (4) General Conditions of the Contract; (5) Technical Specifications; (6) Standard Specifications.

7.6.3 With reference to the drawings the order of precedence is as follows: (1) Figures govern over scaled dimensions; (2) Detail drawings govern over general drawings; (3) Change order drawings govern over contract drawings; (4) Contract drawings govern over standard drawings; (5) Contract drawings govern over shop drawings.

Cooperation of Contractor:

7.7 He shall have available on the Work at all times one (1) copy of said Plans and Specifications, exclusive of the set designated for As-Built Drawings in Paragraph 7.4. the Contractor shall give to the Work the constant attention necessary to facilitate the progress thereof, and he shall cooperate with the Engineer and with other contractors in every way possible. The Engineer shall suggest the sequence of construction in case of controversy between contractors. The Contractor shall have a competent superintendent on the Work at all times who is fully authorized as his agent on the Work; such superintendent shall be capable of reading and thoroughly understanding the Plans and Specifications and shall receive and fulfill instructions, suggestions and communications from the Engineer, or his authorized representative. The superintendent shall have full authority to execute the Work specified in the Contract Documents without delay and to promptly supply materials, tools, plant equipment and labor as may be required to perform such work. Such superintendent shall be furnished irrespective of the amount of Work sublet. Said superintendent shall have authority to act on behalf of Contractor. All communications given to the Superintendent shall be as binding as if given to Contractor.

Construction Stakes:

7.8 The Owner will furnish and set construction stakes establishing all lines, grades and

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measurements necessary to the proper prosecution of the Work contracted for under these Specifications. Contractor shall request that Owner provide engineering surveys and placement of construction stakes no less than 48 hours prior to the time such service is needed. The Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors which may have been made in laying out the Work. The Contractor shall be held responsible for the proper preservation of all marks and stakes. Stakes which must be reset after initial placement will be replaced at Contractor's expense at the current billable rate for a three-person survey crew unless the stakes were removed or destroyed by causes beyond the Contractor's control. Said cost may be deducted from any funds due the Contractor.

Authority and Duties of Field Administrator:

7.9 The Field Administrators shall be authorized to inspect work done and material furnished. Such inspection may extend to any part of the Work and to preparation, fabrication, or manufacture of the materials to be used. The Field Administrator is authorized to call the attention of the Contractor to any failure of the Work or materials to conform to the Contract Documents. He shall have the authority to reject materials or suspend the Work not conforming to Contract Documents until any questions at issue can be referred to and decided between the Engineer and the Owner. If the Contractor refuses to suspend operations on verbal order, the Field Administrator shall issue a written order giving the reason for shutting down the work. After placing the order in the hands of the person in charge, the Field Administrator shall immediately leave the job. Work done during the absence of the Field Administrator will not be accepted nor paid for. The Field Administrator shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice which the Field Administrator may give the Contractor shall in no way be construed as releasing the Contractor for fulfilling all terms of the contract.

Tests and Inspections:

7.10 Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests or approvals.

7.11 If any law, ordinance, rule regulation, code, or order of any public body having jurisdiction requires any Work (or part thereof) to specifically be inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner's or Engineer's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for review prior to Contractor's purchase thereof for incorporation in the Work. The cost of all other inspections, tests and approvals required by the Contract Documents shall be paid by Owner (unless otherwise specified). In the event any tests do not pass initially, and therefore must be performed again, all such extra tests shall be paid for by Contractor.

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7.12 All inspections, tests or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction shall be performed by organizations acceptable to Owner and Contractor (or by Engineer if so specified).

7.13 If any Work that is to be inspected, tested or approved is covered without concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover such Work and Engineer has not acted with reasonable promptness in response to such notice.

7.14 Neither observations by Engineer nor inspections, tests or approvals by others shall relieve Contractor of his obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

7.15 If the Engineer requests it, the Contractor shall, at any time before acceptance of the Work, remove or uncover such portions of the finished Work that was not observed by the Field Administrator or that the Engineer believes has not met the standard set forth in the Contract Documents. After examination, the Contractor shall restore said portions of the work to the standard required by the Specifications. Should the Work thus exposed, examined, or tested prove acceptable, the uncovering, or removing, and the replacing of the coverage or making good of the parts removed, shall be paid for as Extra Work; but should the Work so exposed, examined or tested prove unacceptable, the uncovering or removing, and the replacing of the covering or making good of the parts removed, shall be at the Contractor's expense. In any event, any work done or materials used without suitable construction observation by the Engineer or his authorized representative may be ordered uncovered, removed and replaced at the Contractor's expense.

Removal of Defective and Unauthorized Work:

7.16 All work which has been rejected or condemned shall be repaired, or if it cannot be satisfactorily repaired, be removed and replaced at the Contractor's expense. Work done without lines and grades having been given, work done beyond the lines and grades shown on the Plans, or as given, except as herein provided, work done without proper inspection, or any extra or unclassified work done without written authority and prior agreement in writing as to prices, will be done at the Contractor's risk and will be considered unauthorized and, at the option of the Engineer, may not be measured and paid for and may be ordered removed and replaced at the Contractor's expense. Upon the failure of the Contractor to repair satisfactorily or to remove and replace rejected, unauthorized, or condemned work immediately after receiving formal notice from the Engineer, the Owner may recover for such defective work on the Contractor's bond or by action in a court having proper jurisdiction over such matters, or may employ labor and equipment and satisfactorily repair or remove and replace such work and charge the cost of the same to the Contractor, which cost will be deducted from any money due him. In exercising his rights under this paragraph, Owner shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, Owner may

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exclude Contractor from all or part of the site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees such access to the site as may be necessary to enable Owner to exercise his rights under this paragraph. All direct and indirect costs of Owner in exercising such rights shall be charged against Contractor in an amount verified by Engineer and agreed to by Owner, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by Owner of Owner's rights hereunder.

Disputed Claims for Extra Work:

7.17 In case the Contractor deems extra compensation is due him for work or materials not clearly covered in the contract, or not ordered by the Engineer as an extra, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim and shall afford the Engineer every facility for keeping the actual cost of the work. Failure on the part of the Contractor to give such notification or to afford the Engineer proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra compensation. The filing of such notice by the Contractor and the keeping of costs by the Engineer shall not in any way be construed to prove the validity of the claim. When the work has been completed, the Contractor shall within fifteen (15) days file his claim for extra compensation with the Engineer, who will present it to the Owner for consideration with his recommendations. Further written supporting data will be submitted to the Engineer within forty-five days of completion of the aforementioned work unless Engineer allows an additional period of time to ascertain more accurate data. Owner and Engineer shall render a decision to Contractor within a reasonable period of time.

Visits to Site:

7.18 Engineer will make visits to the site at intervals appropriate to the various states of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work.

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Rejecting Defective Work:

7.19 Engineer will have authority to reject Work which is defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 7.15, whether or not the work is fabricated, installed or completed.

ARTICLE 8

CONTROL OF MATERIAL

Source of Supply and Quality of Materials:

8.1 The source of supply of each of the materials required shall be reviewed and accepted by the Engineer before delivery is started. Representative preliminary samples of the character and quality specified may be submitted by the Contractor or producer for examination and testing. The results obtained from testing such samples may be used for preliminary review but will not be used as a final acceptance of the materials. All materials proposed to be used may be inspected or tested at any time during their preparation and use. If, after testing, it is found that sources of supply which have been reviewed and accepted do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish acceptable material from other sources acceptable to Engineer.

Acceptance of Materials:

8.2 Samples of all materials for test upon which is to be based the acceptance or rejection, shall be taken by the Engineer or his authorized representative at the discretion of the Engineer. Materials may be sampled either prior to shipment or after being received at the place of construction. All sampling, inspection, and testing shall be done in accordance with the methods hereinafter prescribed. The Contractor shall provide such facilities as the Engineer or his representative may require for conducting field tests and for collecting and forwarding samples. The Contractor shall not use or incorporate into the work any materials represented by the samples until tests have been made and the material found to be acceptable. Only materials conforming to the requirements of these Specifications and which have been accepted by the Engineer or his authorized agents shall be used in the work. Any material which, after acceptance, has for any reason become unfit for use shall not be incorporated into the work. Additionally, Contractor and Engineer shall be subject to the procedures and responsibilities set for in paragraphs 7.2.2 through 7.2.5 as they pertain to samples.

Cited Specifications, Samples and Tests:

8.3 Except as otherwise provided, sampling, and testing of all materials, and the laboratory methods and testing equipment required under these Specifications, shall be in accordance with the most current edition of the standards set forth in Technical Specifications. The testing of all samples shall be done at the expense of the Contractor at an independent

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laboratory accepted by the Engineer. Laboratory sieves shall have square openings of the sizes specified. The Contractor shall furnish the required samples without charge. All samples shall have been checked and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended. The Contractor shall give sufficient notification to the Engineer of the placing of orders for materials to permit testing.

Storage:

8.4 Materials shall be stored so as to insure the preservation of their quality and fitness for the Work. When considered necessary by the Engineer, they shall be placed on wooden platforms, or other hard, clean surfaces and not on the ground, and shall be placed under cover or otherwise protected when requested by the Engineer. Stored materials shall be located so as to facilitate prompt inspection.

Substitution of Equipment and Materials:

8.5 Whenever materials or equipment are specified or described in the Drawings or Specifications by using the name of a proprietary item or the name of a particular manufacturer, fabricator, supplier or distributor, only such specific items may be used unless the name is followed by words indicating that an equal may be used. If the Contractor desires to use a substitute, the procedure for review by Engineer will be as set forth in paragraphs 8.5.1 and 8.5.2 below as supplemented in the Special Conditions.

8.5.1 Requests for review of substitute items of material and equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment Contractor shall make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. The application will state whether or not acceptance of the substitute for use in the Work will require a change in the Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of a license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish at Contractor's expense additional data about the proposed substitute. Engineer will be the sole judge of acceptability, and no substitute will be ordered or installed without Engineer's prior written acceptance. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

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8.5.2 Engineer will record time required by Engineer and Engineer's consultants in evaluating substitutions proposed by Contractor and in making changes in the Drawings or Specifications occasioned thereby. Whether or not Engineer accepts a proposed substitute, Contractor shall reimburse Owner for the charges of Engineer and Engineer's consultants for evaluating any proposed substitute.

8.5.3 In case of a difference in price, the Owner shall receive all benefit of the difference for any substitutions, and the contract amount shall be altered by Change Order to credit the Owner with any savings so obtained.

Defective Materials:

8.6 All materials not conforming to the requirements of these Specifications shall be considered defective. Whether in place or not, such materials shall be removed immediately from the site of the Work, unless otherwise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used until approval has been given. Upon failure of the Contractor to comply promptly with any order of the Engineer made under the provisions of this article, the Engineer shall have authority to remove defective materials and to deduct the cost of removal and replacement with specified materials from any moneys due or to become due the Contractor.

ARTICLE 9

LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Laws to be Observed:

9.1 The Contractor is assumed to be familiar with all federal, state and local laws, codes, ordinances, and regulations which, in any manner, affect those engaged or employed in the work or the material or equipment used in or upon the site, or in any way affect the conduct of the work. No pleas of misunderstanding or ignorance on the part of the Contractor will, in any way, serve to modify the provisions of the Contract. However, if Contractor observes that the Specifications or Drawings are at variance with any relevant federal, state and local laws, codes, ordinances, and regulations, Contractor shall give Engineer prompt written notice thereof and any necessary charges shall be adjusted by an appropriate Modification. The Contractor, at all times, shall observe and comply with all federal, state and local laws, codes, ordinances, and regulations in any manner affecting the conduct of the work, and the Contractor and his surety shall indemnify and save harmless the Owner and all his officers, agents and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

Permits and Licenses:

9.2 Unless otherwise provided in the Special Conditions, the Contractor shall procure all permits and licenses, pay all charges and fees including, but not limited to, all inspection charges of agencies having appropriate jurisdiction, and give all notices necessary and

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incidental to the due and lawful prosecution of the work. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. A copy of all permits and licenses procured by Contractor shall be supplied to Engineer within a reasonable period of time.

Taxes:

9.3 The Owner, as a quasi-municipal corporation, established pursuant to Colorado Revised Statutes, '32-4-101, et seq., 1973, as amended, is eligible for sales, consumer, and use tax exemption. The Contract is intended to be awarded under appropriate exemption procedures and sales, consumer or use tax should not be included in the Bid Price. The Contractor shall apply to the State Revenue Department for an exemption certificate in order to exempt him from having to pay sales, consumer, or use tax.

Patented Devices, Materials and Processes:

9.4 If the Contractor is required or desires to use any design, device, invention, product, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or patent owner and shall pay all license fees and royalties and assume all costs incident to said use in performance of the Work or incorporation of the Work. The Contractor and the surety shall indemnify and save harmless the Owner from any and all claims for infringement by reason of the use of any such patented design, device, invention, product, material, or process or any trademark or copyright in connection with the work agreed to be performed under this contract, and shall indemnify the Owner for any costs, expense, and damages, including attorneys' fees, which it may be obliged to pay for reason of any such infringement at any time during the prosecution, or after the completion of the work.

Sanitary Provisions:

9.5 The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the State Department of Health or of other authorities having jurisdiction thereover.

Safety and Protection:

9.6 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

9.6.1 all employees on the Work and other persons who may be affected thereby,

9.6.2 all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and

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

Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and utilities when prosecution of the Work may affect them. All damage, injury or loss to any property referred to in paragraph 9.6.2 or 9.6.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor). Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and final payment has been made.

9.7 The Contractor shall not close any road to the public except by express permission of the County Engineer. When the road under construction is being used by the traveling public, special attention shall be paid to keeping both the subgrade and surfacing in such condition that the public can travel over same in comfort and safety. The Contractor shall cooperate with the appropriate county officials in the regulation of traffic. If the Contractor constructs temporary bridges or temporary stream crossings, his responsibility for accidents shall include the roadway approaches as well as the structures of such crossings.

9.8 Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to Owner.

Emergencies:

9.9 In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Engineer prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby.

