

***CONTRACT DOCUMENTS &
TECHNICAL SPECIFICATIONS***

for



Dorris Ave Sewer Replacement

June 2023

Prepared By:



TECHNICAL SPECIFICATIONS
TOWN OF PAONIA
2023 DORRIS AVE SEWER REPLACEMENT

PAONIA, COLORADO

June 2023

ENGINEER'S STATEMENT:

These specifications were prepared under my direction and supervision. Said technical specifications have been prepared according to the criteria established by the State of Colorado.

James C. Starnes, Colo. P.E. No. 52530

Respec Project Number 333.05

Prepared For:

TOWN OF PAONIA

Prepared By:

RESPEC COMPANY, LLC
5540 Tech Center Drive, Suite 100
Colorado Springs, CO 80919
(719) 227-0072

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SECTION 00 00 20

INVITATION TO BID

TOWN OF PAONIA

DORRIS AVE SEWER REPLACEMENT

Sealed bids for the **Town of Paonia – Dorris Ave Sewer Replacement** will be received by the OWNER located at **214 Grand Ave, Paonia, CO 81428**, until **2:00 PM.**, local time, **June 30, 2023**, at which time the bids will be publicly opened and read aloud at the same location.

A hard-copy of the Contract Documents and Drawings will be available June 16th, 2023 and may be obtained at the Town of Paonia Town Hall office – 214 Grand Ave, Paonia, CO 81428. Cost for hard copies will be \$50. An electronic PDF can be made available free of charge.

Work to be performed generally includes the replacement of a gravity sewer line, pipe borings, manholes, landscaping, re-vegetation, concrete repair, curb & gutter repair, sewer tie-in, asphalt placement, and other work incidental to the project as shown in the enclosed drawings and described herein. Qualifications to the Bidder should include the ability to provide proof of insurance as described in the contract documents and the ability to deliver the work in conformance with specifications within the contract time.

Technical questions must be directed to the ENGINEER, RESPEC COMPANY, LLC. (James Starnes, PE - 719-402-0016, james.starnes@respec.com) by June 28, 2023 at 12:00 PM.

Please refer to the “Bidding Requirements” memo provided with the drawings and specifications for information regarding bids. A site visit can be setup with the ENGINEER. Site visits do not require ENGINEER’s or OWNER’s attendance.

Basis of award will be the lowest responsive and responsible Bid as determined by the ENGINEER and OWNER.

The OWNER reserves the right to waive any irregularities or to waive any technical defects in the bidding process as the best interest of the OWNER may be served. The OWNER also reserves the right to reject any and all bids.

SECTION 00 01 00

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS

Terms used in these Instructions to **BIDDERS** which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions. The term "Successful Bidder" means the **BIDDER** or **BIDDERS** to whom **OWNER** makes an award.

2. COPIES OF BIDDING DOCUMENTS

- 2.1 Complete sets of the Bidding Documents in the number and for the fee, if any, stated in the invitation may be obtained from **OWNER OR ENGINEER**.
- 2.2 Complete sets of Bidding Documents shall be used in preparing Bids; neither **OWNER** nor **ENGINEER** assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3. QUALIFICATIONS OF BIDDERS.

- 3.1 A **BIDDER** otherwise qualified may be required after the bid opening to demonstrate availability of equipment and organization, not otherwise committed, to perform the work within the time limits specified in the Contract Documents. **BIDDERS** will be required to fully inform the **ENGINEER** of the commitments to other work so that he may form an opinion as to their availability for prompt performance of this Contract.
- 3.2 The **OWNER** may make such investigations as he deems necessary to determine the ability of the **BIDDER** to perform the work. The **OWNER** reserves the right to reject any Bid if the evidence submitted by, or investigation of, such **BIDDER** fails to satisfy the **OWNER** that such **BIDDER** is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein, and such rejection shall not give rise to a cause of action against the **OWNER** or **ENGINEER**, or impose a requirement upon the **OWNER** or **ENGINEER** to divulge the information upon which such rejection is based.
- 3.3 Each **BIDDER** must be prepared to submit written evidence of authority to conduct business in the jurisdiction where the Project is located.

4. QUALIFICATION OF SUBCONTRACTORS

The Apparent Low **BIDDER** may be required to submit, within forty-eight (48) hours after the bid opening, the qualifications statement of any significant subcontractors and manufacturers of materials and equipment he proposes to use for the work. Qualifications of Subcontractors shall be in the same format as the Qualification of Bidders. If **OWNER**, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, he may, before giving the Notice of Award, request the Apparent Low **BIDDER** to submit an acceptable substitute without an increase in his bid price. If the Apparent Low Bidder declines to make any such substitution or the **OWNER** is unable to negotiate an acceptable alternate, the Apparent Low **BIDDER** will not sacrifice his Bid Security. Any Subcontractor, other person or organization so listed and to whom **OWNER** does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to **OWNER**. **CONTRACTOR** shall not be required to employ any Subcontractor, other person or organization against whom he has reasonable objection.

5. EXAMINATION OF CONTRACT DOCUMENTS AND SITE.

- 5.1 Before submitting a **Bid**, each **BIDDER** must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) 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; and (d) study and carefully correlate **BIDDER's** observations with the Contract Documents. The submission of a **Bid** will constitute an indisputable representation by the **BIDDER** that he has complied with every requirement of this and Paragraph 3 of the General Conditions.
- 5.2 On request, **OWNER** will provide each **BIDDER** access to the site to conduct reasonable investigations and tests as each **BIDDER** deems necessary for submission of his **Bid**.
- 5.3 The lands upon which the Work is to be performed, rights-of-way for access thereto, and other lands designated for use by **CONTRACTOR** in performing the Work are identified in the Supplementary Conditions, General Requirements or Drawings.

6. INTERPRETATION

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. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7. BID SECURITY

- 7.1 Bid Security shall be made payable to **OWNER**, in an amount of five percent of the **BIDDER's** maximum Bid price and in the form of a certified bank check.
- 7.2 The Bid Security of the successful **BIDDER** will be retained until such **BIDDER** has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if the Successful **BIDDER** fails to execute and deliver the Agreement and furnish the required Contract Security within 15 days of the Notice of Award, **OWNER** may annul the Notice of Award and the Bid Security of that **BIDDER** will be forfeited. The Bid Security of any **BIDDER** whom **OWNER** believes to have a reasonable chance of receiving the award may be retained by **OWNER** until the earlier of the seventh day after the "effective date of the Agreement" (which term is defined in the General Conditions) or the sixty-first day after the Bid opening. Bid Security of other bidders will be returned within seven days of the Bid opening.

8. CONTRACT TIME

The date by which the Work is to be completed (the Contract Time) is set forth in the Agreement.

9. LIQUIDATED DAMAGES

Provisions for liquidated damages are set forth in the Agreement.

10. SUBSTITUTE MATERIAL AND EQUIPMENT

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items.

11. BID FORM

- 11.1 The Bid Form is attached hereto; additional copies may be obtained from **ENGINEER**.
- 11.2 Bid Forms must be completed in ink or by typewriter. The Total Base Bid price on the form must be stated in words and numeral; in case of a conflict, words will take precedence.
- 11.3 **Bids** by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature and title.
- 11.4 **Bids** by partnerships must be executed in the partnership name and signed by a partner, whose title must be under the signature and the official address of the partnership must be shown below the signature.
- 11.5 All names must be typed or printed below the signature.
- 11.6 The **Bid** shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).
- 11.7 The address to which communications regarding the **Bid** are to be directed must be shown.

12. SUBMISSION OF BIDS

Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be included in an opaque sealed envelope, marked with the Project title and name and address of the **BIDDER** and accompanied by the Bid Security and other required documents. If the **Bid** is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "**BID ENCLOSED**" boldly marked on the face thereof.

13. MODIFICATION AND WITHDRAWAL OF BIDS

- 13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a **Bid** must be executed) and delivered to the place where **Bids** are to be submitted at any time prior to the opening of **Bids**.
- 13.2 If, within twenty-four hours after **Bids** are opened, any **BIDDER** files a duly signed written notice with **OWNER** and promptly thereafter demonstrates to the reasonable satisfaction of **OWNER** that there was a material and substantial mistake in the preparation of his **Bid**, that **BIDDER** may withdraw his **Bid**.

14. OPENING OF BIDS

- 14.1 **Bids** will be opened publicly.
- 14.2 When **Bids** are opened publicly, an abstract of the amounts of the base Bids will be made available within seven days after the opening of Bids.

15. BIDS TO REMAIN OPEN

All **Bids** shall remain open for sixty days after the day of the **Bid** opening, but **OWNER** may, in his sole discretion, release any **Bid** prior to that date.