Barricades, Signs and Hazard Markings:

9.10 The Contractor shall provide, erect and maintain all necessary barricades, signs, danger signals and lights for the protection of the work and the safety of the public. Contractor shall comply with the provisions of any and all applicable Traffic Safety Manuals which may be published by a governmental entity having jurisdiction over the project area. All barricades, signs and obstructions erected by the Contractor shall be illuminated at night and all devices

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for this purpose shall be kept burning from sunset to sunrise. The Contractor shall be held responsible for all damage to the work due to failure of barricades, signs, lights and watchmen to protect it, and whenever evidence of such damage is found prior to acceptance, the Engineer may order the damaged portion immediately removed and replaced by the Contractor without cost to the Owner if, in his opinion, such action is justified. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until the project shall have been accepted.

Use of Explosives:

9.11 When the use of explosives is necessary for the prosecution of the Work, the Contractor shall use the utmost care so as not to endanger life or property, and whenever directed, the number and size of the charges shall be reduced. The Contractor shall notify the proper representatives of any public service corporation, any company, or any individual at least 8 hours in advance of any blasting which may damage his or their property on, along, or adjacent to the site. All explosives shall be stored in a secure manner and all storage places shall be marked clearly "DANGEROUS EXPLOSIVES", and shall be in care of competent watchmen at all times.

Protection and Restoration of Property:

9.12 The Contractor shall not enter upon private property for any purpose without first obtaining permission, and he shall be responsible for the preservation of all public and private property, trees, fences, monuments, underground structures, etc., on and adjacent to the site and shall use every precaution necessary to prevent damage or injury thereto. He shall protect carefully, from disturbance or damage, all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed. He shall be responsible for all damage or injury to property of any character resulting from any act, omission, neglect or misconduct in his or any subcontractor's manner, or method of executing said work, or due to his or any subcontractor's non-execution of said work, or at any time due to defective work or materials, and said responsibility shall not be released until the work shall have been completed and accepted. The Contractor's attention is directed to the importance of protecting all public utilities encountered on all projects. These may include telephone, telegraph and power lines, water lines, sewer lines, gas lines, railroad tracks, and other overhead and underground utilities. Before any excavation is begun in the vicinity of water lines, railroad tracks or structures, sewer lines, gas lines, or telephone conduits, each utility company concerned must be notified in advance of such excavation, and such excavation shall not be made until an authorized representative of the utility company concerned is on the ground and has designated the location of their facilities. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof on the part of the Contractor or subcontractor, Contractor shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring, as may be directed, or he shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property or to have started action to

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make good such damage or injury, the Engineer may, upon forty-eight (48) hours' notice, proceed to direct the repair, rebuilding of or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any moneys due or which may become due the Contractor under the Contract. The cost of damages due to Contractor's operation or cost of protecting utilities where required to permit construction under this Contract shall be included in the original Contract prices for the project.

Responsibility for Damage Claims:

9.13 To the fullest extent permitted by law, the Contractor and his surety shall indemnify and save harmless the Owner and all his officers, agents and employees from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work, or through the use of unacceptable materials in the construction of the improvement, or on account of any act or omission by the said Contractor, Subcontractor, their agents and employees, or on account of the use, misuse, storage or handling of explosives, or on account of any claims or amounts recovered for any infringement of patent, trademark, or copyright, or from any claims or amounts arising or recovered under the Workmen's Compensation Laws, or any other law, by-law, ordinance, order or decree, and so much of the money due the said Contractor under and by virtue of his contract, as shall be considered necessary by the Owner, may be retained or, in case no money is due, his surety shall be held until such suit or suits, action or actions, claim or claims, for injuries or damages as aforesaid, shall have been settled and satisfactory evidence to that effect furnished to the Owner.

Contractor's Responsibility for Work:

9.14 Until the final acceptance of the Work by the Engineer as evidenced in writing, the Contractor shall have the charge and care thereof and shall take every necessary precaution against injury or damage to any part thereof by the action of the elements or from any other cause, and the Contractor at his own expense shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any causes before its completion and acceptance. In case of suspension of work from any cause whatever, the Contractor shall be responsible for all materials and shall properly store them, if necessary, and shall provide suitable drainage, barricades and warning signs where necessary. The Contractor shall make good or replace at his own expense and as required, any material which may be broken, lost through fire, theft or otherwise damaged, or in any way made useless for the purpose and use intended by these Plans and Specifications prior to final payment of the work even though such breakage, damage, loss or uselessness may result from causes beyond the control of the Contractor.

No Waiver of Legal Rights:

9.15 Inspection by the Engineer or by any of his duly authorized representatives, any order, measurement or certificate by the Engineer; any order by the Owner for the payment of money, any payment for or acceptance of any work or any extension of time; or any

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possession taken by the Owner shall not operate as a waiver of and provision of the Contract, or any power therein provided, or any waiver of any other or subsequent breach. The Owner reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust the same to meet the requirements of the Contract and Specifications. The Owner reserves the right to claim and recover, by process of law, sums as may be sufficient to correct any error or make good any deficit in the work resulting from such error, dishonesty, or collusion upon conclusive proof of collusion or dishonesty between the Contractor or his agents and any person including the Engineer or his assistants discovered in the work after the final payment had been made.

Limitation of Engineer's Responsibility:

9.16 Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.17 Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractors, or of the agents or employees of any Contractor or Subcontractor, or of any other persons at the site or otherwise performing any of the Work.

9.18 Neither Engineer's authority to act under the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the Work.

Rights-of-Way:

9.19 The Owner will furnish all lands and rights-of-way required for completion of this Contract. In acquiring right-of-way, the Owner will proceed as expeditiously as possible, but in the event all rights-of-way or easements are not acquired prior to the beginning of construction the Contractor shall begin work on such lands and rights-of-way that have been acquired. In the event of litigation or other delays in acquiring right-of-way, the time allowed herein for completion will be extended to compensate for the time actually lost by such delay.

Use of Premises:

9.20 Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workmen to areas permitted by law, ordinances, permits or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

ARTICLE 10

PROSECUTION AND PROGRESS

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Supervision:

10.1 Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but Contractor shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

Concerning Subcontractors:

10.2 Contractor shall only employ subcontractors in accordance with the provisions set forth below:

10.2.1 Contractor shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom the Owner or Engineer may have reasonable objection. A Subcontractor or other person or organization identified in writing to Owner and Engineer by Contractor prior to the Notice of Award and not objected to in writing by Owner or Engineer prior to the Notice of Award will be deemed acceptable to Owner and Engineer. Acceptance of any Subcontractor, other person or organization by Owner or Engineer shall not constitute a waiver of any right of Owner or engineer to reject defective Work. If Owner or Engineer after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by Contractor after the Notice of Award, Contractor shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection.

10.2.2 Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that Contractor is responsible for the acts and omissions of persons directly employed by Contractor. Nothing in the Contract Documents shall create any contractual relationship between Owner or Engineer and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any monies due any Subcontractor or other person or organization, except as may otherwise be required by law. Owner or Engineer may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to Contractor on account of specific Work done.

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

10.2.4 All Work performed for Contractor by a Subcontractor will be pursuant to an appropriate agreement between Contractor and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Contractor shall pay each Subcontractor a just share of any insurance monies received by Contractor on account of losses under policies issued pursuant to Article 5.

Prosecution of Work:

10.3 The Contractor shall notify the Engineer at least forty-eight (48) hours in advance of the time he intends to start work on the site. The Contractor shall operate at such points as the Owner through the Engineer may direct. The Contractor shall conduct the work in such a manner and with sufficient materials, equipment, and labor as is considered necessary to insure its completion within the time limit set forth in the Proposal. Should the prosecution of work for any reason be discontinued by the Contractor, he shall notify the Engineer at least forty-eight (48) hours in advance of resuming operations.

Limitations of Operations:

10.4 The Contractor shall at all times conduct the work in such manner as will insure the least practicable interference with traffic and existing utility systems. No section of any road shall be closed to the public, nor any utility system put out of service except after permission has been granted by the County Engineer. Each item of work shall be prosecuted to completion without delay and in no instance will the Contractor be permitted to transfer his forces from uncompleted work to new work without prior written notification of the Contractor to the Engineer. The Contractor shall not open up work to the prejudice of work already started.

Schedules:

10.5 At least ten days prior to submitting the first application for a progress payment, Contractor shall (except as otherwise specified in the Special Conditions) submit to Engineer an initial progress schedule, a final schedule of Shop Drawing submission and where applicable a schedule of values of the Work. These schedules shall be satisfactory in form and substance to Engineer. These schedules shall serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by Engineer, it shall be incorporated into a form of Application for Payment acceptable to Engineer. The Contractor shall also forward to the Engineer as soon as practicable after the first day of each month, a progress schedule, a summary report of the progress of the various parts of the work under the Contract in the mills or shops and in the field, stating the existing status, rate of progress, estimated time of completion and cause of delay, in any.

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Character of Workmen and Equipment:

10.6 The Contractor shall employ such superintendents, foremen, and workmen as are careful and competent, and the Engineer may request the dismissal of any person or persons employed by the Contractor in, about, or upon the work who shall misconduct himself or be incompetent or negligent in the proper performance of his or their duties, or neglects or refuses to comply with the Contract Documents given and such person or persons shall not be employed again thereon without the written consent of the Engineer. Should the Contractor continue to employ, or again employ, such person or persons, the Engineer may withhold all pay estimates, which are or may become due, or the Engineer may suspend the Work until such orders are complied with. No preference or discrimination among citizens of the United States shall be made, except as may be required by special labor provisions. The Contractor shall furnish such equipment as is considered necessary for the prosecution of the Work in an acceptable manner and at a satisfactory rate of progress. All equipment, tools, and machinery used for handling materials and executing any part of the Work shall be subject to the approval of the Engineer and shall be maintained in a satisfactory working condition. Equipment used on any portion of the Work shall be such that no injury to the work, roadways, adjacent property, or other objects will result from its use. The Contract may be terminated if the Contractor fails to provide adequate equipment for the Work.

10.6.1 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditions in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.

Temporary Suspension of Work:

10.7 The Engineer, in consultation with Owner when time permits, shall have the authority to suspend the Work wholly or in part because of unfavorable weather or other essential conditions, or because of the failure on the part of the Contractor to properly prosecute the Work in accordance with the Contract, to carry out orders or to remove defective material or work. The Contractor shall not suspend the Work without written authority and prior to resuming work shall give the Engineer adequate notice to afford opportunity to re-establish observation and inspection of work being performed.

Determination and Extension of Contract Time for Completion:

10.8 The Contractor shall perform fully, entirely, and in a satisfactory and acceptable manner the work contracted, within the number of calendar days stipulated in the Proposal and the Contract. Time will be assessed against the Contractor beginning with the actual date the work is started when this is in accordance with the Notice to Proceed. If the Contractor does not begin the work within the limit as designated in the Notice to Proceed, the calendar days shall start on the first calendar day after the last permissible starting date as set forth in the Notice to Proceed. In adjusting the contract time for the completion of the project, all strikes, lockouts, unusual delays in transportation, or any condition over which the Contractor has no control, such as fires, floods, abnormal weather conditions, or acts of God, and also any

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suspensions ordered by the Engineer for causes not the fault of the Contractor, shall be excluded from the computation of the Contract Time for completion of the Work. If the satisfactory execution and completion of the contract shall require work or materials in greater amounts or quantities than those set forth in the contract, then the contract time shall automatically be increased as negotiated between Contractor and Engineer and accepted by Owner as set forth in a Change Order. No allowances will be made for delays or suspensions of the prosecution of the Work due to the fault of the Contractor. In order to secure an extension of time for delays beyond his control, the Contractor shall within ten (10) days from the beginning of any such delay notify the Engineering in writing of the causes of delay, whereupon the Engineer shall ascertain the facts and the extent of the delay and extend the time for completing the work in an amount equal to time lost due to said delay when, in his judgement, the findings of fact justify such an extension, and his finding of fact thereon shall be final and conclusive. The Contract Time may only be changed by a Modification.

Failure to Complete Work on Time:

10.9 In case the Contractor shall fail to fully perform and complete the work in conformity to the provisions and conditions of the Contract within the specified time limit for such performance and completion or within such further time as, in accordance with the provisions of this Contract, shall be fixed or allowed for such performance and completion, the Contractor shall and will pay to the Owner for each and every day of the additional time in excess of the Contract time and any granted extension thereof, the sum set forth in paragraph V of the Formal Contract as liquidated damages and not as a penalty. The parties agree that Owner will suffer loss and damage; however, due to the uncertainty and difficulty of measuring actual damages for every day the work remains uncompleted and unfinished, the parties agree that said sum is reasonable forecast of compensatory damages. The Owner shall recover said damages by deducting the amount thereof out of any moneys which may be due or become due the Contractor, or by an action at law against the Contractor or his Surety, or by either or both of these methods.

Adjustment for Suspended Work:

10.10 In the event the Contractor is ordered by the Engineer, in writing, to suspend work for some unforeseen cause not provided for in the Specifications, and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the job during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the date set out in the written order for work to cease until the date of the order for work to resume. Claims for such compensation shall be filed with the Engineer within ten (10) days after date of order to resume work or such claims will not be considered. The Contractor shall submit with his claims, substantiating papers covering the entire amount shown on the claim. After receiving relevant information from the Engineer, the Owner shall take the claim under consideration, and may make such investigations as are deemed necessary, and shall be the sole judge as to the equitability of such claim and such decision shall be final. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, delays due to failure for surety, for suspensions made at the request of the Contractor, or for any other delay

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provided for in the Specifications.

Termination of Contract:

10.11 The Contract, of which these Specifications form a part, may be terminated by the Owner for the following reasons: (a) Failure of the Contractor to start the work on the date given in the Notice to Proceed; (b) Substantial evidence that the progress being made by the Contractor is insufficient to complete the work within the specified time; (c) Deliberate failure on the part of the Contractor to observe any requirement of these Specifications; (d) Failure of the Contractor to promptly make good any defects in materials or work or any defects of any other nature, the correction of which has been directed in writing by the Engineer; (e) Substantial evidence of collusion for the purpose of illegally procuring a contract or perpetrating fraud on the Owner in the construction of work under contract; (f) If the Contractor is adjudged a bankrupt or becomes insolvent; (g) If the Contractor shall allow any final judgement to stand against him unsatisfied for a period of ten (10) days; (h) If the Contractor makes an assignment for the benefit of creditors; (i) If a trustee or receiver is appointed for Contractor or for any of Contractor's property; (j) If Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws; (k) If Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment; (l) If Contractor repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment; (m) If Contractor disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction; (n) If Contractor disregards the authority of Engineer; or (o) If Contractor otherwise violates in any substantial way any provisions of the Contract Documents. Before the Contract is terminated, the Contractor and his Surety will first be notified in writing by the Engineer of the conditions which make termination of the Contract imminent. Seven (7) days after this is given, if a satisfactory effort has not been made by the Contractor or his Surety to correct the conditions, the Owner may declare the Contract terminated and notify the Contractor and his Surety accordingly. Upon receipt of notice from the Owner that the Contract has been terminated, the Contractor shall immediately discontinue all operations. The Engineer may then proceed with the Work in any lawful manner that he may elect until it is finally completed. Owner may exclude Contractor from the site and take possession of the Work and of all Contractor's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Engineer and incorporated in a Change Order, but in finishing the Work Owner shall not be required to obtain the lowest figure for the Work performed.

10.12 Where Contractor's services have been so terminated by Owner, the termination shall not affect any rights of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release

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Contractor from liability.

10.13 Upon seven days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, Contractor shall be paid for all Work executed and any expense sustained plus reasonable termination expenses.

Cooperation with Other Contractors:

10.14 In connection with the improvements under this Contract, the right is reserved to award any work not included in the Contract to another Contractor for performance during the progress of this Contract, or to perform such work with the Owner's forces, and the Contractor for this Contract shall cooperate and so conduct his operations as to minimize the interference therewith, as directed by the Engineer.

Termination of Contractor's Responsibility:

10.15 This Contract will be considered complete when all work has been finished, the final inspection made and the work finally accepted by the Engineer, all claims for payment of labor, materials, or services of any kind used in connection with the Work have been settled for the Contractor or his Surety and final payment has been made by Owner. The Contractor will then be released from further obligation except as set forth in the Surety Bonds. The Surety Bond executed for performance of this Contract shall be in full effect for a period of one year following the date of final payment. Neither the final payment nor any provision in the Contract Documents shall relieve the Contractor of the responsibility for negligence or workmanship within the guarantee period of one year after final payment. Corrections during said guarantee period shall be made in accordance with the provisions of paragraph 12.5.

ARTICLE 11

MEASUREMENT AND PAYMENT

Detailed Estimate:

11.1 At least ten days prior to submitting the first Application for a progress payment, Contractor shall furnish to the Owner a detailed estimate and breakdown of his bid for any lump sum item involving more than one item of construction. This breakdown, when reviewed and accepted by the Engineer, shall be used as the basis for making partial payments to the Contractor.

Measurement of Quantities:

11.2 The determination of quantities of work acceptably completed under the terms of the Contract, will be made by the Engineer and based on measurements taken by him or his assistants. These measurements will be taken according to the United States standard measure. All surface and linear measurements will be taken horizontally unless otherwise

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shown on plans or specified. Structures shall be measured as shown on the plans. When base course, topsoil, surface course, or any materials are measured by the cubic yard in the vehicle, such measurement shall be taken at the point of delivery. The capacity of all vehicles shall be plainly marked on said vehicle and the capacity or marking shall not be changed without permission of the Engineer. The Engineer may require all vehicles to have uniform capacity.

Scope of Payment:

11.3 The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, equipment, labor, tools, and incidentals necessary to complete the Work and for performing all work contemplated and embraced under the Contract, the required bonds and insurance policies; also for loss or damage arising from the nature of the work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the Work, for all expenses incurred in consequence of the suspension or discontinuance of the work as herein specified, and for any infringement of patent, trademark, or copyright; and for completing the Work according to the Plans and Specifications. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligations to make good any defective work or material. No moneys, payable under Contract, or any part thereof, except the estimate for the first month or period, shall become due and payable if the Owner so elects, until the Contractor shall satisfy the said Owner that he has fully settled or paid for all materials and equipment used in or upon the work and labor done in connection therewith, and the Owner, if he so elects, may pay any or all such bills, wholly or in part, and deduct the amount or amounts so paid from any monthly or final estimate excepting the first estimate. In the event the Surety on any Contract, Performance or Payment Bond given by the Contractor becomes insolvent, or is placed in the hands of a receiver, or has its right to do business in the State revoked as provided by law, or in any manner becomes unacceptable to Owner, the Owner may, at its election, withhold payment of any estimate filed or approved by the Engineer until the Contractor shall give a good and sufficient bond in lieu of the bond so executed by such Surety.

Payment for Increased or Decreased Quantities:

11.4 When alterations in the Plans or quantities of work not requiring Supplemental Agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving Supplemental Agreements will be paid for as stipulated in such agreements.

Payment for Deleted Items:

11.5 As provided in paragraph 6.4, the Engineer shall have the right to cancel or alter the portions of the Contract relating to the construction of any item or items therein by the payment to the Contractor of a fair and equitable amount covering all items of cost incurred prior to the date of cancellation, alteration, or suspension of the work by order of the Engineer.

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The Contractor shall accept payment in full at the Contract unit prices or schedule of values for any work actually performed prior to the date of cancellation, alteration, or suspension of the work by order of the Engineer. No allowance will be made for anticipated profits in reimbursements to the Contractor for deleted items of work. Acceptable materials ordered by the Contractor or delivered on the work prior to the date of cancellation, alteration, or suspension of the work by order of the Engineer will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner. The Contractor shall submit immediately certified statements covering all money expended in preparation for any deleted item, and he shall be reimbursed for any money expended in preparation for any work on any deleted item when such preparation has no value to the remaining items of the Contract, or for a proportionate amount based on the total Contract price over which such preparation would ordinarily be distributed when other items are included in such preparation.

Extra Work:

11.6 Extra work, for which no price is provided in the Proposal, shall be covered by a Supplemental Agreement or Change Order to be signed by both parties before such Work is commenced. Extra Work will be paid for either at a lump sum, or unit prices agreed upon, or on a the basis of the Cost of the Work as forth in paragraphs 11.7 and 11.8 plus a contractor's fee for overhead and profit as set forth in paragraph 11.9 The Contractor shall make no claim for work done on Cost of Work basis unless performed on written order and in accordance therewith. Work performed prior to a written order by the Engineer will not be paid for.

Cost of the Work:

11.7 The term "Cost of the Work" means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.8.

11.7.1 Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Sunday or legal holidays, shall be included in the above to the extent authorized by Owner.

11.7.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field

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services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment, shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

11.7.3 Payments made by Contractor to the Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from Subcontractors acceptable to Contractor and shall deliver such bids to Owner who will then determine, with the advice of the Engineer, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as Contractor's Cost of the Work. All subcontractors shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.7.4 Costs of special consultants employed for services specifically related to the Work.

11.7.5 Supplemental costs including the following:

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

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

11.7.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.7.5.4 Sales, use or similar taxes related to the Work, and for which Contractor is liable, imposed by any governmental authority; however, as set forth in paragraph 9.3, it is intended that no such taxes shall be applicable.

11.7.5.5 Deposits lost for causes other than Contractor's negligence, royalty payments and fees for permits and licenses.

11.7.5.6 Losses and damages (and related expenses), not compensated

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by insurance or otherwise, to the Work or otherwise sustained by Contractor in connection with the execution of the Work, provided they have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's Fee. If, however, any such loss or damage requires reconstruction and Contractor is placed in charge thereof, Contractor shall be paid for services a fee proportionate to that stated in paragraph 11.9.2.

11.7.5.7 The cost of utilities, fuel and sanitary facilities at the site.

11.7.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, express postage and similar petty cash items in connection with the Work.

11.7.5.9 Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.8 The term Cost of the Work shall not include any of the following:

11.8.1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by Contractor whether at the site or in his principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in subparagraph 11.7.1, all of which are to be considered administrative costs covered by the Contractor's Fee.

11.8.2 Expenses of Contractor's principal and branch offices other than Contractor's office at the site.

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

11.8.4 Cost of premiums for all Bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except for additional Bonds and insurance required because of changes in the Work).

11.8.5 Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

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11.8.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.7.

Contractor's Fee:

11.9 The Contractor's Fee allowed to Contractor for overhead and profit shall be determined as follows:

11.9.1 A mutually acceptable fixed fee; or if none can be agreed upon.

11.9.2 A fee based on the following percentages of the various portions of the Cost of the Work:

11.9.2.1 For costs incurred under paragraphs 11.7.1 and 11.7.2, the Contractor's Fee shall be ten percent.

11.9.2.2 For costs incurred under paragraph 11.7.3, the Contractor's Fee shall be five percent; and if a subcontractor is on the basis of Cost of the Work Plus a Fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall be ten percent.

11.9.2.3 No fee shall be payable on the basis of costs itemized under paragraphs 11.7.4, 11.7.5 and 11.8.

11.10 The amount of credit to be allowed by Contractor to Owner for any such change which results in a net decrease in cost will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

Substantiation of Cost of Work:

11.11 Whenever the cost of any Work is to be determined pursuant to paragraphs 11.7 and 11.8, Contractor will submit in form acceptable to Engineer an itemized cost breakdown together with supporting data.

Application for Progress Payment:

11.12 On the 1st day of each month, Contractor shall submit to Engineer for review and approval an Application for Payment filled out and signed by Contractor covering the Work completed through the last day of the prior month and accompanied by such supporting documentation as is required by the Contract Documents and also as Engineer may reasonably require. Materials on hand but not complete in place shall not be included for payment. The amount of retainage with respect to progress payments will be as stipulated in the Formal Contract.

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Contractor's Warranty of Title:

11.13 Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

Review of Applications for Progress Payment:

11.14 Engineer will, within five days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Pay Estimate to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Owner shall, on or about the 3rd Thursday of the month subsequent to presentation to him of the Application for Payment with Engineer's recommendation pay Contractor the amount recommended.

11.14.1 Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's on-site observation of the Work in progress as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the recommendation), and that Contractor is entitled to payment of the amount recommended. However, by recommending any such payment, Engineer will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work, or that the means, methods, techniques, sequences, and procedures of construction have been reviewed or that any examination has been made to ascertain how or for what purpose Contractor has used the monies paid or to be paid to Contractor on account of the Contract Price, or that title to any Work, materials or equipment has passed to Owner free and clear of any Liens.

11.14.2 Engineer's recommendation of final payment will constitute an additional representation by Engineer to Owner that the conditions precedent to Contractor's being entitled to final payment as set forth in paragraph 11.19 have been fulfilled to the best of Engineer's knowledge.

11.15 Engineer may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations to Owner. He may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

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11.15.1 The Work is defective, or completed Work has been damaged requiring correction or replacement.

11.15.2 Written claims have been made against Owner or Liens have been filed in connection with the Work.

11.15.3 The Contract Price has been reduced because of Modifications.

11.15.4 Owner has been required to correct defective Work or complete the Work in accordance with paragraph 8.6.

11.15.5 Contractor's failure to make payment to Subcontractors, or for labor, materials or equipment.

11.16 Partial Payments:

11.16.1 No progress payment except final payment will be made for a sum less than \$1,000.00. The estimates will be approximate only, and all partial or monthly estimates and payments shall be subject to correction in the estimate rendered following discovery of an error in any previous estimates. Should any defective work or material be discovered, or should a reasonable doubt arise as to the integrity of any part of the work completed previous to the final payment, there will be deducted from the first estimate rendered after the discovery of such work an amount equal in value to the defective or questioned work, and this work will not be included in a subsequent estimate until the defects have been remedied or the causes for doubt removed.

11.16.2 The Owner awarding a contract exceeding eighty thousand dollars for construction shall make partial payments of the amount due under such contract at the end of each calendar month, or as soon thereafter as practicable, to the contractor, if the contractor is satisfactorily performing the contract and if the contractor requests in writing to the Owner. At least ninety percent of the calculated value of any work completed shall be paid until fifty percent of the work required by the contract has been performed. Thereafter, the Owner shall pay any of the remaining installments without retaining additional funds if, in the opinion of the Owner, satisfactory progress is being made in the work. The withheld percentage of the contract price for any such work, improvement, or construction shall be retained until the contract is completed satisfactorily and finally accepted by the Owner. If the Owner finds that satisfactory progress is being made in all phases of the contract, it may, upon written request by the contractor, authorize final payment from the withheld percentage to the contractor or subcontractors who have completed their work in a manner finally acceptable to the Owner. Before such payment is made, the Owner shall determine that satisfactory and substantial reasons exist for the payment and shall require written approval from any surety furnishing bonds for the contract work.

Final Inspection:

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11.17 Upon written notice from Contractor that the Work is complete, Engineer will make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

11.18 After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents and other documents, all as required by the Contract Documents, and after Engineer has indicated that the Work is acceptable, Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents and such other data and schedules as Engineer may reasonably require, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases in full; an affidavit of Contractor that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or his property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor, manufacturer, fabricator, supplier or distributor fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

Final Payment and Acceptance:

11.19 If on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor has fulfilled all of his obligations under the Contract Documents, Engineer will, within five days after receipt of the final Application for Payment, indicate in writing his recommendation of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that to the best of Engineer's knowledge the Work is acceptable subject to continuing obligations under the Contract Documents. Otherwise, Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. All prior partial estimates and progress payments shall be subject to correction in the final estimate and payment. If the Application and accompanying documentation are appropriate as to form and substance, and acceptable to Owner, Owner shall, within thirty days after receipt thereof, cause publication to commence of Notice of Final Settlement in accordance with Owner's statutory requirements. In the event no claims are made against Contractor in response to said publication, Owner shall pay Contractor the amount of final payment recommended by the Engineer in accordance with the Notice of Final Settlement. In the event claim(s) are made against Contractor, Owner shall

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withhold double the amount of any asserted claim(s) against contractor until said claims have been resolved; however, Owner shall pay Contractor the balance of the final payment. The acceptance by the Contractor of the final payment shall operate as and shall be a release to the Owner from all claims or liability arising from the prosecution of the Work under the Contract.