16. AWARD OF CONTRACT

- 16.1 **OWNER** reserves the right to reject any and all **Bids**, to waive any and all informalities and to negotiate contract terms with the Successful **BIDDER**, and the right to disregard all nonconforming, non-responsive or conditional **Bids**. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 16.2 In evaluating **Bids**, **OWNER** shall consider the qualification of the **BIDDERS**, whether or not the **Bids** comply with the prescribed requirements, and alternates and unit prices if requested in bid forms. He may consider the qualification and experience of Subcontractors and other persons and organizations proposed for the work.(including those who are to furnish the principal items of material or equipment). Identity of Subcontractors and other persons and organizations must be submitted as specified within. He may conduct such investigations as he deems necessary to establish the responsibility, qualifications and financial ability of the **BIDDER's**, proposed Subcontractors, and other persons and organizations to do the work in accordance with the Contract Documents to **OWNER's** satisfaction within the prescribed time. **OWNER** reserves the right to reject the bid of any **BIDDER** who does not pass any such evaluation to **OWNER's** satisfaction.
- 16.3 If a contract is to be awarded, it will be awarded to the lowest responsible **BIDDER** whose evaluation by **OWNER** indicates to **OWNER** that the award will be in the best interests of the **OWNER** and Project.

17. PERFORMANCE AND OTHER BONDS

Paragraph 5.1 of the General Conditions and the Supplementary Conditions set forth **OWNER's** requirements as to performance and other Bonds. When the Successful **BIDDER** delivers the executed Agreement to **OWNER** it shall be accompanied by the required Contract Security.

18. SIGNING OF AGREEMENT

When **OWNER** gives a Notice of Award to the Successful **BIDDER**, it will be accompanied by at least three unsigned counterparts of the Agreement and all other contract Documents. Dates of execution of Agreement shall be the dates identified in Section 00 08 10. **ENGINEER** will identify those portions of the Contract Documents not fully signed by **OWNER** and **CONTRACTOR** and such identification shall be binding on all parties.

19. SPECIAL LEGAL REQUIREMENTS

- 19.1 The **OWNER** is exempt from Colorado State Sales and Use Taxes on materials to be incorporated in the Work. Therefore, such taxes shall NOT be included in the Contract Price.
- 19.2 The **CONTRACTOR** or Subcontractors must apply to the Colorado Department of Revenue, Sales Tax for an exemption certificate.

END OF SECTION

SECTION 00 03 00

BID FORM (REVISED)

PROJECT IDENTIFICATION: TOWN OF PAONIA
DORRIS AVE SEWER REPLACEMENT
PAONIA, CO

CONTRACT IDENTIFICATION #: 333.05

THIS BID IS SUBMITTED TO: TOWN OF PAONIA
PO BOX 460
PAONIA, CO 81428

1. The undersigned **BIDDER** proposes and agrees, if this **Bid** is accepted, to enter into an Agreement with **OWNER** in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this **Bid** and in accordance with the Contract Documents.
2. **BIDDER** accepts all of the terms and conditions of the Instructions to Bidders. This **Bid** will remain open for sixty days after the day of **Bid** opening. **BIDDER** will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents by the date identified.
3. In submitting this **Bid**, **BIDDER** represents, as more fully set forth in the Agreement, that:

- (a) **BIDDER** has examined copies of all the Contract Documents and of all of the following addenda:

Number:

Date:

(receipt is hereby acknowledged) and also copies of the Advertisement or Invitation to Bid and the Instructions to Bidders:

- (b) **BIDDER** has examined the site and locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as **BIDDER** deems necessary. The **BIDDER** has inspected all **OWNER** furnished equipment and materials and is satisfied that the equipment and materials are in good working order and can be removed and replaced into the new facility.
- (c) This **Bid** is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; **BIDDER** has not directly or indirectly induced or solicited any other **Bidder** to submit a false or sham **Bid**; **BIDDER** has not solicited or induced any person, firm or a corporation to refrain from bidding; and **BIDDER** has not sought by collusion to obtain for himself any advantage over any other **Bidder** or over **OWNER**.

4. **BIDDER** will complete the Work for the prices on the following page:

BID SCHEDULE A

<u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Sub-Total Item</u>
1.	General Requirements	1	LS	\$ _____	\$ _____
2.	60" ID Manholes	2	EA	\$ _____	\$ _____
3.	8" SDR26 Along Dorris Ave.	600	LF	\$ _____	\$ _____
4.	Private Service Connections	14	EA	\$ _____	\$ _____
5.	Tie-in to 2 nd Ave Sewer	1	LS	\$ _____	\$ _____
6.	Dorris Ave Resurfacing	1	LS	\$ _____	\$ _____
7.	Dewatering	1	LS	\$ _____	\$ _____
8.	Traffic Control	1	LS	\$ _____	\$ _____
9.	Erosion & Stormwater Control & Permit	1	LS	\$ _____	\$ _____

SCHEDULE A TOTAL BASE BID PRICE \$ _____

SCHEDULE A TOTAL BASE BID PRICE (in words): _____

SCHEDULE A BID FORM DISCREPANCIES: (Add/Deduct the following to/from above Base Bid Price:

SCHEDULE A SUBSTANTIAL & FINAL COMPLETION DATES:

Substantial Completion: _____ 30 Calendar Days after Notice to Proceed _____

Final Completion: _____ 45 Calendar Days after Notice to Proceed _____

BIDDER agrees that the Work will be completed on or before the dates indicated in the Agreement; Section 00 05 00.

5. Communications concerning this Bid shall be addressed to the address of **BIDDER** indicated below.
6. The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.
7. (a) The **BIDDER** states that his major material suppliers are (list Equipment Manufacturers and Suppliers):

_____	_____
_____	_____
_____	_____

(b) Significant subcontractors are

_____	_____
_____	_____
_____	_____

SUBMITTED ON _____, 20__

If **BIDDER** is:

An Individual

By _____ (SEAL)
(Individual's Name)

doing business as _____

Business address: _____

Phone No. _____

A Partnership

By _____ (SEAL)
(Firm Name)

(General Partner)

Business address: _____

Phone No. : _____

A Corporation

By _____
(Corporation Name)

(State of Incorporation)

By _____
(Name of person authorized to sign)

(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business Address: _____

Phone No.: _____

END OF SECTION

SECTION 00 04 30

SUBCONTRACTOR LISTING

The following information is submitted for each subcontractor that will be used in the work if the **BIDDER** is awarded the Agreement. Additional numbered pages shall be attached to this page as required. Each page shall be headed "SUBCONTRACTOR LISTING" and signed. All work to be subcontracted over \$10,000 shall be listed.

<u>Amount of Subcontract</u>	<u>Name and Address of Subcontractor</u>	<u>Portion of Work</u>
_____	_____	_____
	_____	_____
	_____	_____
_____	_____	_____
	_____	_____
	_____	_____
_____	_____	_____
	_____	_____
	_____	_____
_____	_____	_____
	_____	_____
	_____	_____

Signature

END OF SECTION

SECTION 00 04 50

MATERIAL AND EQUIPMENT SUPPLIER LISTING

The following information is submitted for each major supplier of material and each manufacturer and supplier of equipment for manufacturers and suppliers of major items of material, equipment and systems to be used in the work if the **BIDDER** is awarded the contract.

<u>Specification Section No.</u>	<u>Material or Equipment Description</u>	<u>Manufacturer & Supplier</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The Surety who will be the surety on the Performance and Payment Bond will be

Signature

END OF SECTION

SECTION 00 04 80

NOTICE OF AWARD

Dated _____, 20____

TO: _____
(BIDDER)

OWNER'S PROJECT NO.: _____

OWNER'S CONTRACT NO.: _____ 333.05 _____

CONTRACT FOR: _____ Town of Paonia _____

Dorris Ave Sewer Replacement

(Insert name of Contract as it appears in the Bidding Documents)

You are notified that your Bid dated _____, 2023 for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for _____

(Indicate total Work, alternates or sections of Work awarded)

The Contract Price of your contract is _____ Dollars.

Three copies of each of the proposed Contract Documents accompany this Notice of Award. Three sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award, that is by _____, 20____.

1. You must deliver to the **OWNER** three fully executed counterparts of the Agreement including all the Contract Documents. Each of the Contract Documents must bear your signature on (the cover) page.
2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Instructions to Bidders (paragraph 17), General Conditions (paragraph 5.01) and Supplementary Conditions (Part 5).
3. You must also deliver to the **OWNER** (with copies to **ENGINEER**) certificates of insurance which you are required to purchase and maintain in accordance with the Contract Documents.