Contractor's Continuing Obligation:

11.20 Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by Engineer, nor any payment by Owner to Contractor under the Contract Documents, nor any use of occupancy of the Work or any part thereof by Owner, nor any act of acceptance by Owner nor any failure to do so, nor the issuance of a notice of acceptability by Engineer pursuant to paragraph 11.19, nor any correction of defective Work by Owner shall constitute an acceptance of Work not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents.

Change of Contract Price:

11.21 The Contract Price may only be changed by Modification. When Contractor and Owner agree upon a price for extra or changed Work by way of a Contract Modification, Contractor and Owner agree that the price set forth in the Modification shall include the cost of the extra or change plus any direct, indirect, and impacted costs attributable to the change or extra.

ARTICLE 12

WARRANTY AND GUARANTEE; ACCESS TO WORK; CONTINUATION OF WORK; PARTIAL UTILIZATION

Warranty and Guarantee:

12.1 Contractor warrants and guarantees to Owner and Engineer that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in the Specifications.

Access to Work:

12.2 Engineer and Engineer's representatives, other representatives of Owner, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspection and testing. Contractor shall provide proper and safe conditions for such access.

Continuing the Work:

12.3 Contractor shall carry on the Work and maintain the progress schedule during all

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disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as Contractor and Owner may otherwise agree in writing.

Partial Utilization:

12.4 Use by Owner of completed portions of the Work may be accomplished prior to Completion of all the Work subject to the following:

12.4.1 Owner at any time may request Contractor in writing to permit Owner to use any part of the Work which Owner believes to be substantially complete and which may be so used without significant interference with construction of the other parts of the Work. If Contractor agrees, Contractor will certify to Owner and Engineer that said part of the Work is substantially complete. Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of that part of the Work to determine its status of completion. Prior to Owner's use, Engineer will deliver to Owner and Contractor a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance and correction period for that part of the Work which is binding upon Owner and Contractor as to that part of the Work, unless Owner and Contractor shall have otherwise agreed in writing and have so informed Engineer, or shall object to the Engineer in writing within fifteen days of receiving Engineer's recommendations. Owner shall have the right to exclude Contractor from any part of the Work which Owner uses, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

12.4.2 In lieu of the provisions of paragraph 12.4.1, Owner may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately useable; provided that prior to any such takeover, Owner and Contractor have agreed as to the division of responsibilities between Owner and Contractor for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

12.4.3 No occupancy of part of the Work or taking over of operations of a facility will be accomplished prior to acknowledgment from the insurers providing the property insurance on the Work that notice of such occupancy has been received and that said insurers, in writing, have effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent to such use or occupancy by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

One-Year Correction Period:

12.5 If within one year after the date of final payment as set forth in paragraph 11.19 or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the

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Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work, or, if it has been rejected by Owner, remove it from the site and replace it with nondefective Work. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor. Contractor shall also pay for any damage done to other work, other property or persons which occurred as a result of the defective Work within the one-year correction period.

Acceptance of Defective Work:

12.6 If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, also Engineer) prefers to accept it, Owner may do so. In such case, if acceptance occurs prior to Engineer's recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance occurs after such recommendation, an appropriate amount shall be paid by contractor to Owner.

ARTICLE 13

WORK BY OTHERS

13.1 Owner may perform additional work related to the Project by himself, or have additional work performed by utility service companies, or let other direct contracts therefor which shall contain General Conditions similar to these. Contractor shall afford the utility service companies and the other contractors who are parties to such direct contracts (or Owner, if Owner is performing the additional work with Owner's employees) reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.

13.2 If any part of Contractor's Work depends for proper execution or results upon the work of any such other contractor or utility service company (or Owner), Contractor shall inspect and promptly report to Engineer in writing any patent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. Contractor's failure so to report shall constitute an acceptance of the other work as fit and proper for integration with Contractor's Work, except for latent or nonapparent defects and deficiencies in the other work.

13.3 Contractor shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected.

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13.4 If the performance of additional work by other contractors or utility service companies or Owner was not noted in the Contract Documents, written notice thereof shall be given to Contractor prior to starting any such additional work.

ARTICLE 14

MISCELLANEOUS

Giving Notice:

14.1 Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

14.2 When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period fall on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

General:

14.3 Should Owner or Contractor suffer injury or damage to his person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

14.4 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor and all of the rights and remedies available to Owner and Engineer thereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph shall be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Contract.

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Titles and Headings:

14.5 The titles and headings used in the Specifications are for guidance and convenience and are not intended to control over the specific language contained in the body of the paragraphs in the event a conflict, error or discrepancy occurs. Further, titles and headings shall not limit the scope of an article or paragraph.

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SECTION 01 10 00

SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contract Description
- B. Conditions Unique to the Project
- C. Construction Drawings
- D. Governing Agencies
- E. Required Permits
- F. Work by Owner
- G. Work Sequence
- H. Project Schedule

1.2 CONTRACT DESCRIPTION

- A. Project Location: The project area associated with this project is located within public right-of-way in the City and County of Denver, Colorado within the boundaries of the Cherry Hills North Metropolitan District. The specific locations are shown on Sheet C.1 of the Construction Drawings.
- B. Scope of Work: The work to be performed under this contract generally consists of furnishing all materials, equipment, accessories and labor for performing all operations necessary to install approximately 2,156 linear feet of 8" Cured in Place Pipe (CIPP). The work shall include, but not be limited to, connections to existing facilities, reconnecting any services, traffic control, erosion control and site restoration to a condition equal to or better than the existing condition at the start of construction.

1.3 CONDITIONS UNIQUE TO THE PROJECT

- A. Not Used.

1.4 CONSTRUCTION DRAWINGS

- A. The Construction Drawings for the project consist of Purrington Civil, LLC. drawings titled '2017 Sanitary Sewer Capital Improvements Project' and

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numbered Sheet C.1, which is hereby referred to and made part of these specifications.

1.5 GOVERNING AGENCIES

A. The following represents the governing agencies for the project:

1. Cherry Hills North Metropolitan District (District)
2. City and County of Denver
3. Colorado Department of Health and Environment

1.6 REQUIRED PERMITS

- A. It shall be the responsibility of the Contractor to secure all required permits for construction and any other permits, license fees or other expenses required in order to install the proposed sanitary sewer outfall at his own expense. No extra payment will be made for these costs. Cost of said permits shall be included in the applicable prices for the associated work.
- B. The Contractor shall be responsible for providing advance notification to any and all agencies required such notification for purposes such as inspection, approval, etc.
- C. The permits the Contractor will require are from, but not limited to, City and County of Denver (erosion control, dewatering, etc.), and the Colorado Department of Public Health and Environment (CDPH&E) sewage division. ***The CDPH&E program is referred to as the Colorado Discharge Permit System (CDPS). CDPS is required when construction activity disturbs one (1) acre or more during the life of the project. Construction activity includes clearing, grading and excavation activities. It is not expected that the scope of work will require the CDPS. However, it is the Contractor's responsibility to verify this requirement.***

1.7 WORK BY OWNER

- A. As the engineer of record, Purrington Civil, LLC will provide the following during construction:
1. Part-time Construction Observation

1.8 WORK SEQUENCE

- A. Construct Work to accommodate Contract time requirements per the Contract Documents.

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1.9 PROJECT SCHEDULE

A. At this time, the District intends for the project to proceed in accordance with the following:

1. Bidder Questions Due: July 11, 2017
2. Bid Opening: July 13, 2017
3. Notice of Award: September 12, 2017
4. Contract Procurement: To Be Determined
5. Notice to Proceed: To Be Determined
6. Preconstruction Meeting: To Be Determined
7. Substantial Completion: To Be Determined
8. Final Completion: To Be Determined

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Measurement and Payment of each bid item listed in the Bid Form.
- B. The method used to determine Measurement and Payment of Work performed and / or materials supplied for which a price is given in the Bid Form.

1.2 DESCRIPTION

- A. The Contractor shall furnish all materials, equipment, accessories and labor necessary to complete the project per the Construction Drawings, as described in Section 01 10 00 - Summary of Work, and in accordance with the Contract Documents and Specifications. Although such work may not be specifically shown, described or specified, furnish and install all supplementary and miscellaneous items, appurtenances and devices incidental to or necessary for a complete project.
- B. The Work shall be coordinated with the work of all other contractors and subcontractors and activities on related projects and with the property owners.
- C. Each unit or lump sum price stated in the Bid Form shall constitute full compensation as herein specified for each item of work completed in accordance with the Construction Drawings and Contract Documents.

1.3 INCIDENTALS

- A. If no bid item exists for a portion of the Work necessary for a complete project, it shall be considered incidental. The costs for that Work shall be included in a related bid item.
- B. Unless otherwise indicated on the plans, all earthwork shall be included under any item requiring excavation. The prices for those items which involve excavation shall include compensation for disposal of surplus excavated material, and installation of all necessary sheeting and bracing. No allowance will be made for trench over-width conditions that require additional labor or material.

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C. Items that are considered incidental to the project include but are not limited to the following:

1. Securing Staging Areas
 2. Utility Locates (not identified on plans)
 3. Protection of Existing Utilities including overhead electric
 4. Construction Water
 5. Potholing Utilities
 6. Removal and Replacement of existing fences and signs
 7. Notifications
 8. Meetings
 9. Submittals
 10. Site Restoration / Cleanup

D. **Infiltration Seals are not incidental.** If infiltration seals are deemed necessary after the CIPP installation, we will establish the quantity, technology used and cost of such repairs at that time.

1.4 BID ITEMS

	<u>Street Name</u>	<u>SSMH</u>		<u>SSMH</u>	<u>Pipe Length</u>
1.	Sanford Circle West	MH 4.1	To	MH 4	235'
2.	Nassau Circle West	MH 5	To	MH 4	221'
3.	Nassau Circle West	MH 8	To	MH 7	150'
4.	Nassau Circle West	MH 8.1	To	MH 8	201'
5.	Nassau Circle West	MH 9	To	MH 8	169'
6.	Nassau Circle West	MH 11	To	MH 10	342'
7.	Holly Way	MH 3.3.12	To	MH 3.3.11	100'
8.	South Hudson Way	MH 3.2	To	MH 3.1	215'
9.	Sanford Circle East	MH 3.9	To	MH 3.8	222'
					1855'

- a. Description: Includes, but is not limited to bypass pumping, jet cleaning, mobilization, traffic control, erosion control, resident notification, root-sawing, pre & post video inspection, furnishing and installing all related 8" cured-in-place pipeline materials for pipeline rehabilitation, sewer service reconnection, dye testing existing sewer services prior to and after pipe lining, and all work incidental thereto not specifically included for payment under other items.
- b. Basis of Measurement: Measurement will be the linear feet of CIPP installed from the edge of the Manhole, measured along the centerline of the pipe, and between ends of pipe, complete in place as shown.
- c. Basis of Payment: Payment will be made at the contract lump sum price.

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11. Mobilization / Permits

- a. Description: The work of this bid item is the mobilization of personnel, equipment, supplies, to the project site in preparation for work on the project. It includes Contractor's field office, if any, and costs incurred, labor and operations that must be performed prior to beginning the other bid items. Permits and licenses shall be procured by the Contractor per the General Conditions.
- b. Basis of Measurement: Measurement will be based upon the earned contract amount. Mobilization will be considered 100% complete when 5% of the other contract work is completed. Mobilization shall not exceed 5% of the total project bid.
- c. Basis of Payment: Payment will be made at the contract lump sum price.

12. Traffic Control

- d. Description: Includes, but is not limited to, furnishing all material, equipment and labor necessary for preparing traffic control plans and permits for approval by Denver County and CDOT, performing traffic control as necessary (including all barriers, channeling devices and flaggers), and all work incidental thereto not specifically included for payment under other items.
- e. Basis of Measurement: Measurement will be per lump sum.
- f. Basis of Payment: Payment will be issued by percentage of completed work.

13. Bypass Pumping

- g. Description: Includes, but is not limited to, bypass pump, backup equipment, generator, hoses, traffic ramps (hose protection), bypass details and schedule, installation, monitoring, alarms, scada, appurtenances and all work incidental thereto not specifically included for payment under other items.
- h. Basis of Measurement: Measurement will be bypass completed.
- i. Basis of Payment: Payment will be made at the contract lump sum price.

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14. Pre-Construction Video

- j. Description: Includes, but is not limited to, furnishing all material, equipment and labor necessary for video recording prior to construction, and all work incidental thereto not specifically included for payment under other items.
- k. Basis of Measurement: Measurement will be per lump sum.
- l. Basis of Payment: Payment will be made at the contract lump sum price.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-construction Meeting
- B. Coordination and Notification
- C. Right of Entry
- D. Verification of Existing Conditions Before Starting Work

1.2 PRE-CONSTRUCTION MEETING

- A. The Owner will schedule a Pre-Construction Meeting after Notice of Award.
- B. Attendance Required: The District, Engineer, Contractor Superintendent, Superintendents of Subcontractors, Surveyor, Geotechnical Consultant, Representatives of agencies, City's and County having jurisdiction, and any others as determined by the Engineer.

1.3 COORDINATION AND NOTIFICATION

- A. Coordinate Work with all agencies having jurisdiction.
- B. The Contractor shall notify all agencies including the Utility Notification Center of Colorado at least 48 hours in advance of performing any work.
- C. The Contractor shall be responsible for notification to all property owners along the project. Notification shall be in writing and shall be approved by the District and the Engineer prior to delivery to property owners. Property owners shall be notified at least 72 hours prior to construction and any disruption in water and sanitary sewer service.

1.4 RIGHT OF ENTRY

- A. Representatives of the District, Engineer and other agencies having jurisdiction have the right to enter upon the job site to review and observe the Work for compliance with the Construction Drawings and Contract Documents.

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1.5 VERIFICATION OF EXISTING CONDITIONS BEFORE STARTING WORK

- A. The Drawings indicate, as accurately as possible, the location and type of various utilities within the site of the proposed work. Some utilities may have been omitted, and the location of those shown on the Drawings may not be precise. The Contractor shall assume all responsibility for protection, repair and relocation of all such items encountered at no additional cost to the Owner.

- B. The Contractor shall pothole existing utilities along the alignment of the construction. The Construction Drawings indicate existing utility locations that need to be potholed, but in no way is this considered to be inclusive of all utilities that may need to be potholed. All utility crossings and utilities that may interfere with construction shall be potholed whether indicated or not. The Contractor must determine vertical and horizontal locations of utilities prior to constructing the new sewer pipe and the pothole information must be reviewed with the Engineer prior to construction. Based on actual locations of utilities the sewer pipe grades may have to be adjusted to allow for minimum separation at utility crossings.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 33 00

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements for Submittals.
- B. Construction Progress Schedule.
- C. Equipment and Labor Rates.
- D. Subconsultants and Suppliers List.
- E. Certificates.
- F. Pre-Existing Damage Video.

1.2 REQUIREMENTS FOR SUBMITTALS

- A. Submit six copies of each shop drawing specified in the individual sections to the Engineer at least 5 days before the need for approval.
- B. Shop drawings shall be as defined in the General Conditions, and shall clearly illustrate and describe applicable materials, devices, external connections, anchorages, supports, performance characteristics, installation dimensions and correlation with other material and equipment.
- C. Number submittals consecutively in direct sequence of submittal and without division by sub-contract or trade. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal.
- D. The Contractor shall accept full responsibility for the completeness of each submittal, and in the case of a resubmittal, shall verify that all exceptions previously noted by the Engineer have been resolved. In the event that more than one resubmittal is required because of failure of the Contractor to resolve exceptions previously noted, the Contractor shall reimburse the Owner for the charges by the Engineer for review of the additional resubmittals.
- E. Any need for more than one resubmittal, or any other delay in obtaining the Engineer's review of submittals, will not entitle the Contractor to extension of the Contract Time unless authorized by a Change Order or by failure of the Engineer to return any submittal within 14 days after its receipt in the Engineer's office.

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- F. The Engineer's review of shop drawings submitted by the Contractor will cover only general conformity to the drawings and specifications, external conditions, and dimensions which affect the layout. The Engineer's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, or item shown.
- G. The Engineer's review of submittals will not relieve the Contractor from responsibility for errors, omissions, or deviations, nor responsibility for compliance with the Contract.
- H. All submittals shall be:
 - 1. Stamped with the approval of the Contractor
 - 2. Identified with the Contractor's name
 - 3. Identified with the name and number of this contract
 - 4. Referenced to the applicable specification
 - 5. Dated
- I. When catalog pages are submitted, applicable items shall be clearly identified.
- J. Contractor's stamp of approval is a representation to the Owner and Engineer that the Contractor accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that contractor has reviewed or coordinated each submittal with the requirements of the work and the Contract.
- K. All deviations from the drawings or specifications shall be identified on each submittal, and shall be tabulated in the Contractor's letter of transmittal. Such submittals shall indicate essential details of all changes proposed by the Contractor, including modifications of related work which would result from the deviation, and related piping and wiring diagrams.

1.3 CONSTRUCTION PROGRESS SCHEDULE

- A. Submit initial schedule within 7 days after date Notice of Award. After review, resubmit required revised data within 7 days.
- B. Submit computer generated horizontal bar chart with separate line for each major portion of Work or operation, identifying first workday of each week. The contractor shall provide a critical path project schedule covering the duration of the project, beginning with the Notice to Proceed and indicating Substantial Completion and Contract Completion.
- C. The project schedule shall be updated on a monthly basis. The revision shall indicate actual progress to date, changes resulting from change orders, and planned changes necessary to complete the Work in accordance with the Contract Documents.

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- D. The Owner's review of the project schedule is for compliance with the Contract Documents. Acceptance by the Owner of the Contractor's schedule does not relieve the Contractor of any of his responsibility for the accuracy or feasibility of the project schedule, or of the Contractor's ability to meet the Contract Completion Date.

1.4 EQUIPMENT AND LABOR RATES

- A. The bidder must submit hourly rates for all equipment and labor that the bidder intends to use in performing the work. Hourly rates for equipment in use and for equipment in standby shall be submitted. The hourly rates of equipment and labor are intended to be used for determining the cost of additional work, if such work is required. The hourly rates will be considered in determining qualification of low bidder. All information will be kept confidential.

1.5 SUBCONTRACTORS AND MATERIAL SUPPLIERS LISTS

- A. The Bidder shall complete the "List of Subcontractors" and submit with bid. The list shall indicate all major subcontractors that the Contractor is proposing to use on the project.
- B. The Bidder shall complete the "List of Major Material Suppliers" and submit with bid. The list shall indicate all major material suppliers that the Contractor is proposing to use on the project.

1.6 CERTIFICATES

- A. When required by the Engineer, submit certification by manufacturer, installation/application subcontractor, or Contractor to Engineer.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.7 PRE-EXISTING DAMAGE VIDEO

- A. A mandatory pre-existing damage video will be prepared by the Contractor at his expense and shall show existing conditions of all concrete, asphalt, landscape areas, etc., surrounding the construction area. The video shall be adequately detailed because the Contractor will be responsible for any damage not evident on the pre-existing conditions video. One copy each shall be given to the District and District Engineer.

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PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Construction Observation.
- B. Construction Materials Testing (Earthwork and Asphalt).
- C. Replacement of Survey Stakes.
- D. Quality Control and Control of Installation.
- E. Tolerances.
- F. References.

1.2 CONSTRUCTION OBSERVATION

- A. General
 - 1. The Engineer shall decide any and all questions that may arise as to the quality and acceptability of the materials furnished, the work performed, the manner of performance and the rate of progress of the work. The Engineer shall decide all questions which may arise as to the interpretation of the Specifications and/or the acceptable fulfillment of the Agreement and all disputes and mutual rights by the Contractors, if there be more than one contractor on the project. Purrington Civil, LLC, acting as the District Engineer, is not a guarantor of the construction Contractor's obligations and performance of the Agreement.
 - 2. Observation of work in progress and on-site visits are not to be construed as a guarantee by Purrington Civil, LLC and the District of the Contractor's contractual commitment.
 - 3. Purrington Civil, LLC and the District are not responsible for safety in, on, or about the project site, nor compliance by the appropriate party of any regulations relating thereto.
 - 4. Purrington Civil, LLC and the District, exercise no control of the safety or adequacy of any equipment, building components, scaffolding, forms, or other work aids used in or about the project and do not supervise the Contractor or his forces.

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B. Overtime

1. Any construction observation performed at times other than between the hours of 7:30 AM and 5:00 PM, Monday through Friday or on holidays that may fall on a weekday shall be done at the Contractor's expense. The cost will be based on the current billing rate for the District Engineer. The minimum charge for weekend (Saturday or Sunday) or holiday observation shall be four (4) hours per day. The question of whether or not overtime construction observation is necessary shall be determined by the Engineer.

1.3 CONSTRUCTION MATERIALS TESTING (EARTHWORK AND ASPHALT)

- A. It is anticipated that construction materials testing (earthwork and asphalt) by a Geotechnical Engineer will be required for this project in order to ensure adequate fill and compaction control. The costs for the Geotechnical Engineer will be borne by the Contractor.
- B. If soil compaction tests fail to meet the compaction requirements specified, all additional tests required to ensure that proper soil compaction has been attained will be performed by the same Geotechnical Engineer at the expense of the Contractor. The Contractor shall make all necessary excavations at the Contractor's expense for compaction tests.
- C. Compaction Testing:
 1. Backfill compaction density for pipeline construction and for soil adjacent to structures shall be per Section 31 23 16.13 - Trenching, Bedding and Backfill.
 2. Hot Bituminous Pavement compaction density testing will be per Section 32 12 16 – Flexible Pavement (Asphalt) and CDOT Standards, Town, and County requirements.
 3. Compaction testing is done on a random sample basis for the Owner's purposes in monitoring performance by the Contractor, and such testing and the passage of tests cannot ensure that all the bedding/backfill is properly compacted, or, even if it is properly compacted, that settlement or subsidence will not occur. Neither compaction testing by the Owner nor the passage of compaction tests shall relieve the Contractor of the Warranty obligation to recompact backfill or bedding and/or repair surface improvements or otherwise perform Warranty work in the event of settlement, subsidence or other failure of subsurface material in the area of any excavation required by the Contract Documents.

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1.4 REPLACEMENT OF SURVEY STAKES

- A. The Contractor shall be responsible for protecting all stakes set for his use, and stakes which must be reset due to the negligence of the Contractor, after the initial stakeout will be replaced at the Contractor's expense.

1.5 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.6 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from the Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.7 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents except where specific date is established by code.

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- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used

END OF SECTION

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Mobilization
- B. Project Identification
- C. Traffic Control
- D. Dust Control
- E. Erosion and Sediment Control
- F. Removal of Facilities and Controls
- G. Bypass Pumping
- H. Construction Water

1.2 MOBILIZATION

- A. Project site preparation including mobilization of personnel, equipment, and supplies.
- B. Establish contractor's facilities (i.e. offices).
- C. All labor and operations which must be performed prior to beginning the Work under the Contract.

1.3 PROJECT IDENTIFICATION

- A. Project informational signs shall be placed along the project at major intersections and entrances to the construction zone.
- B. Owner shall approve information on signs prior to the Contractor making signs.
- C. Signs shall indicate, but not limited to, project name, dates of construction, Contractor name and phone number.

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1.4 TRAFFIC CONTROL

- A. The Contractor shall submit a Traffic Control Plan (TCP) to each City and County and the Colorado Department of Highways for approval prior to beginning any construction. The key elements of the Contractor's Method of Handling Traffic (MHT) shall be indicated on the plans.
- B. All traffic control for the project shall be in conformance with the MUTCD, CDOT Specification 630, and the City and County having jurisdiction.
- C. The TCPs shall be submitted to each agency as a requirement to obtain a street cut and construction permit.
- D. All construction signing shall be in conformance with MUTCD. Traffic control devices and barricades must be kept clean and in good working order at all times. All flaggers and traffic control supervisors shall be certified per CDOT Specifications 630.09 and 630.12. The traffic control supervisor shall have a copy of the MUTCD available at all times.
- E. Traffic lanes shall through construction areas shall be maintained with a clear width of at least 12 feet per lane.
- F. During non-construction periods (evenings, weekends, holidays, etc.) all work shall be adequately protected to insure the safety of vehicular traffic and pedestrian traffic. All excavated areas must be securely enclosed per the requirements of the City, County, CDOT, and approved by the Engineer.
- G. The Contractor shall cooperate fully with the Engineer and other agency representatives in the handling of traffic. The Contractor shall inform the Engineer and the respective agency of his intent to close any lane at least 24 hours prior to closing the lane.
- H. Access to all properties must be maintained at all times. The Contractor shall develop an access maintenance plan in coordination with adjacent property owners.
- I. The Contractor shall visit the project site prior to bid to satisfy himself of the requirements for traffic control and access to properties.
- J. One (1) week prior to the start of construction, the Contractor shall place notification/identification signs at the location of the proposed work.
- K. Prior to the start of construction operations, the Contractor shall notify affected residents and businesses, as well as the appropriate Police and Fire Departments, and advise the school transportation office, giving the approximate starting date expected, completion date, and the name and telephone number

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of a responsible person who may be contacted at any hour in the event of a critical condition requiring immediate correction.

- L. In the event the Contractor fails to complete the project within the allowable Contract Time, including time extensions, all flagging and traffic control supervision required thereafter will not be measured and paid for, but shall be provided by the Contractor at his expense.

1.5 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
- C. Dust resulting from the Contractor's performance of the work either inside or outside of the right-of-way or job site, shall be controlled by the Contractor. Prevention of any dust nuisance shall consist of applying either water or dust palliative, or both, if so ordered by the Engineer, the Owner, the Environmental Protection Agency (EPA), or any other local agency having jurisdiction.

1.6 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. All off-site property and drainage channels must be protected by the Contractor against erosion and sediment deposits resulting from the construction operations. Hay bales, silt fences, or other barriers shall be placed so that sediment is trapped. Erosion control shall be in accordance with the requirements of the agency having jurisdiction.

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1.7 REMOVAL OF FACILITIES AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.8 BYPASS PUMPING

- A. The peak sanitary sewer flow rate in the existing 8-inch sanitary sewer are based on the SFE counts. The state health department criteria equates one SFE to 3.1 capita per unit; Unit Flow Factor of 100 gallons per capita per day and a peaking factor ranging between 2.5 and 5.
- B. Bypass pumping shall be performed in a manner so as not to create a public nuisance or health hazard and shall conform to current Colorado Department of Public Health practices. The Contractor shall supply and operate equipment for pumping at the listed flow rates with provisions for 100% backup pumping capacity on site during pumping operation. Discharge line locations and street crossings shall be coordinated with the appropriate governing agency. The contractor will provide a Bypass pumping plan prior to construction.

1.9 CONSTRUCTION WATER

- A. The Contractor is responsible for obtaining any water that may be needed for the various phases of construction. To obtain construction water contact the District Manager at [303-986-2275](tel:303-986-2275).

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products
- B. Product Delivery Requirements
- C. Product Storage and Handling Requirements
- D. Product Substitution Procedures

1.2 PRODUCTS

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

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

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- F. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- G. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- H. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- I. No payment for materials on-site will be made until materials have been installed complete in place per Section 01 22 00 – Measurement and Payment.