Failure to comply with these conditions within the time specified will entitle **OWNER** to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with those conditions, **OWNER** will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

(OWNER)

By _____
(AUTHORIZED SIGNATURE)

(TITLE)

ACCEPTANCE OF NOTICE

Receipt and acceptance of the above **NOTICE TO AWARD** is hereby acknowledged by

this the _____, 20____

Copy to **ENGINEER**

SECTION 00 05 00

AGREEMENT

THIS AGREEMENT is dated this _____ day of _____ in the year 20__ by and between

TOWN OF PAONIA (hereinafter called **OWNER**)

and

_____ (hereinafter called **CONTRACTOR**)

OWNER and **CONTRACTOR**, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Replacement of a gravity sewer line and tying in to the Town of Paonia existing sewer system.

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

Town of Paonia – Dorris Ave Sewer Replacement

ARTICLE 2 ENGINEER

The Project has been designed by Respec Company, LLC. who is hereinafter called **ENGINEER** and who will have the rights and authority assigned to **ENGINEER** in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3 CONTRACT TIME

3.1 The **CONTRACTOR** shall commence performance on the project by the date specified in the Notice to Proceed. Substantial and Final Completion dates are as follows:

3.1.1 Substantial Completion: _____ 30 days after Notice to Proceed _____

3.1.2 Final Completion: _____ 45 days after Notice to Proceed _____

3.2 Liquidated Damages. **OWNER** and **CONTRACTOR** recognize that time is of the essence of this Agreement and that **OWNER** will suffer financial loss if the Work is not completed within the substantial completion dates specified in the Agreement, Section 00 05 00 plus any extensions thereof approved in accordance with the Contract Documents. They also recognize the delays, expenses and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by **OWNER** if the Work is not completed on time. Accordingly, instead of requiring any such proof, **OWNER** and **CONTRACTOR** agree that as liquidated damages for delay (but not as a penalty) **CONTRACTOR** shall pay **OWNER** Five Hundred Dollars (\$ 500.00) for each day that expires after the deadline specified for substantial completion until the Work is granted substantial completion by **OWNER**, and after the Work is deemed substantially completed by the **OWNER**, Two Hundred Fifty Dollars (\$250.00) for each day that expires after the deadline specified for final completion until **OWNER** finally accepts the Work.

ARTICLE 4 CONTRACT PRICE

- 4.1 For the performance of Work and completion of the Project as specified in the Contract Documents, **OWNER** shall pay **CONTRACTOR** (*see Exhibit A*) Dollars, in accordance with the Contract Documents. The Agreement Price shall be subject to adjustment for changes in the Drawings and Specifications or for extensions of time to complete performance, if approved by **OWNER** and **CONTRACTOR** as hereinafter provided, and for changes in quantities, if bid on a unit-price basis in the Bid Form, which shall be verified by **ENGINEER**.

ARTICLE 5 PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by **ENGINEER** and approved by **OWNER** as provided in the General Conditions.

- 5.1 Progress Payments. **OWNER** shall make progress payments on account of the Contract Price on the basis of **CONTRACTOR**'s Applications for Payment as recommended by **ENGINEER** at the times described in the Supplementary Conditions during construction and as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in Paragraph 14.1 of the General conditions.
- 5.2 Bills shall be rendered complete before the 10th of each month, to be paid by the 10th of the following month.
- 5.3 Payments will be made for materials stored on-site in accordance with Part 14.01 B of the General Conditions.
- 5.4 Final Payment. Upon final completion and acceptance of Work in accordance with Paragraph 14.09 of the General Conditions, **OWNER** shall pay the remainder of the Contract Price as recommended by **ENGINEER** as provided in said Paragraph 14.09.
- 5.5 It is understood that no phase of work required to be done herein shall be deemed completed until the **ENGINEER** and **OWNER** have inspected and approved the installation.

ARTICLE 6 INTEREST

All moneys not paid when due hereunder shall bear interest at the rate of 10% annually, except in instances where **OWNER** contests owing such monies, in which case interest shall accrue only if **CONTRACTOR**'s claim is upheld.

ARTICLE 7 CONTRACTOR'S REPRESENTATIONS

CONTRACTOR makes the following representations:

- 7.1 **CONTRACTOR** has familiarized himself with the nature and extent of the Contract Documents, Work, locality and with all local conditions and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.
- 7.2 **CONTRACTOR** has studied carefully all 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 were relied upon by **ENGINEER** in the preparation of the Drawings and Specifications and which have been identified in the Supplementary Conditions.
- 7.3 **CONTRACTOR** has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in Paragraph 7.2 as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and the Contract Documents; and no additional examinations, tests, reports or similar data are or will be required by **CONTRACTOR** for such purposes.

- 7.4 **CONTRACTOR** has correlated the results of all such observations, examinations, investigations, tests reports and data with the terms and conditions of the Contract Documents.

ARTICLE 8 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between **OWNER** and **CONTRACTOR** are attached to this Agreement, made a part hereof and consist of the following:

- 8.1 Agreement (Pages 1 to 4, inclusive).
- 8.2 Notice of Award
- 8.3 Notice to Proceed
- 8.4 Performance and Payment Bonds
- 8.5 General Conditions (Pages 1 to 38, inclusive)
- 8.6 Supplementary Conditions (Pages 1 to 6, inclusive)
- 8.7 Specifications bearing the title "Dorris Ave Sewer Replacement"
- 8.8 Addenda numbers _____ to _____ inclusive.
- 8.9 **CONTRACTOR's** Bid Form, (Pages 1 to 6, inclusive) marked Exhibit "A".
- 8.10 Documentation submitted by **CONTRACTOR** prior to Notice of Award (if applicable).
- 8.11 Drawing sets prepared by Respec Company, LLC., consisting of sheets G1 through C2 (including cover sheet) entitled "Town of Paonia – Dorris Ave Sewer Replacement".
- 8.12 Any Modification, including Change Orders, duly delivered after execution of Agreement.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be altered, amended or repealed by a Modification (as defined in Section 1 of the General Conditions).

ARTICLE 9 MISCELLANEOUS

- 9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions shall have the meanings indicated in the General Conditions.
- 9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3 **OWNER** and **CONTRACTOR** each binds himself, his partners, successors, assigns and legal representatives to the other party hereto, his partner, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

ARTICLE 10 OTHER PROVISIONS

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in triplicate. One counterpart each has been delivered to **OWNER**, **CONTRACTOR**, and **ENGINEER**. All portions of the Contract Documents have been signed or identified by **OWNER** and **CONTRACTOR** or by **ENGINEER** on their behalf.

This Agreement will be effective on _____, 20 _____.

OWNER _____ CONTRACTOR _____

BY _____ BY _____
(Corporate Seal) (Corporate Seal)

ATTEST _____ ATTEST _____

Address for giving notices:

Address for giving notices

License No. _____

Agent for service of process:

END OF SECTION

SECTION 00 06 10

PERFORMANCE AND PAYMENT BOND

THE STATE OF)
) ss. KNOW ALL PERSONS BY THESE PRESENTS:
COUNTY OF)

That we, _____, of the City of _____, County of _____, and State of _____ (hereinafter called "Principal") as Principal, and _____ (hereinafter called "Surety") as Surety, authorized under the laws of the State of Colorado to act as surety on bonds for principals, are held and firmly bound unto Town of Paonia (hereinafter called "OWNER") as obligee, in the penal sum of _____ (\$ _____), for the payment of which sum well and truly to be made, we bind ourselves, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has, on _____, 20 ____, entered into a written Agreement with **OWNER** for construction of "the Project" as defined in said Agreement and which Agreement is by this reference made a part hereof and is hereinafter referred to as the "Agreement."

NOW, THEREFORE, the condition of this obligation is such that, if the Principal shall (1) faithfully perform all covenants, obligations and provisions of said Agreement on Principal's part and satisfy all claims and demands incurred for the same; (2) fully indemnify and save harmless the **OWNER** from all costs and damages which said **OWNER** may suffer by reason of failure so to do; and (3) fully reimburse and repay said **OWNER** all outlay and expenses which said **OWNER** may incur in making good any default; and (4) if the Principal shall pay all persons, firms and corporations all just claims due them for the payment of all laborers and mechanics for labor performed, for all materials and equipment furnished, and for all materials and equipment used or rented in the performance of the Agreement, then this obligation is null and void; otherwise it shall remain in full force and effect.

The Principal shall pay all persons, firms and corporations all just claims due them for the payment of all laborers and mechanics for labor performed, for all materials and equipment furnished, and for all materials and equipment used or rented in the performance of Principal's Agreement.

Whenever Principal shall be, and is declared by **OWNER** to be, in default under the Agreement, the **OWNER** having performed **OWNER's** obligations thereunder, the Surety shall promptly remedy the default, or shall promptly, subject to **OWNER's** concurrence, perform and complete the Agreement in accordance with its terms and conditions, which may include obtaining a Bid or Bids for completing the Project and the execution of a new contract between the **OWNER** and a new contractor approved by **OWNER**. The Surety shall pay the costs of completion of the Project up to an amount equal to the amount of this Bond, as increased or decreased by change orders which increase or decrease the Agreement Price.