1.5 PRODUCT SUBSTITUTION PROCEDURES

- A. The Contract Documents specify time restrictions for submitting requests for Substitutions during the bidding period.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for Substitution as for specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse District Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing submittals, without separate written request, or when acceptance will require revision to Contract Documents.
- F. Substitution Submittal Procedure:

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1. Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence.
3. Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 70 00

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures
- B. Site Restoration and Cleanup
- C. Project Record Documents
- D. Warranties

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been reviewed, and that Work is complete in accordance with Contract Documents and ready for the Engineer's review.
- B. Provide submittals to District required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. District will have use of facility as specified in Section 01 10 00 - Summary of Work.

1.3 SITE RESTORATION AND CLEANUP

- A. The Contractor shall restore and/or replace curbing, sidewalks, gutters, pans, shrubbery, fences, retaining walls, decorative rock, sod, seeding or other disturbed surfaces to a condition equal to that before work began and to the satisfaction of the Engineer and the local authority having jurisdiction. All drainage ditches shall be restored to their original shape and slope.
- B. The Contractor shall periodically, or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the project and public rights-of-way reasonably clear. Upon completion of the work, prior to final inspection, he shall remove all temporary construction facilities, debris and unused materials provided for the work, and put the entire site of the work and public rights-of-way in a neat and clean condition.
- C. The Contractor will be required to restore all existing site improvements to an equal or better condition.

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- D. All site restoration items not paid for separately in the Bid Proposal shall be considered a part of site restoration. Contractor shall satisfy himself of site restoration requirements prior to bid.

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other modifications to the Agreement
 - 5. Reviewed Shop Drawings, Product Data, and Samples
 - 6. Manufacturer's instruction for assembly, installation, and adjusting
- B. Ensure entries are complete and accurate, enabling future reference by District.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of manholes in relation to finish rims.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Field changes of dimension and detail.
 - 4. Details not on original Contract drawings.
- G. Submit documents to the Engineer.

1.5 WARRANTIES

- A. Unless a longer period of time is prescribed by any laws or regulations or by the terms of any special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents, there shall be a one (1) year warranty by the Contractor on the whole Project and, without exception, all of the various identifiable parts thereof included within the Work required to be

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furnished under the Contract Documents, which warranty shall begin at the time of probationary acceptance of the Project. This general warranty shall not be construed as a waiver of any manufacturer's warranties which may exceed the one (1) year period, or the Statute of Limitations for construction projects as provided for in the Colorado Revised Statutes or the Uniform Commercial Code. The Contractor shall be responsible for any repairs, replacements, or reinstallations that are required during the one (1) year warranty period, including all materials, parts and labor. If the Contractor fails to complete such warranty work within a reasonable time or prior to the expiration of the performance and payment bond, the District shall complete the work and all direct and indirect costs of same (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) shall be paid by the Contractor or his bonding company. The Contractor shall be held liable for all consequential damages as a result of failure of the Work or the Project or any part or portion thereof.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 02 20 00

ASSESSMENT - PRECONSTRUCTION VIDEO

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preconstruction Video

1.2 DESCRIPTION

- A. Prior to commencing work, prepare a continuous color audio-video compact disc or digital recording along the entire length of the work within all road right-of-ways and easements.

1.3 QUALITY ASSURANCE

- A. Engineer attendance is required prior to filming. Provide Engineer forty-eight (48) hours notice prior to start of filming.
- B. No construction shall begin prior to Engineer review and approval of the tapes covering the work area. The Engineer shall have the authority to reject all or any portion of a recording and order that it be redone at no additional charge.
- C. Recordings shall not be made more than sixty (60) days prior to construction in any area. All recordings and written records shall become property of the District.

1.4 SUBMITTALS

- A. Submit one (1) copy of the Preconstruction recordings or compact discs to the Engineer.

PART 2 PRODUCTS

2.1 MEDIA

- A. Windows Real Player or Windows Media Player Compact Discs or digital recordings.
- B. Audio track containing simultaneously recorded narrative commentary describing in detail site conditions.

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PART 3 EXECUTION

3.1 EQUIPMENT

- A. The Contractor shall furnish all equipment, accessories, materials and labor to perform this service.
- B. The completed recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion and interruptions.
- C. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be more than ten (10) feet. In some instances, video coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance provided by the Contractor.

3.2 RECORD INFORMATION – AUDIO

- A. Each recording shall begin with the current date, project name and District and be followed by the general location (i.e., viewing side and direction or progress). The audio track shall consist of an original live recording. The recording shall contain the narrative commentary, recorded simultaneously with the fixed elevation video record of the zone of influence of construction.
- B. The District reserves the right to supplement the audio portion of the taping as deemed necessary. A representative of the Owner shall be selected to provide such narrative.

3.3 RECORD INFORMATION – VIDEO

- A. All recordings shall, by electronic means, display on the screen the time of day, month, day and year of the recording. This time and date information must be continuously and simultaneously generated with the actual recording.
- B. Each recording shall have a log that describes the various segments of coverage contained on that recording in terms of the names of street or easements, coverage beginning and end, directions of coverage, unit counter numbers, engineering stationing numbers and the date.

3.4 LIGHTING

- A. All recording shall be done during time of good visibility. No recording shall be done during precipitation, mist, fog or snow cover. The recording

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shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp, recordings of those subjects.

3.5 SPEED OF TRAVEL

- A. The rate of speed in the general direction of travel of the vehicle used during recording shall not exceed forty (40) feet per minute (0.5 miles per hour). Panning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.

3.6 AREA OF COVERAGE

- A. Recording coverage shall follow the length of the work within road right-of-ways, and easements. For utilities within road right-of-ways, video coverage shall be taken along the same side of the road as the utility.
- B. Recording coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not limited to, existing driveways, sidewalks, curbs, gutters, concrete and asphalt pavements, ditches, mailboxes, landscaping, culverts, fences, signs, and headwalls within the area covered.

END OF SECTION

CHERRY HILLS NORTH METROPOLITAN DISTRICT

SECTION 33 01 30.16

TV INSPECTION OF SEWER PIPELINES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipeline flushing and cleaning.
 - 2. Video inspection of sewer pipelines.
 - 3. Audio-video recording of pipeline interior.
- B. Related Sections:
 - 1. Division 1 - General Requirements
 - 2. Section 33 01 30.72 – Relining Sewers

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Section 01 22 00 - Measurement and Payment

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittals: Requirements for submittals.
- B. Submit completed DVDs or Digital Recording Files, identified by number, project name, street name, right-of-way property name, and manhole numbers. DVDs or Digital Recording Files become property of District.
- C. Submit cleaning and television inspection logs for each section of sewer line to be inspected.
- D. If required, submit a specific detailed description of proposed bypass pumping system to include written description of plan and addressing quantity, capacity, and location of pumping equipment. Submit spill plan to address any spills that might occur.

1.4 QUALIFICATIONS

- A. Video inspection of pipelines to be completed by a Company specializing in performing work of this section with minimum 3 years documented experience.

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PART 2 PRODUCTS

2.1 MEDIA

- A. Power DVD or Windows Real Player formatted CD/DVDs, Windows Media Player or Fiexireader formatted DVDs or acceptable Digital Recording Files.
- B. Audio track containing simultaneously recorded narrative commentary describing in detail condition of pipeline interior.

2.2 CONTENTS OF VIDEO INSPECTION

The following information, to the extent it can be reasonably determined, is to be recorded visually on the CD/DVDs or Digital Recording Files and video logs.

- A. Date: The date on which the videotaping was performed at the beginning of each segment.
- B. Manhole to Manhole: The manhole identification number for both the upstream and downstream manholes at either end of the taped segment.
- C. Direction of Video: Relative to flow direction, indication whether the camera is facing upstream or downstream.
- D. Continuous Digital Counter: A digital counter to designate the distance from the "upstream" manhole.
- E. Street Name: The street name which contains the video segment and/or the nearest cross street.
- F. Service Identification: Identification of all taps by size, type, and pipe entrance location. As previously established, a clock reference is also preferred.
- G. Root Intrusion: Identification of all types of root structures (hair, string, chunk) encountered by severity (minor, moderate, or severe) and location.
- H. Addresses: If services are encountered which have roots in or around the sewer service, the street address from which the service is believed to originate.
- I. Cracks: Identification of all cracks (spiral, lateral, beam) by type, severity, location and footage.
- J. Broken Pipe: Identification of all broken pipe other than cracks by location, cause if known (i.e., improper installation of service, encroachment of other utility, etc.), severity, and footage.
- K. Sags: Identification of all sags greater than one inch (1") by beginning/start, best estimate of depth of sag (greatest point), and ending footage. If the segment

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has a number of sags or one long continuous sag, view the apparent length and depth of the sag. Once convinced as to the extent of the sag, suck the sag down by the use of the jet cleaning unit so the condition of the pipe wall can be viewed. Also identify any apparent high spots.

- L. Grease: Audible identification of all forms of grease accumulation apparent within the pipe by severity, location and footage.
- M. Infiltration: Identification of all forms of infiltration (or exfiltration) by estimation of flow volume (GPM), possible source, visible calcium deposits and footage.
- N. Vertical/Horizontal Offset Joints: Identification of all joints which appear to be offset from original alignment, severity, location, and footage.
- O. Wide Joints: Identification of all joints which appear to have a wider separation of bell and spigot than normal, by width and footage.
- P. Oval/Deformed Pipe: If PVC or other flexible pipe material exists which may deflect and not sustain noticeable failure, identification of shape of pipe (i.e., egg shaped, non-circular, etc.), footage, and location.
- Q. Percent Deterioration: Identify severity of deterioration.
- R. Lens Height: Indication whether the camera has been lowered, and the reason. Otherwise, the camera should be set as close to the center of the pipe as possible.
- S. Size and Type (Material): A best estimate of the inside pipe diameter and type of material for each pipe segment. If possible, note specifically unusual, as well as standard, types of pipe (e.g., sliplined, PVC, concrete, clay, etc.).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify location of sewer pipelines to be inspected.

3.2 PREPARATION

- A. Flush and clean pipeline interiors to remove sludge, dirt, sand, stone, grease, and other materials from pipe to ensure clear view of interior conditions.
- B. Intercept flushed debris at next downstream manhole by use of weir or screening device, remove, and dispose of debris from system off site.

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- C. Furnish materials, labor, equipment, power, maintenance, to implement a temporary bypass pumping system around work area for time required to complete TV inspection.

3.3 APPLICATION

- A. Closed-circuit TV Camera System:
 - 1. Utilize cameras specifically designed and constructed for closed-circuit sewer line inspection. Utilize camera equipment with pan and tilt capability to view each lateral connection at multiple angles.
 - 2. Utilize camera capable of moving both upstream and downstream; minimum 1,000 feet horizontal distance with one setup; direct reading cable position meter.

3.4 PROCEDURES

- A. Color Video: Since color provides better contrast and detail, no black and white video will be accepted.
- B. Video (Travel) Speed: To the extent practicable, the speed range at which all segments will be videotaped will be a maximum of 1 Ft/Sec, and a minimum of 1/2 Ft/Sec. Should variance from these parameters occur, it must be noted on the audio, and the reason for the variance. It is recognized that variance from the minimum speed according to the condition of the pipe is not a serious problem, but that exceeding the maximum velocity can reduce the viewability of the recording, and may be grounds for request of re-recording the specified segment.
- C. Counter Variance:
 - 1. Variance of counter/as-built distance shall not exceed the following:

As-Built Distance	Variance
0 - 100 feet	2%
101 - 200 feet	2%
201 - 300 feet	3%
301 - 400+ feet	3%

- 2. If the as-built distance and counter distance have a greater difference than specified by the variance, the contractor shall either verify recorded as-built distance or re-video the entire segment.

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- D. Lens Obstruction: If the lens is obstructed by a foreign object or by fog (e.g., water spray, mist, etc.), attempt to clear the lens of the obstruction. If attempts fail and additional videotaping would produce the same results, continue to videotape the extent of the segment; otherwise, re-video all or the portion which had not been viewed.
- E. Lighting: Ensure that the illumination level inside the pipe is high enough to identify clearly the condition of the interior circumference. If segments are not already visible, a request will be made to re-video the segment. If there are outside contributing factors which make the pipe impossible to illuminate, identify such on video log.
- F. Skips in Video: If a portion of the video segment is not recorded on the recording (such as through malfunction of equipment), the segment must either be entirely re-recorded from the beginning of the skip to the end, or the entire segment must be re-recorded. Such corrective action will be at the contractor's expense.
- G. Video Footage: Properly identify footage from "upstream" manhole (i.e., as-built footage is from center of manhole to center of manhole). State location of beginning of video segment and correlate counter to this footage (i.e., beginning of pipe segment would be 2 feet, center of manhole would be 0 feet).

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Construction Observation.

END OF SECTION

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SECTION 33 01 30.72

RELINING SEWERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cleaning and flushing existing sanitary sewers.
 - 2. Video recording existing sewers.
 - 3. Inserting liner into existing sewers.
 - 4. Reestablishing service connections.

- B. Related Sections:
 - 1. Division 1 - General Requirements
 - 2. Section 33 01 30.72 – TV Inspection of Sewer Pipelines

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Section 01 22 00 – Measurement and Payment

1.3 REFERENCES

- A. This section references the ASTM Standards and Test Methods, which are being made part of the Specifications for the various approved processes.

- B. American Society for Testing and Materials Standards for Cured-in-Place Pipe:
 - 1. ASTM C581 - Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass Fiber Reinforced Structures Intended for Liquid Service.
 - 2. ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - 3. ASTM D5035 - Test Method for Breaking and Elongation of Textile Fabrics (Strip Method).
 - 4. ASTM D5199 - Standard Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
 - 5. ASTM D5813 - Specification for Cured-in-Place Thermosetting Resin Sewer Pipe.
 - 6. ASTM E1251 - Standard Practice for General Techniques for Qualitative Infrared Analysis.
 - 7. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

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8. ASTM F1743 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).
- C. American Society for Testing and Materials Standards for Fold and Form PVC Pipe:
1. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
 2. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 3. ASTM D792 - Standard Method for Specific Gravity Plastics.
 4. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 5. ASTM D2152 - Standard Test Method for Extrusion Quality using Acetone Immersion.
 6. ASTM D2444 - Standard Test Method for Impact Strength.
 7. ASTM F1057 - Standard Method for Extrusion Quality using Heat Reversion.
 8. ASTM F1504 - Standard Specification for Folded Ploy (Vinyl Chloride) (PVC) Pipe for Existing Sewer and Conduit Rehabilitation.
- D. American Society for Testing and Materials Standards for Expand-in-Place PVC Pipe:
1. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
 2. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics.
 3. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 4. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 5. ASTM 2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.
 6. ASTM F1504 - Standard Specification for Folded Ploy (Vinyl Chloride) (PVC) Pipe for Existing Sewer and Conduit Rehabilitation.
 7. ASTM F2990 - Standard Practice for Installation of Folded Poly (Vinyl Chloride) (PVC) Pipe into Existing Sewers and Conduits

1.4 DESIGN REQUIREMENTS

- A. Design lining material for a fully deteriorated host pipe. Rehabilitated pipe shall have sufficient structural strength to support dead loads, live loads and groundwater load imposed.

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- B. Design liner material to provide jointless and continuous structurally sound construction able to withstand imposed static, dynamic and hydrostatic loads on long-term basis.
- C. Identify design provisions for reconnection of services.

1.5 PERFORMANCE REQUIREMENTS

- A. Perform relining and reestablish service connections without need for excavation while minimizing disruptions to residences, adjacent occupied buildings and traffic.
- B. Excavate for point repairs or service connections only on emergency basis and as permitted by the District and Engineer.

1.6 SUBMITTALS

- A. Section 01 33 00 - Submittals: Requirements for submittals.
- B. Shop Drawings: Indicate liner dimensional information for each pipe size to be relined.
- C. Product Data: Submit manufacturer's information on liner material, curing chemicals, and lubricants.
- D. Samples: When requested by the District, the Contractor shall submit test results from field installations to verify that the physical properties specified have been achieved in previous field applications.
- E. Design Data: Submit two (2) copies of liner thickness and design calculations, signed and sealed by Professional Engineer.
- F. Test Reports: Submit reports certifying liner material meets ASTM testing standards listed in this section.
- G. Manufacturer's Installation Instructions:
 - 1. Submit detailed description of liner placement and curing procedures for piping.
 - 2. Include description of procedures for sealing liner material at manholes and reestablishing service connections.
 - 3. Submit manufacturer's requirements for receiving, handling, and storage of materials.
- H. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- I. DVDs or Digital Video Recordings:

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1. Submit DVDs or Digital Video Recordings of piping sections as follows:
 - a. After cleaning and prior to relining showing condition of existing pipe and pipe joints, and location of existing service connections.
 - b. After relining work is complete showing cured liner and reestablished service connections.
 - c. After service connection infiltration seals have been installed.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three (3) years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum three (3) years documented experience in installation of liner materials and licensed or certified by manufacturer.
- C. Design liner under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Colorado.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Receive, store, and protect liner materials.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements of pipe inside diameters and lengths between manholes prior to design, fabrication, and delivering of liner material.
- B. Verify existing pipe material changes for previous repairs.

1.10 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate work with users connected to system.
- C. Notify homeowners and businesses at least 48 hours in advance of expected disruption of sanitary service.
- D. Limit disruption of service to individual properties to one-time occurrence for maximum of 8 hours.
- E. Do not disrupt customer service between hours of 5:00 PM and 8:00 AM.

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- F. Provide and maintain temporary facilities as specified in Section 01 50 00 - Temporary Facilities and Controls.
- G. Contractor is responsible for cleaning and video recording the sewer main prior to lining, as described in Sections 3.2 and 3.3 of this specification. **Contractor may not start CIPP installation until the Engineer has reviewed and approved the initial video inspections.**

PART 2 PRODUCTS

2.1 CURED-IN-PLACE PIPE (CIPP) RESIN IMPREGNATED FELT

A. Materials:

- 1. Tube: Fabricated from one or more layers of absorbent non-woven felt fabric meeting the requirements of ASTM F1216 or ASTM F1743, Section 5.
- 2. Resin: Shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the requirements of ASTM F1216 and ASTM F1743.
- 3. Liner effective length to match length of piping to be lined.

B. Structural Requirements:

<u>Property</u>	<u>Test Method</u>	<u>Cured Composite (per ASTM F1216)</u>
Modulus of Elasticity	ASTM D790	250,000 psi
Flexural Stress	ASTM D790	4,500 psi

C. Design Requirements: The cured-in-place liner thickness shall be calculated based on the following physical condition of the existing pipe.

- 1. The liner shall be structurally designed for a minimum service life of 50 years.
- 2. A safety factor shall be set to 2.0.
- 3. Long-term modulus and strength shall be set to 50% of the initial values given in part B, above.
- 4. Design lining material for a fully deteriorated host pipe.
- 5. Live loading shall be considered to be HS-20.
- 6. Water table shall be considered to be at the ground surface due to extensive groundwater found in previous projects near the project area.
- 7. All pipes shall be considered to have a minimum of two percent (2%) ovality in the circumference.
- 8. Allowable liner deflection of 5%.

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9. The liner shall be furnished to the following minimum thickness:

<u>Diameter (inches)</u>	<u>Min. Wall Thickness (mm)</u>
6" to 15"	6

- D. Chemical Resistance: The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2.

- E. Acceptable Manufacturers:

1. Inliner Technologies, Inc.
2. Insituform Technologies, Inc.
3. Liner Products, LLC
4. CIPP Corporation
5. Substitutions: Not Permitted.

2.2 CURED-IN-PLACE (CIPP), GLASS REINFORCED PLASTIC

- A. Materials:

1. General: The finished UV Light Cured Fiberglass pipe liner in place shall be fabricated from materials which when complete are chemically resistant to and will withstand internal exposure to domestic sewage having a pH range of 5 to 11 and temperatures up to 150° F.
2. The flexible tube shall be fabricated to a size that when installed will nearly fit (minimum 99.75%) the internal circumference of the existing sanitary sewer lines (including services). Allowance shall be made for circumferential stretching during insertion so that the final cured product is snug against the wall of the host pipe.
3. Tube: Corrosion resistant fiberglass fabric tube meeting the requirements of ASTM F2019-03, Section 5.
4. Resin: Chemically resistant isophthalic polyester or vinyl ester UV curing resin and catalyst system compatible with the UV light curing process.
5. Liner material shall be manufactured with the resins pre-impregnated within the liner to eliminate the possibility of air bubbles and voids.

- B. Structural Requirements:

<u>Property</u>	<u>Test Method</u>	<u>Cured Composite (per ASTM F1216)</u>
Modulus of Elasticity	ASTM D790	1,015,000 psi
Flexural Stress	ASTM D790	20,000 psi

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- C. Design Requirements: The cured-in-place liner thickness shall be calculated based on the following physical condition of the existing pipe.
1. The liner shall be structurally designed for a minimum service life of 50 years.
 2. A safety factor shall be set to 2.0.
 3. Long-term modulus and strength shall be set to 50% of the initial values given in part B, above.
 4. Design lining material for a fully deteriorated host pipe.
 5. Live loading shall be considered to be HS-20.
 6. Water table shall be considered to be at the ground surface due to extensive groundwater found in previous projects near the project area.
 7. All pipes shall be considered to have a minimum of two percent (2%) ovality in the circumference.
 8. Allowable liner deflection of 5%.
 9. The liner shall be furnished to the following minimum thickness:

<u>Diameter (inches)</u>	<u>Min. Wall Thickness (mm)</u>
6" to 15"	6

- D. Chemical Resistance: The cured CIPP shall meet the chemical resistance requirements of ASTM D5813, Section 6.4.1 and 6.4.2.
- E. Acceptable Manufacturers:
1. Prokasro & Saertex GmbH (C&L Water Solutions).
 2. Substitutions: Not Permitted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify location of piping to be relined.

3.2 CLEANING AND FLUSHING

- A. Clean existing sewer pipes of debris, sedimentation and mineral deposits with high velocity cleaner or cutter head a maximum of one (1) week prior to lining.

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3.3 INITIAL VIDEO INSPECTION AND REPAIR

- A. Conduct closed-circuit video inspection in accordance with Section 33 01 30.16 – TV Inspection of Sewer Pipelines.
- B. Determine condition of existing piping, degree of offset of joints, crushed walls, roots and other obstructions.
- C. Determine sizes and locations of service entrances and service connections. Identify live service connections with addresses.
- D. Clear obstructions, service piping protrusions more than ¼” and other materials from entire circumference of existing pipe to ensure inserted pipe liner contacts only existing pipe wall.
- E. Submit the initial video inspections on CD, DVD or Digital File to the District or Engineer for review. **DO NOT start CIPP installation until the Engineer has reviewed and approved the initial video inspections.** The District and Engineer may require additional video recording to verify that all obstructions have been removed prior to lining.

3.4 BYPASSING SEWAGE

- A. Set up bypassing pump system per Section 01 50 00 - Temporary Facilities and Controls to isolate each section of piping for relining.
- B. Maintain bypass pumping until lining is totally formed and service connections reestablished.

3.5 MATERIAL TRANSPORTATION AND STORAGE

- A. Materials shall be transported to, and stored at, the site in such a manner that they will not be damaged, exposed to direct sunlight, or result in any public safety hazard.

3.6 INSTALLATION - CURED-IN-PLACE PIPE, RESIN IMPREGNATED FELT

- A. Cured-In-Place Pipe installation shall be in accordance with ASTM F1216, Section 7, or ASTM F1743, Section 6, with the following modifications:
- B. Resin Impregnation: The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To insure thorough resin saturation throughout the length of the felt tube, the point of vacuum shall be located to create adequate withdrawal of air so that the tube is fully wet out and no dry spots are visible at the exterior coating.

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- C. The leading edge of the resin slug shall be as near to perpendicular as possible. A roller system shall be used to uniformly distribute the resin throughout the tube. If the Installer uses an alternate method of resin impregnation, the method must produce the same results.
- D. Tube Insertion: The wet out tube shall be positioned in the pipeline using either inversion or a pull-in method. If pulled into place, a power winch should be utilized and care should be exercised not to damage the tube as a result of pull-in friction. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point.
- E. For pipes where infiltration is present, high-pressure cure shall be used so that a strong mechanical bond is formed between the host pipe and the cured-in-place pipe.
- F. Where the host pipe is PVC, only the inversion method with a hot water hydrostatic pressure cure method shall be used.
- G. Temperature gauges shall be placed inside the tube at the invert level of each end to monitor the temperatures during the cure cycle.
- H. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or low temperature steam pressure in conjunction with low pressure air in accordance with the manufacturer's recommended cure schedule.
- I. Contractor shall install approved end seals around each end of the liner at the manhole connection. The seal shall be of a material compatible with the CIPP material and shall be approved by the District or the Engineer.
- J. "Dimples" shall be visible where service openings are present so it is absolutely clear where the service openings are located. If dimples are not present, contractor to use infrared device to locate sanitary sewer service connections.

3.7 INSTALLATION – CURED-IN-PLACE PIPE, GLASS REINFORCED PLASTIC

- A. Cured-In-Place Pipe installation shall be in accordance with ASTM F2019-03.
- B. Resin Impregnation: The reconstruction tube shall be vacuum impregnated with UV Curing Resins in the manufacturing facility prior to installation. The Contractor shall allow the District and/or Engineer to inspect materials prior to installation.
- C. Tube Insertion: The wet out tube shall be positioned in the pipeline using a pull-in method. A power winch should be utilized and care should be exercised not to damage the tube as a result of pull-in friction. The tube should be pulled-in

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through an existing manhole or approved access point and fully extended to the next designated manhole or termination point.

- D. The Fiberglass Liner shall be inflated in place using low-pressure air to the Manufacturer's specification for installing the UV Chain. The Ultra Violet Light Chain with built-in safety air loss shut off sensors, as provided by the ProKasro UV light chain, shall then be installed into the liner and the gates are then closed. The fiberglass liner will then be inspected with a camera mounted on the UV Chain as it is pulled to the end of the liner. After inspection and complete inflation to Manufacturer's specifications, the UV light bulbs will be turned on. The curing process will commence at a rate specified by the Manufacturer according to the total length and diameter of the liner.
- E. As the liner is curing, the UV Curing System shall record all curing data in DVD format for review by the District. Initial cure shall be deemed complete when the UV Chain arrives at the initial entry point of insertion.
- F. Contractor shall install approved end seals around each end of the liner at the manhole connection. The seal shall be of a material compatible with the CIPP material and shall be approved by the District or the Engineer.

3.8 SERVICE CONNECTIONS

- A. Reconnect active sewer service connections through use of closed-circuit television camera and remote controlled cutting device.
- B. Match invert of reestablished service with previously existing invert. Maintain minimum of 95 percent to maximum of 100 percent of original service connection opening.
- C. Reconnect sewer service connection with uniform cuts free of burrs and sharp edges. The reconnection process can be a one or two-step method.
 - 1. One Step Method – Cut hole using a router bit or deburring tool leaving service free of burrs and sharp edges. After inspection, if burrs or sharp edges remain a second brushing step may be required.
 - 2. Two Step Method – Cut hole using a router bit or deburring tool and then brush with a wire brush to a neat and smooth surface free of burrs and sharp edges.
- D. After reestablishing service connection, flush piping clean.

3.9 SERVICE CONNECTION INFILTRATION SEALS

- A. Epoxy / Grout Infiltration Seal:
 - 1. For infiltration at the tap connection, Contractor shall install an epoxy or grout seal at the tap to eliminate the infiltration at the connection. The infiltration seal shall be installed after the trenchless pipeline rehabilitation

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is complete, and the post-lining video has been approved by the District or the Engineer. Infiltration seal shall not extend into service line further than 3 inches. After infiltration seal has been installed, surface must be smoothed so that it is free of burrs and sharp edges. Shop drawings must be submitted for approval.