If the Principal fails to pay for any labor performed, for any materials and equipment furnished, and for any materials and equipment used or rented in the performance of the Agreement, the Surety will pay the same in an amount not exceeding the Agreement Price together with interest at ten percent (10%) per annum.

Any suit under this Bond must be instituted before the expiration of two years from the date on which final payment under the Agreement falls due.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the **OWNER** named herein or the successors and assigns of **OWNER** or any persons, firms and corporations for all just claims due them for the payment of all laborers and mechanics for labor performed, for all materials and equipment furnished, and for all materials and equipment used or rented in the performance of Principal's Agreement.

The Surety hereby waives the right to special notification of any notification of or alterations, omissions or reductions, extra or additional work, extensions of time, change orders or any other act or acts of **OWNER** or its authorized agents under the terms of the Agreement; and failure to notify Surety of such shall in no way relieve Surety of its obligations.

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

PRINCIPAL:

Witness

By: _____

(Address)

SURETY:

Witness

By: _____

Surety's Telephone No. _____

END OF SECTION

SECTION 00 06 60

NOTICE TO PROCEED

Dated _____

TO: _____

OWNER'S PROJECT NO.: 333.05

PROJECT: Town of Paonia – Dorris Ave Sewer Replacement

OWNER'S CONTRACT NO.: _____

CONTRACT FOR: Dorris Ave Sewer Replacement

You are notified that the Contract Time under the above contract will commence to run on _____.
By that date, you are to start performing the work and your other obligations under the Contract Documents.
The dates of Substantial Completion and Final Completion are set forth in the Agreement; they are:
_____, 2023 and _____, 2023

Also before you may start any work at the site, you must deliver to the OWNER (with copies to ENGINEER) certificates of insurance which you are required to purchase and maintain in accordance with the Contract Documents.

(OWNER)

By: _____
(Authorized Signature)

(Title)

END OF SECTION

Copy to **ENGINEER**

SECTION 00 06 80

CHANGE ORDER

Change Order No.: _____

Project: Dorris Ave Sewer Replacement

Date of Issuance: _____

Owner: Town of Paonia

Address: PO Box 460
Paonia, CO 81428

Contractor: _____

Engineer: Respec Company, LLC

You are directed to make the following changes in the Contract Documents:

Description:

Purpose of Change Order:

Attachments (List Documents Supporting Change):

CHANGE IN CONTRACT PRICE: \$ _____
CHANGE IN CONTRACT TIME: _____ (days or date)

Original Contract Price: \$ _____
Original Contract Time: _____ (days or date)

Previous Change Orders:
No. _____ to No. _____

Net Change from Previous Change Orders:
\$ _____
_____ (days or date)

Contract Price Prior to this Change Order:
\$ _____
Contract Time Prior to this Change Order:
_____ (days or date)

Net Increase of this Change Order:
\$ _____
Net Increase of the Change Order:
_____ (days)

Net Decrease of this Change Order:
\$ _____
Net Decrease of this Change Order:
_____ (days)

Net Change of this Change Order:
\$ _____
Net Change of this Change Order:
_____ (days)

Contract Price with all approved Change Orders:
\$ _____
Contract Time with all approved Change Orders:
_____ (days or date)

RECOMMENDED:
by: _____
Engineer

APPROVED:
by: _____
Owner

APPROVED:
by: _____
Contractor

END OF SECTION

SECTION 00 06 85

LIEN WAIVER

Name of Owner: Town of Paonia

Name of Contractor: _____

Date of Agreement: _____

Name of Project: Dorris Ave Sewer Replacement

Location of Project: Paonia, CO (the "Premises")

1. The undersigned has performed the following work at the Premises:

2. In consideration of Owner's payment of \$_____, receipt of which is acknowledged, the undersigned waives any right it may have to claim any lien against the Premises for labor performed on and/or materials furnished to the Premises up to and including the date of _____, 20____, excepting only retention applicable thereto.

3. The undersigned executes this lien waiver voluntarily and with full knowledge of its significance under the laws of the state of Colorado.

_____,

a _____

Date: _____ By: _____

Title: _____

STATE OF COLORADO)

)ss.

COUNTY OF DELTA)

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by

_____.

Witness my hand and official seal.

My commission expires: _____

Notary Public

END OF SECTION

SECTION 00 06 90

NOTICE OF FINAL PAYMENT

NOTICE is hereby given that Town of Paonia of Delta County, Colorado, will make final payment at _____, on _____, at the hour of _____ to _____ of _____ for all work done by said Contractor(s) in construction or work on the Dorris Ave Sewer Replacement Project performed for Town of Paonia, County of Delta, State of Colorado.

Any person, co-partnership, association of persons, company or corporation that has furnished labor, materials, team hire, sustenance, provisions, provender, or other supplies used or consumed by such contractors or their subcontractors, in or about the performance of the work contracted to be done or that supplies rental machinery, tools, or equipment to the extent used in the prosecution of the work, and whose claim therefor has not been paid by the contractors or their subcontractors, at any time up to and including the time of final settlement for the work contracted to be done, is required to file a verified statement of the amount due and unpaid, and an account of such claim, to Town of Paonia, on or before the date and time hereinabove shown for final payment. Failure on the part of any claimant to file such verified statement of claim prior to such final settlement will release Town of Paonia, its directors, officers, agents, and employees, of and from any and all liability for such claim.

**BY ORDER OF THE BOARD OF DIRECTORS
TOWN OF PAONIA**

By: _____

First Publication: _____

Last Publication: _____

(Name of Newspaper)

END OF SECTION

SECTION 00 07 00

GENERAL CONDITIONS

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PART 1 DEFINITIONS

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

Addendum or Addenda - Written or graphic instrument(s) which clarifies, corrects or changes the bidding documents or the Contract Documents.

Agreement - The written agreement between **OWNER** and **CONTRACTOR** covering the Work to be performed.

Agreement Price - The moneys payable by **OWNER** to **CONTRACTOR** under the Contract Documents as stated in the Agreement for the Work or discrete portions thereof.

Application for Partial Payment - The form designated by **ENGINEER** which is to be used by **CONTRACTOR** in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents.

Bid - Comprised of all Bidding Documents.

Bidder - The person or entity submitting the Bidding Documents to **OWNER** for the performance of the Work.

Bidding Documents - All documents and supporting documentation submitted to **OWNER** in accordance with this Invitation to Bid.

Bid Form - The offer or proposal of the Bidder attached to the Agreement as Exhibit A.

Bid Price - The price submitted by Bid Form to perform the Work.

Bid Security - A security required to be paid in the amount and in the manner as set forth in Part 8 of the Instruction to Bidders.

Change Order - A written order to **CONTRACTOR** signed by **OWNER** authorizing an addition, deletion, or revision in the Work, or an adjustment in the Agreement Price or the Contract Time issued after the effective date of the Agreement.

Contract Documents - As defined in the Agreement.

Contract Time - The number of days stated in the Agreement for the completion of the Work.

CONTRACTOR - The person or entity with whom **OWNER** has entered into the Agreement to perform field construction.

Day - A calendar day of twenty-four hours measured from midnight to the next midnight.

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 **ENGINEER's** recommendation for final payment.

Drawings - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by **ENGINEER** and are referred to in the Contract Documents.

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

ENGINEER - Named as "**ENGINEER**" in the Agreement.

Field Order - A written order issued by **ENGINEER** which orders minor changes in the Work in accordance with paragraph 10.01.B but which does not involve a change in the Agreement Price or the Contract Time.

Modification - (a) a written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Field Order. A modification may only be issued after the effective date of the Agreement.

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 Agreement.

Notice to Proceed - A written notice given by the **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 its obligations under the Contract Documents.

Project - The total construction required under the Contract Documents, of which the Work to be provided under the Contract Documents may be the whole or part.

Resident Project Representative - The authorized representative of **ENGINEER** who is assigned to the site or any part thereof on a temporary or permanent basis.

Part - Section(s) of these General Conditions.

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 Documents, supplemental to these Specifications.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by **CONTRACTOR**, a Sub**CONTRACTOR**, 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.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

SubCONTRACTOR - A person or entity having a direct contract with **CONTRACTOR** or with any other Sub**CONTRACTOR** for the performance of a part of the Work at the site.

Substantial Completion - The date when Work has progressed to the point where, in the opinion of **ENGINEER** as evidenced by its definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work can be utilized for the purposes for which it was intended and it is ready for punch listing.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. 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.

PART 2 PRELIMINARY MATTERS

2.01 DELIVERY OF BONDS

- A.** When **CONTRACTOR** delivers the executed Agreement to **OWNER's** Representative, **CONTRACTOR** shall also deliver to **OWNER's** Representative the Performance and Payment Bond.

2.02 EXECUTION AND TRANSMISSION OF DOCUMENTS

- A.** At least four (4) copies of the Contract Documents will be prepared by **OWNER's** Representative. All copies will be submitted to **CONTRACTOR** and **CONTRACTOR** shall execute the Agreement, insert all Certificates of Insurance, and submit all copies to **OWNER's** Representative within ten days of Notice of Award. The date on the Agreement and Bond forms and the Certification Date on the Power of Attorney shall be left blank for completion by **OWNER**.
- B.** **OWNER** will execute all copies, insert the date on the Agreement and Bond forms and the Certification Date on the Power of Attorney, and transmit all copies to **OWNER's** Representative within ten (10) days for review and distribution. Distribution of signed copies will be one copy each to **OWNER, CONTRACTOR, and ENGINEER. CONTRACTOR** shall be responsible for distribution of copies to the Surety.

2.03 COPIES OF DOCUMENTS

- A.** **OWNER** shall furnish to **CONTRACTOR** three (3) complete sets of the Contract Documents for use in the execution of the Work. Additional copies will be furnished, upon request, at the cost of the reproduction.

2.04 COMMENCEMENT OF CONTRACT TIME; NOTICE TO PROCEED

- A.** The Contract Time shall commence to run on the day indicated in the Notice to Proceed.

2.05 STARTING THE PROJECT

- A.** **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.

2.06 BEFORE STARTING CONSTRUCTION

- A.** 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.

- B.** Before any Work under this Agreement is started, **CONTRACTOR** shall deliver to **OWNER's** Representative, with a copy to **ENGINEER**, certificates of insurance (and other evidence of insurance requested by **OWNER**) which **CONTRACTOR** is required to purchase and maintain in accordance with Part 5.

2.07 PRECONSTRUCTION CONFERENCE

- A.** Within ten (10) days after the Effective Date of the Agreement, but before **CONTRACTOR** starts the Work at the site, a conference will be held for review and acceptance of the schedules referred to in Section 6.13 to establish procedures for handling Shop Drawings and other submittals and for processing Applications for Partial Payment, and to establish a working understanding among the parties as to the Work.

PART 3 CONTRACT DOCUMENTS: INTENT AND REUSE

3.01 INTENT

- A.** The Contract Documents comprise the entire Agreement between **OWNER** and **CONTRACTOR** concerning the Work. They may be altered only by a Modification.
- B.** 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, it 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.
- C.** 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 Agreement 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 9.03.A.
- D.** The Contract Documents have been made, executed, and delivered in the State of Colorado and shall be governed and construed for all purposes under and in accordance with the laws of the State of Colorado.
- E.** The Project Manual consists of Bid Form, Agreement, Performance and Payment Bond, General Conditions, Supplementary Conditions, if any, and Specifications. Should any construction or conditions which are not thoroughly or satisfactorily stipulated or set forth by the Specifications be anticipated on any proposed project, Supplementary Conditions for such Work may be prepared and attached to the Bid Proposal Form and Agreement, and shall be considered as part of the Specifications, the same as though contained fully therein. Should any Supplementary Condition conflict with the General Conditions, the Supplementary Condition will govern.

3.02 REUSE OF DOCUMENTS

- A.** Neither **CONTRACTOR** nor any Sub**CONTRACTOR**, manufacturer, fabricator, supplier or distributor shall have or acquire any title to or **OWNER**ship 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**.

PART 4 AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 AVAILABILITY OF LANDS

- A.** **OWNER** shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way for access thereto, and such other lands which are designated for the use of the **CONTRACTOR**. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by **OWNER**, unless otherwise provided in the Contract Documents. In acquiring easements or rights-of-way, the **OWNER** shall proceed as expeditiously as possible, but in the event all easements or rights-of-way are not acquired prior to the beginning of construction, the **CONTRACTOR** shall begin Work on such easements and rights-of-way that have been acquired. In the event a delay in the acquisition of rights-of-way causes unavoidable delay in **CONTRACTOR**'s prosecution of the Work, then **CONTRACTOR** may make a claim for an extension of Contract Time, as provided in Part 12.

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

4.02 PHYSICAL CONDITIONS - INVESTIGATIONS AND REPORTS

- A. **OWNER** shall identify and make available to **CONTRACTOR** copies 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.

4.03 UNFORESEEN PHYSICAL CONDITIONS

- A. **CONTRACTOR** shall promptly notify **OWNER** and **ENGINEER** in writing of any latent physical conditions at the site or in an 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** finds that the results of such investigations or tests indicate that there are latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by **CONTRACTOR**, a Change Order shall be issued incorporating the necessary revisions.
- B. Rock encountered during excavation, and dewatering of soils shall not constitute unforeseen physical conditions pursuant to paragraph 4.03.A. **CONTRACTOR** shall not be entitled to a Change Order for expense and delay resulting from greater than anticipated rock excavation or dewatering.

4.04 REFERENCE POINTS

- A. **OWNER** shall provide engineering surveys for construction to establish reference points which in its judgment are necessary to enable **CONTRACTOR** to proceed with the Work. **CONTRACTOR** shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of **OWNER**. **CONTRACTOR** shall report to **ENGINEER** whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for replacement or relocation of such reference points by professionally qualified personnel.

PART 5 BONDS AND INSURANCE

5.01 PERFORMANCE AND OTHER BONDS

- A. **CONTRACTOR** shall furnish a Performance and Payment Bond in an amount at least equal to the Agreement Price as security for the faithful performance and payment of all **CONTRACTOR**'s obligations under the Contract Documents. The Bond shall remain in effect at least until one (1) year after the date when final payment becomes due, or until the one-year correction period in Paragraph 13.07 is over, except as otherwise provided by law or regulation or by the Contract Documents. **CONTRACTOR** shall also furnish such other Bonds as are required herein by the Supplementary Conditions. All Bonds shall be on the forms prescribed by the Contract Documents and be executed by such Sureties authorized to do business in the State of Colorado as 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 Audit Staff Bureau of Accounts, U.S. Treasury Department. Each Bond shall be accompanied by a "Power of Attorney" authorizing the attorney-in-fact to bind the Surety and certified to include the date of the Bond.
- B. 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 paragraph 5.01.A **CONTRACTOR** shall, within five (5) days thereafter, substitute another Bond and Surety acceptable to **OWNER**.
- C. The Performance and Payment Bond shall be in an amount equal to one hundred percent (100%) of the Agreement Price, as indicated by Change Orders and all Modifications, as security for payment of all wages and bills contracted for materials, supplies, and equipment used in the performance of the contract.

5.02 CONTRACTOR'S INSURANCE REQUIREMENTS

- A. **CONTRACTOR** shall purchase and maintain during the entire term of this Agreement, including any extensions of the Contract Time through Change Orders, and as provided in Paragraph 5.02.B., such commercial general liability and other insurance as will provide protection from claims set forth below which may arise out of or result from **CONTRACTOR**'s performance of the Work and **CONTRACTOR**'s other obligations under the Contract Documents, whether such performance is by **CONTRACTOR**, by any Sub**CONTRACTOR**, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:
1. Claims under workers' or worker's compensation, disability benefits and other similar employee benefit acts;
 2. Claims for damages because of bodily injury, occupational sickness or disease, or death of **CONTRACTOR**'s employees;
 3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than **CONTRACTOR**'s employees;
 4. Claims for damages insured by personal injury liability coverage which are sustained (i) by any person directly or indirectly resulting from the employment of such person by **CONTRACTOR**, or (ii) by any person for any other reason;
 5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and
 6. Claims for damages because of bodily injury or death of any person or property damage arising out of the **OWNER**ship, maintenance or use of any motor vehicle.
- B. The insurance required of **CONTRACTOR** shall include the specific coverages and corresponding limits of liability provided in the Supplementary Conditions., or as required by law, whichever is greater, and shall meet all requirements specified herein. All coverages shall be underwritten by carriers authorized to do business in Colorado and acceptable to **OWNER**. All such insurance shall contain a provision that the coverage afforded will not be canceled, materially changed or renewal refused until at least sixty (60) days' prior written notice has been given to **OWNER** and **ENGINEER**. All such insurance 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 13.07.A. In addition, **CONTRACTOR** shall maintain the Completed Operations insurance as shown in Paragraph 5.02.C for at least two (2) years after final payment and furnish **OWNER** with evidence of continuation of such insurance at final payment and one (1) year thereafter.
- C. To the extent that **CONTRACTOR**'s work, or work under its direction, may require blasting, explosive conditions, or underground operations, the commercial general liability coverage shall contain no exclusion relative to blasting, explosion, collapse of buildings, or damage to underground property.
- D. Builder's Risk Insurance.
1. Where required, the builder's risk insurance policy shall on an "all risk" basis for the entire Project include (1) coverage for any ensuing loss from faulty workmanship, defective materials, and omission or deficiency in design or specifications, (2) coverage against damage or loss caused by earth movement, flood, fire, theft, vandalism and malicious mischief and machinery accidents and operational testing, (3) coverage for removal of debris, and insuring the buildings, structures, machinery, equipment, facilities, fixtures and all other properties constituting a part of the Project, (4) transit coverage, with sub-limits sufficient to insure the full replacement value of any key equipment item and (5) coverage with sub-limits sufficient to insure the full replacement value of any property or equipment stored either on or off the Site. The policy shall provide for coverage in the event an occupancy or use permit is issued for any portion or portions of the Work prior to Substantial Completion of the Work. Builder's risk insurance shall be written in completed value form and shall protect **CONTRACTOR** and **OWNER**. The amount of such insurance shall be not less than the insurable value of the Work at completion less the value of the materials and equipment insured under installation floater insurance and shall provide for recovery on a "replacement cost" basis.
 2. Where required, builder's risk insurance shall provide for losses to be payable to **CONTRACTOR** and **OWNER** as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided the insurance company shall have no rights of recovery against the **CONTRACTOR** or **OWNER**.