- a. Acceptable products
 - 1) Pressure Injected Epoxy Lateral Repair
 - 2) AvantiGrout Lateral Repair
 - 3) Substitutions: Section 01 60 00 – Product Requirements

3.10 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Construction Observation.
- B. Manhole structures shall be protected from damage.
- C. When liner fails to reform, remove failed liner and install new liner.
- D. Conduct closed-circuit video inspection of completed relining work.
- E. No infiltration of groundwater is permitted.
- F. No visual defects including foreign inclusions, wrinkles, cracks, and / or frayed, torn or delaminated liner will be accepted.
- G. Confirm service connections are complete and are unobstructed.
- H. Submit summary report of final inspection with copy of DVD, CD or Digital File.

3.11 CLEANING

- A. Remove debris resulting from work and unused materials from site and legally dispose.

END OF SECTION

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VIDEO LOGS

	<u>Street Name</u>	<u>SSMH</u>		<u>SSMH</u>	<u>Pipe Length</u>
1.	Sanford Circle West	MH 4.1	To	MH 4	235'
2.	Nassau Circle West	MH 5	To	MH 4	221'
3.	Nassau Circle West	MH 8	To	MH 7	150'
4.	Nassau Circle West	MH 8.1	To	MH 8	201'
5.	Nassau Circle West	MH 9	To	MH 8	169'
6.	Nassau Circle West	MH 11	To	MH 10	342'
7.	Holly Way	MH 3.3.12	To	MH 3.3.11	100'
8.	South Hudson Way	MH 3.2	To	MH 3.1	215'
9.	Easement	MH 3.3.7C	To	MH 3.3.7B	301'
10.	Sanford Circle East	MH 3.9	To	MH 3.8	222'
					2,156'



Defect Listing

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular	Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...

SPR	N/A	MPR	29	PO Number		Customer	
SPRI	N/A	MPRI	1.7	Work Order		Purpose	
QSR	N/A	QMR	4133			Maintenance Related	
OPR	29	Surveyed By JOHN_T		Direction Downstream		Date 20170322	
OPRI	1.7	Certificate Number U-0109-7986		Pre-Cleaning No Pre-Cleaning		Time 12:06	
Date Cleaned				End Time 13:02		Weather Dry	
						Media label 2017	
						Additional Info	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Manhole					<input type="checkbox"/>			
Remarks: MH 3.3.7C									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
65.6 ft.	Tap Break-in Capped		4			<input type="checkbox"/>	11		2
67.2 ft.	Tap Break-in Active		4			<input type="checkbox"/>	1		
67.2 ft.	Roots Fine Lateral					<input type="checkbox"/>	1	2	1
73.9 ft.	Tap Break-in Capped		4			<input type="checkbox"/>	1		2
73.9 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	3	4	1
88.9 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	7	8	1
114.3 ft.	Roots Medium Joint					<input checked="" type="checkbox"/>	12	12	3
119.6 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	1	6	1
120.3 ft.	Tap Break-in Active		4			<input type="checkbox"/>	11		
120.3 ft.	Roots Ball Lateral					<input type="checkbox"/>	10	11	4
136.0 ft.	Roots Medium Joint					<input checked="" type="checkbox"/>	12	12	3
138.1 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	12	12	1
163.2 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	3	9	1
166.4 ft.	Roots Medium Joint					<input checked="" type="checkbox"/>	12	12	3
170.2 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	7	8	1
176.0 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	7	9	1
185.9 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	7	9	1
227.7 ft.	Tap Break-in Capped		4			<input type="checkbox"/>	11		2
272.5 ft.	Tap Break-in Active		4			<input type="checkbox"/>	11		
272.5 ft.	Roots Fine Lateral					<input type="checkbox"/>	10	11	1
297.3 ft.	Tap Break-in Active		4			<input type="checkbox"/>	10		
300.3 ft.	Manhole					<input type="checkbox"/>			
Remarks: MH 3.3.7B									



Defect Listing Plot with Images

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular	Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...
SPR N/A	MPR 29	PO Number		Customer	
SPRI N/A	MPRI 1.7	Work Order		Purpose	
QSR N/A	QMR 4133			Maintenance Related	
OPR 29	Surveyed By JOHN_T	Direction Downstream	Date 20170322	Media label 2017	
OPRI 1.7	Certificate Number U-0109-7986	Pre-Cleaning No Pre-Cleaning	Time 12:06	Weather Dry	
Date Cleaned			End Time 13:02	Additional Info	



MH 3.3.7C

0.0 ft. Manhole



MH 3.3.7C

0.0 ft. Water Level



65.6 ft. Tap Break-in Capped



67.2 ft. Tap Break-in Active



67.2 ft. Roots Fine Lateral



73.9 ft. Tap Break-in Capped



73.9 ft. Roots Fine Joint



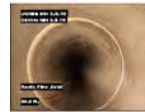


Defect Listing Plot with Images

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular		Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...	

SPR	N/A	MPR	29	PO Number		Customer	
SPRI	N/A	MPRI	1.7	Work Order		Purpose	
QSR	N/A	QMR	4133			Maintenance Related	
OPR	29	Surveyed By	JOHN_T	Direction	Downstream	Date	20170322
OPRI	1.7	Certificate Number	U-0109-7986	Pre-Cleaning	No Pre-Cleaning	Time	12:06
		Date Cleaned				End Time	13:02
							Additional Info

88.9 ft. Roots Fine Joint



114.3 ft. Roots Medium Joint



119.6 ft. Roots Fine Joint



120.3 ft. Tap Break-in Active



120.3 ft. Roots Ball Lateral



136.0 ft. Roots Medium Joint



138.1 ft. Roots Fine Joint



163.2 ft. Roots Fine Joint





Defect Listing Plot with Images

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular		Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...	

SPR	N/A	MPR	29	PO Number		Customer	
SPRI	N/A	MPRI	1.7	Work Order		Purpose	
QSR	N/A	QMR	4133			Maintenance Related	
OPR	29	Surveyed By	JOHN_T	Direction	Downstream	Date	20170322
OPRI	1.7	Certificate Number	U-0109-7986	Pre-Cleaning	No Pre-Cleaning	Time	12:06
		Date Cleaned				End Time	13:02
							Additional Info

166.4 ft. Roots Medium Joint



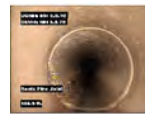
170.2 ft. Roots Fine Joint



176.0 ft. Roots Fine Joint



185.9 ft. Roots Fine Joint



227.7 ft. Tap Break-in Capped



272.5 ft. Tap Break-in Active



272.5 ft. Roots Fine Lateral



297.3 ft. Tap Break-in Active



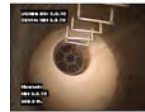


Defect Listing Plot with Images

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular		Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...	

SPR	N/A	MPR	29	PO Number		Customer	
SPRI	N/A	MPRI	1.7	Work Order		Purpose	
QSR	N/A	QMR	4133			Maintenance Related	
OPR	29	Surveyed By JOHN_T	Direction Downstream	Date 20170322		Media label 2017	
OPRI	1.7	Certificate Number U-0109-7986	Pre-Cleaning No Pre-Cleaning	Time 12:06		Weather Dry	
Date Cleaned				End Time 13:02		Additional Info	

300.3 ft. Manhole



MH 3.3.7B

MH 3.3.7B



Image Report 4/Page

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular		Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...	



Distance: 0.0 ft. Grade: 0
 Condition: Manhole
 Remarks: MH 3.3.7C



Distance: 0.0 ft. Grade: 0
 Condition: Water Level
 Remarks: N/A



Distance: 65.6 ft. Grade: 2
 Condition: Tap Break-in Capped
 Remarks: N/A

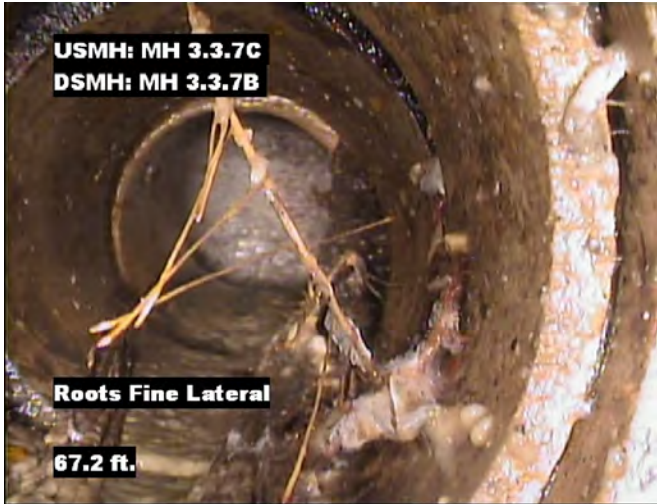


Distance: 67.2 ft. Grade: 0
 Condition: Tap Break-in Active
 Remarks: N/A



Image Report 4/Page

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular	Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...



Distance: 67.2 ft. Grade: 1
 Condition: Roots Fine Lateral
 Remarks: N/A



Distance: 73.9 ft. Grade: 2
 Condition: Tap Break-in Capped
 Remarks: N/A



Distance: 73.9 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 88.9 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Image Report 4/Page

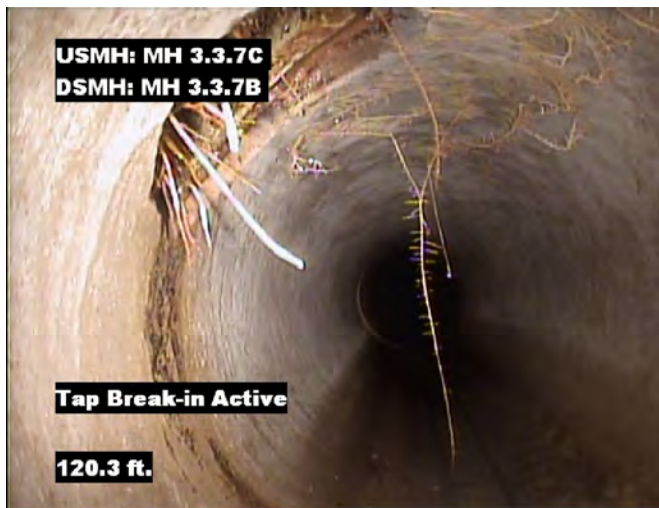
Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular		Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...	



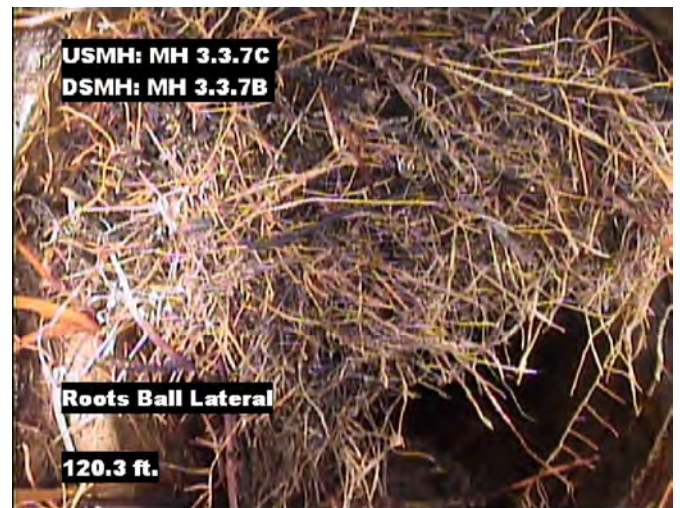
Distance: 114.3 ft. Grade: 3
 Condition: Roots Medium Joint
 Remarks: N/A



Distance: 119.6 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 120.3 ft. Grade: 0
 Condition: Tap Break-in Active
 Remarks: N/A



Distance: 120.3 ft. Grade: 4
 Condition: Roots Ball Lateral
 Remarks: N/A



Image Report 4/Page

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular	Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...



Distance: 136.0 ft. Grade: 3
 Condition: Roots Medium Joint
 Remarks: N/A



Distance: 138.1 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 163.2 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 166.4 ft. Grade: 3
 Condition: Roots Medium Joint
 Remarks: N/A



Image Report 4/Page

Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular	Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...



Distance: 170.2 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 176.0 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 185.9 ft. Grade: 1
 Condition: Roots Fine Joint
 Remarks: N/A



Distance: 227.7 ft. Grade: 2
 Condition: Tap Break-in Capped
 Remarks: N/A



Image Report 4/Page

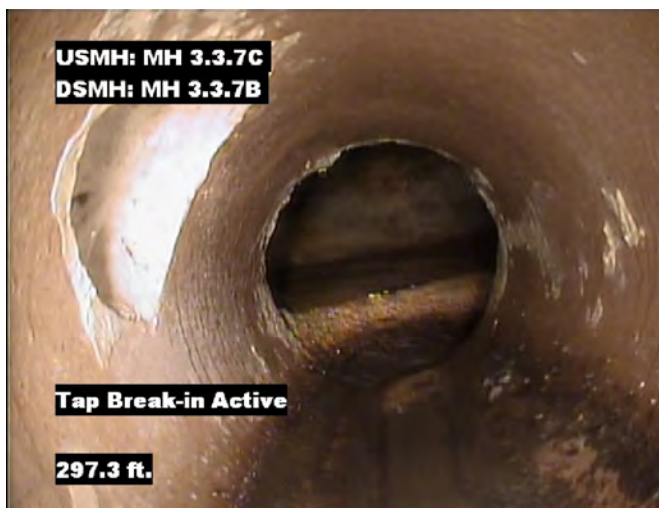
Pipe Segment Refere... MH 3.3.7C	City ENGLEWOOD CO.	Street S. HOLLY ST.	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Sanitary
Upstream MH MH 3.3.7C	Total Length	Year Laid	Shape Circular		Location Details	
Downstream MH MH 3.3.7B	Length surveyed 300.3	Year Renewed	Height 8	Width	Pipe Joint...	



Distance: 272.5 ft. Grade: 0
 Condition: Tap Break-in Active
 Remarks: N/A



Distance: 272.5 ft. Grade: 1
 Condition: Roots Fine Lateral
 Remarks: N/A



Distance: 297.3 ft. Grade: 0
 Condition: Tap Break-in Active
 Remarks: N/A



Distance: 300.3 ft. Grade: 0
 Condition: Manhole
 Remarks: MH 3.3.7B