- E. Insured losses under policies of insurance which include **OWNER's** interests 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 any direction by arbitrators. **OWNER** as trustee shall have the right to adjust and settle losses with the insurers unless one of the parties in interest shall object in writing within 5 days after the occurrence of loss to **OWNER's** exercise of this power and, if such objection be made, arbitrators shall be chosen as provided in the General Conditions. **OWNER** as trustee shall, in that case, make settlement with the insurers in accordance with the direction of such arbitrators. If distribution of the insurance proceeds by arbitration is required, the arbitrators will direct such distribution. **OWNER** waives all rights against **CONTRACTOR** and **ENGINEER** for damage caused by fire or other perils but only to the extent that such damage is covered by insurance and only to the extent that such damage does not fall within the indemnification given by **CONTRACTOR** in Paragraph 5.05. **OWNER** shall have no liability for damages caused by fire or other perils.

5.03 INSURANCE CERTIFICATES

- A. Prior to the commencement of any Work under these Contract Documents, the **CONTRACTOR** shall furnish to the **OWNER's** Representative certificates of insurance and policy endorsements to prove that all required insurance is in force. 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 **CONTRACTOR**, nor failure to disapprove such insurance shall relieve the **CONTRACTOR** of its obligation to maintain in full force during the life of the Contract Documents all required insurance as set forth herein.

5.04 ADDITIONAL REQUIREMENTS

- A. No insurance coverages required to be obtained by **CONTRACTOR** pursuant to this Part 5 shall have a deductible greater than \$1,000 or as reasonably approved by **OWNER**. The **CONTRACTOR** is solely responsible for the payment of any deductible(s).
- B. If any policy required under this Part 5 is a claims made policy, the policy shall provide the **CONTRACTOR** the right to purchase, upon cancellation or termination by refusal to renew the policy, an extended reporting period of not less than one year. The **CONTRACTOR** agrees to purchase such an extended reporting period as required by this Paragraph 5.04 shall not relieve it of any liability under this Agreement. If the policy is a claims made policy, the retroactive date of any such renewal of such policy shall be not later than the date this Agreement is executed by the parties hereto. If the **CONTRACTOR** purchases a subsequent claims made policy in place of any prior policy, the retroactive date of such subsequent policy shall be no later than the date this Agreement is executed by the Parties hereto.
- C. The **OWNER** and its directors, officers, agents and employees and the **OWNER's** Representative shall be designated as additional insureds on the **CONTRACTOR's** commercial general liability insurance and the automobile liability insurance and the same shall be clearly indicated on the applicable certificates of insurance provided to comply with the requirements of this Part 5.
- D. For any claims related to the provision of services by the **CONTRACTOR**, **CONTRACTOR's** insurance shall be primary insurance with respect to the **OWNER** and its directors, officers, employees and agents. Any insurance maintained by the **OWNER** (or its directors, officers, employees and agents) shall be excess of **CONTRACTOR's** insurance and shall not contribute with it.
- E. **CONTRACTOR's** insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- F. Each commercial general liability policy and, though not a general liability policy, any worker's compensation policy, shall waive any right of subrogation against the **OWNER** and its directors, officers, employees and agents.
- G. Any failure on the part of the **CONTRACTOR** to comply with reporting provisions or other conditions of the policies shall not affect the obligation of the **CONTRACTOR** to provide the required coverage to the **OWNER** and its directors officers, employees and agents. If the **CONTRACTOR** fails to obtain or maintain the required coverages, the **OWNER** may obtain such coverage and charge back the **CONTRACTOR**.

5.05 INDEMNIFICATION

- A. **CONTRACTOR** shall indemnify save harmless and defend the **OWNER**, the **ENGINEER** and all of their consultants, directors, officers, agents and employees, from any and all claims, demands, losses, liabilities, actions, lawsuits and expenses (including reasonable attorney's fees), arising directly or indirectly, in whole or in part, out of the negligence or any criminal or tortious act or omission of the **CONTRACTOR** or any of its employees, agents, Sub**CONTRACTORS** or any person for whom **CONTRACTOR** is responsible, in connection with this Agreement and the scope of services hereunder, whether any such negligence or any criminal or tortious act or omission is within or beyond the scope of its duties or authority. **CONTRACTOR** agrees that the policy limits of the Commercial General Liability, the Automobile Liability and Property Damage Insurance, which the **CONTRACTOR** is required to maintain pursuant to the Contract Documents shall not act as a limitation on the **CONTRACTOR's** obligation to indemnify the **OWNER**, the **ENGINEER** and all of their consultants, directors, officers, agents, and employees.
- B. In any and all claims against **OWNER** or **ENGINEER** or any of their agents or employees or the **OWNER's** Representative by any employee of **CONTRACTOR**, any Sub**CONTRACTOR**, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 5.05.A shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for **CONTRACTOR** or any Sub**CONTRACTOR** under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.
- C. The obligations of **CONTRACTOR** under paragraph 5.05.A shall not extend to the liability of **ENGINEER**, its agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or Specifications. The obligations of **CONTRACTOR** under paragraph 5.05A shall not extend to liability which is caused by the act omission, or other fault of the **OWNER**, its officers or employees.

PART 6 CONTRACTOR'S RESPONSIBILITIES

6.01 SUPERVISION AND SUPERINTENDENCE

- A. The **CONTRACTOR** is an independent **CONTRACTOR** and nothing herein contained shall constitute or designate the **CONTRACTOR** or any of its employees or agents as employees of the **OWNER**. The Work to be performed by the **CONTRACTOR** shall be at its sole cost, risk and expense, and no part of the cost thereof shall be charged to the **OWNER**, except the payments to be made by the **OWNER** to the **CONTRACTOR** for the Work performed as provided herein. **OWNER**, **ENGINEER**, or **OWNER's** Representative shall not be responsible for **CONTRACTOR's** means, methods, techniques, sequences or procedures of construction or for safety precautions and programs incident thereto.
- B. **CONTRACTOR** shall supervise and direct the Work competently and efficiently giving the Work the constant attention necessary to facilitate its progress and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. **CONTRACTOR** shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. **CONTRACTOR** shall be responsible to see that the finished Work complies accurately with the Contract Documents.
- C. **CONTRACTOR** shall employ at all times during its work progress a competent resident superintendent, who shall not be replaced without written notice to **OWNER** or **OWNER's** Representative except under extraordinary circumstances. 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 its 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. The superintendent will be **CONTRACTOR's** representative at the site and shall have authority to act on behalf of **CONTRACTOR**. All communications given to the superintendent shall be as binding as if given to **CONTRACTOR**.
- D. The **CONTRACTOR** shall employ such superintendent and foremen, as are careful and competent, and the **OWNER's** Representative may request the dismissal of any person or persons employed by the **CONTRACTOR** in, about, or upon the Work who shall misconduct itself or be incompetent or negligent in the proper performance of its 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 **OWNER's** Representative. 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.

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

- E. The **CONTRACTOR** shall notify the **OWNER's** Representative at least forty-eight (48) hours in advance of the time it intends to start Work on the site. The **CONTRACTOR** shall operate at such points as the **OWNER** through the **OWNER's** Representative 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 Agreement. Should the prosecution of Work for any reason be discontinued by the **CONTRACTOR**, it shall notify the **OWNER's** Representative at least forty-eight (48) hours in advance of resuming operations.

6.02 LABOR, MATERIALS, AND EQUIPMENT

- A. **CONTRACTOR** shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. **CONTRACTOR** shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Supplementary Conditions, all Work at the site shall be performed during regular working hours, and **CONTRACTOR** will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without **OWNER's** written consent given after prior written notice to **OWNER's** Representative.
- B. **CONTRACTOR** shall furnish all materials, equipment, labor, transportation, 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. 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 damage to the Work, roadways, adjacent property, or other objects will result from its use. The Agreement may be terminated if the **CONTRACTOR** fails to provide adequate equipment for the Work.
- C. 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 of the product from any source proves unacceptable at any time, the **CONTRACTOR** shall furnish acceptable material from other sources acceptable to **ENGINEER**.

Samples of all materials for test upon which is to be based the acceptance or rejection, shall be taken by the **ENGINEER** or its 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 its 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 its 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 forth in paragraph 6.13 as it pertains to samples.

Except, as otherwise provided herein, 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 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.

- D. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.
- E. 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. **CONTRACTOR** is responsible for the safety of any of its materials, tools, possessions, and rented items stored on the job site, and for protection of the project and shall hold **OWNER** and **OWNER's** authorized representative harmless for any damages or loss incurred thereto.
- F. No material, equipment, tools, supplies, or instruments other than those belonging to or leased by **CONTRACTOR** will be removed from the project site by **CONTRACTOR** without the prior written approval of **OWNER's** Representative.
- G. All materials not conforming to the requirements of these Specifications shall be considered defective. Whether in place or not, such material 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** or **OWNER's** Representative made under the provisions of this article, the **ENGINEER** or **OWNER's** Representative 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**.

6.03 EQUIVALENT MATERIALS AND EQUIPMENT

- A. 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, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that a substitution is permitted, materials or equipment of other manufacturers, fabricators, suppliers, or distributors may be accepted by **ENGINEER** if sufficient information is submitted by **CONTRACTOR** to allow **ENGINEER** to determine that the material or equipment proposed is equivalent to that named. The procedure for review by **ENGINEER** will be as set forth in paragraphs 6.03.A.1 and 6.03.A.2 below as supplemented in the other Contract Documents.
 - 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 shall 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 any 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 shall 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** 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.
 - 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.

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.

6.04 CONCERNING SUBCONTRACTORS

- A. **CONTRACTOR** shall not employ any Sub**CONTRACTOR** 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 **OWNER** or **ENGINEER** may have reasonable objection. A Sub**CONTRACTOR** 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 Sub**CONTRACTOR**, 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 Sub**CONTRACTOR**, other person or organization proposed by **CONTRACTOR** after the Notice of Award, **CONTRACTOR** shall submit an acceptable substitute and the Agreement 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 Sub**CONTRACTOR**, other person or organization against whom **CONTRACTOR** has reasonable objection.
- B. **CONTRACTOR** shall be fully responsible for all acts and omissions of its Sub**CONTRACTORs** 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 Sub**CONTRACTOR** or other person or organization having a direct contact 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 moneys due any Sub**CONTRACTOR** or other person or organization, except as may otherwise be required by law. **OWNER** or **ENGINEER** may furnish to any Sub**CONTRACTOR** or other person or organization, to the extent practicable, evidence of amounts paid to **CONTRACTOR** on account of specific Work done.
- C. The divisions and sections of the Specifications and the identifications of any Drawings shall not control **CONTRACTOR** in dividing the Work among Sub**CONTRACTORs** or delineating the Work to be performed by any specific trade.
- D. All Work performed for **CONTRACTOR** by a Sub**CONTRACTOR** will be pursuant to an appropriate agreement between **CONTRACTOR** and the Sub**CONTRACTOR** which specifically binds the Sub**CONTRACTOR** to the applicable terms and conditions of the Contract Documents for the benefit of **OWNER** and **ENGINEER** and contains waiver provisions as required by the Contract Documents. **CONTRACTOR** shall pay each Sub**CONTRACTOR** a just share of any insurance moneys received by **CONTRACTOR** on account of losses under policies issued pursuant to the Contract Documents.
- E. **CONTRACTOR** shall fully cooperate with **OWNER** and such other **CONTRACTORs** or Sub**CONTRACTORs** as may be performing work or supplying materials in connection with the project and shall carefully fit its work in with that of all such other persons or entities. **CONTRACTOR** shall neither commit nor permit any act which will interfere with the performance of the project by any such person or entity.
- F. **CONTRACTOR** shall promptly pay in full for any and all damages caused to the project site by **CONTRACTOR** or by any Sub**CONTRACTOR** or other person or entity of any nature furnishing materials, equipment, machinery, supplies, labor, skilled services or instruments for whose actions the **CONTRACTOR** is responsible hereunder.

6.05 PATENT FEES AND ROYALTIES

- A. If the **CONTRACTOR** is required or desires to use any design, device, invention, product, materials, or process covered by letters of patent or copyright, it 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 hold harmless the **OWNER** and **ENGINEER**

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** and **ENGINEER** for any costs, expense, and damages, including attorney's 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.

6.06 PERMITS

- A. Unless otherwise provided in the Contract Documents, **CONTRACTOR** shall obtain 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 incidental to the due and lawful prosecution of the Work. **OWNER** and **ENGINEER** shall assist **CONTRACTOR**, when necessary, in obtaining such permits and licenses. **CONTRACTOR** shall pay all charges of utility service companies for connections to the Work, and **OWNER** shall pay all charges of such companies for capital costs related thereto. A copy of all permits and licenses procured by **CONTRACTOR** shall be supplied to **ENGINEER** within a reasonable period of time.

6.07 LAWS AND REGULATIONS

- A. **CONTRACTOR** shall be familiar with all federal, state and local laws, ordinances, rules and regulations which in any manner affect those engaged or employed in the Work or the material or equipment used in or on the site, or in any way affect the conduct of the Work, including rules and regulations that **OWNER** may promulgate at any time for the safe, orderly and efficient conduct of all Work on the Project ("the applicable regulations"). If **CONTRACTOR** observes that the Specifications or Drawings are at variance therewith, **CONTRACTOR** shall give **ENGINEER** or **OWNER's** Representative prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. The **CONTRACTOR**, at all times, shall observe and comply with all applicable federal, state and local regulations and the Contract Documents and its surety shall indemnify and hold harmless the **OWNER**, the **ENGINEER** and their consultants, agents and employees, against any claim or liability arising from or based on the violation of any applicable regulations, by anyone for whom **CONTRACTOR** is responsible.

6.08 TAXES

- A. **CONTRACTOR** shall pay all sales, consumer, use and other similar taxes required to be paid by him.
- B. **OWNER** is exempt from Colorado State sales and use taxes. Accordingly, taxes from which **OWNER** is exempt shall not be included in the Agreement Price. **OWNER** shall, upon request, furnish **CONTRACTOR** with a copy of its certificate of tax exemption. **CONTRACTOR** and Sub**CONTRACTORS** shall apply to the Colorado Department of Revenue, Sales Tax Division, for an Exemption Certificate and purchase the materials tax free. Pursuant to Subsection 39-26-114(1)(a)(XIX)(A), C.R.S., **CONTRACTOR** and Sub**CONTRACTORS** shall be liable for exempt taxes paid due to failure to apply for Exemption Certificates or for failure to use said Certificates. All schedules payable by US Home Corporation are subject to Colorado State sales and use taxes (See Supplementary Conditions, Section 00800).

6.09 USE OF PREMISES

- A. **CONTRACTOR** shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits and the requirements of the Contract Documents.
- B. During the progress of the Work, **CONTRACTOR** shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work **CONTRACTOR** shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, temporary structures, stumps or portions of trees and surplus materials, and shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents. Materials cleared from the site and deposited on property adjacent will not be considered as having been disposed of satisfactorily.
- C. **CONTRACTOR** shall not load or permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall **CONTRACTOR** subject any part of the Work or adjacent property to stresses or pressures that will endanger it.
- D. 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 Bid 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.

- E. 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 Bid Proposal, and it 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 Specification 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 outside of the proposed slope and grade lines as indicated on the Drawings, without prior consent by the **ENGINEER**.
- F. **CONTRACTOR** shall protect all existing erosion control measures installed by others and shall promptly replace all items disturbed during his work.

6.10 RECORD DOCUMENTS

- A. **CONTRACTOR** shall keep one record of all Specifications, Drawings, Addenda, Modifications, Shop Drawings and samples at the site, in good order and annotated and updated weekly to show all changes made during the construction process. These shall not be used for construction purposes, shall be available to **ENGINEER** or **OWNER's** Representative at all times for examination and shall be delivered to **ENGINEER** or **OWNER's** Representative for **OWNER** upon completion of the Work. All changes or drawings from the original drawings shall be neatly marked thereon in brightly contrasting color.

6.11 SAFETY AND PROTECTION

- A. **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:
 1. All employees on the Work or other persons who may be affected thereby;
 2. All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and
 3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

The **CONTRACTOR** shall be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including the safety of all persons who may enter on the job site for any reason and the security of all property located on the job site. This requirement shall apply at all times during the course of the contract and not only to normal work hours.

- B. **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 paragraphs 6.11.A.2 or 6.11.A.3 caused, directly or indirectly, in whole or in part, by **CONTRACTOR**, any Sub**CONTRACTOR** 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). **CONTRACTOR's** duties and responsibilities for the safety and protection of the Work shall continue such time as all the Work is completed and final payment has been made.
- C. **CONTRACTOR** shall designate a responsible member of its 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**.
- D. **CONTRACTOR** has the affirmative duty of ensuring compliance with all Occupational Safety and Health Administration (OSHA) regulations, of designating a representative who is a competent person for purposes of identifying existing or predictable hazards at the site, of providing required safety instruction for **CONTRACTOR's** Sub**CONTRACTORs** and employees, and of immediately taking precautionary measures when necessary and remedying all identified OSHA violations. Daily, and other, inspections of the work site, including of excavations, adjacent areas and protective systems, shall be the sole responsibility of **CONTRACTOR**. **CONTRACTOR's** obligation to indemnify

OWNER pursuant to paragraphs 5.05 shall include failure of **CONTRACTOR** to effect full compliance with OSHA regulations.

- E. The **CONTRACTOR** shall at all times conduct the Work in such manner as will incur 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 **ENGINEER** or **OWNER's** Representative. Each item of Work shall be prosecuted to completion without delay and in no instance will the **CONTRACTOR** be permitted to transfer its forces from uncompleted Work to new Work without prior written notification of the **CONTRACTOR** to the **ENGINEER** or **OWNER's** Representative. The **CONTRACTOR** shall not open up Work to the prejudice of Work already started.

Unless the Contract Documents specifically provide 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 temporary approaches, crossings, or intersections with roads and highway. 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, crossing, intersections and any necessary features without direct compensation, except as otherwise provided.

The **CONTRACTOR** shall not close any road to the public except by express permission of the appropriate engineering authority. When the road under construction is being used by the traveling public, special attention shall be paid to keeping 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 officials in the regulation of traffic. If the **CONTRACTOR** constructs temporary bridges or temporary stream crossings, its responsibility for accidents shall include the roadway approaches as well as the structures of such crossings.

The **CONTRACTOR** shall provide, erect and maintain all necessary barricades, signs, danger signals and lights to protect 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 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** or **OWNER's** Representative may order the damaged portion immediately removed and replaced by the **CONTRACTOR** without cost to the **OWNER** if, in its opinion, such action is justified. The **CONTRACTOR's** responsibility for necessary barricades, signs and lights shall not cease until the Project shall have been accepted.

- F. The **CONTRACTOR** shall provide and maintain in a neat, sanitary condition such accommodations for the use of its 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.
- G. 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 representative of any public service corporation, any company, or any individual, at least 8 hours in advance of any blasting which may damage its or their property, on along, or adjacent to the site. All explosives shall be stored in a secure manner and all storage place shall be marked clearly "DANGEROUS EXPLOSIVES," and shall be in care of competent watchmen at all times.

6.12 EMERGENCIES

- A. 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.

6.13 PLANS AND SHOP DRAWINGS

- A. The approved Plans will show details of all structures; lines and grade 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, panels and other Work.
- B. 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 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 confirm to all conditions shown therein. The mechanical Drawings shall take precedence over all other Drawings.
- C. 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.
- D. 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, 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 date 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.
- E. 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.
- F. **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 construction or to satisfy 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.
- G. 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**.
- H. **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.
- I. The cost of furnishing all shop drawings shall be borne by the **CONTRACTOR**.
- J. Finished surfaces in all cases shall conform with lines, grade, cross-sections and dimensions shown on the Approved Plans. Any deviations 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.
- K. The Plan 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 advance of any apparent error of omission in the Plans or Specifications. In the event the

CONTRACTOR discovers any apparent conflict, error or discrepancy, it shall immediately call upon the **ENGINEER** for its interpretation and decision shall be final. Any apparent error or discrepancy must be resolved before **CONTRACTOR** proceeds with the Work affected thereby.

6.14 PRIVATE PROPERTY AND EXCAVATION

- A.** The **CONTRACTOR** shall not enter upon private property for any purpose without first obtaining permission, and it 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. It 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. It shall be responsible for all damage or injury to property or any character resulting from any act, omission, neglect or misconduct in its or any sub**CONTRACTOR**'s manner, or method of executing said Work, or due to its or any sub**CONTRACTOR**'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 has 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 sub**CONTRACTOR**, **CONTRACTOR** shall restore, at its 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 it 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 make good such damage or injury, the **ENGINEER** or **OWNER**'s Representative 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 for 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 these Contract Documents shall be included in the original Contract prices for the Project.

PART 7 COORDINATION OF WORK

7.01 OWNER'S RIGHT TO PERFORM

- A.** **OWNER** may perform additional Work related to the Project by itself, 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 its Work with theirs, and shall conduct its operations as to minimize the interference with theirs, as directed by **ENGINEER**.

7.02 CONTRACTOR TO COORDINATE

- A.** 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. Such acceptance by **CONTRACTOR** shall render him responsible for subsequent correction of any such Work.
- B.** **CONTRACTOR** shall do all cutting, fitting and patching of its 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.

- C. 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. If the performance of such additional Work not noted in the Contract Documents causes unavoidable additional expense to **CONTRACTOR** or causes unavoidable delay in **CONTRACTOR**'s prosecution of the Work, **CONTRACTOR** may make a claim therefore as provided in Parts 11 and 12 respectively.

PART 8 OWNER'S RESPONSIBILITIES

8.01 OWNER TO COMMUNICATE THROUGH ENGINEER OR OWNER'S REPRESENTATIVE

- A. **OWNER** shall issue all communications to **CONTRACTOR** through **ENGINEER** or the **OWNER**'s Representative.

PART 9 STATUS OF ENGINEER DURING CONSTRUCTION

9.01 DUTIES OF ENGINEER

- A. The duties and responsibilities and the limitations of authority of **ENGINEER** during construction are set forth in the Contract Documents and shall not be extended without written consent of **OWNER** and **ENGINEER**.

9.02 VISITS TO SITE

- A. **ENGINEER** and/or **OWNER** will make visits to the site at intervals appropriate to the various stages 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 onsite 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 onsite 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.

9.03 CLARIFICATIONS AND INTERPRETATIONS

- A. **ENGINEER** will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as **ENGINEER** may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

9.04 REJECTING DEFECTIVE WORK

- A. **ENGINEER** will have authority to disapprove or reject Work which is defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04.B, whether or not the Work is fabricated, installed or completed.

9.05 NOT USED

9.06 DECISIONS ON DISAGREEMENTS

- A. **ENGINEER** will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work shall be referred initially to **ENGINEER** in writing with a request for a formal decision in accordance with this paragraph, which **ENGINEER** will render in writing within a reasonable time. Written Notice of each such claim, dispute and other matter shall be delivered by the claimant to **ENGINEER** and the other party to the Agreement within fifteen (15) days of the occurrence of the event giving rise thereto, and written supporting data will be submitted to **ENGINEER** and the other party within forty-five (45) days of such occurrence unless **ENGINEER** allows an additional period of time to ascertain more accurate data. In its capacity as interpreter and judge **ENGINEER** will not show partiality to **OWNER** or **CONTRACTOR** and will not be liable in connection with any interpretation or decision rendered in good faith and in accord with professional standards in such capacity.

- B. Notwithstanding Paragraph E of Part 10 of the **OWNER-CONTRACTOR** Agreement, the rendering of a decision by **ENGINEER** pursuant to paragraph 9.06.A with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.11.A) or the determination by **ENGINEER** that it shall not render a decision with respect thereto, will be a condition precedent to any exercise by **OWNER** or **CONTRACTOR** of such rights or remedies as either may otherwise have under the Contract Documents or at law in respect of any such claim, dispute or other matter.

9.07 **LIMITATIONS ON ENGINEER'S AND OWNER'S RESPONSIBILITIES**

- A. Neither **ENGINEER's** nor **OWNER's** authority to act under this Part 9 or elsewhere in the Contract Documents nor any decision made by **ENGINEER** or **OWNER** in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of **ENGINEER** or **OWNER** to **CONTRACTOR**, any Sub**CONTRACTOR**, any manufacturer, fabricator, supplier, or distributor, or any of their agents or employees or any other person performing any of the Work.
- B. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used, to describe requirement, direction, review or judgment of **ENGINEER** as to the Work, it is intended that such requirement, direction, review or judgement will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that **ENGINEER** shall have authority to supervise or direct performance of the Work or authority to undertake responsibility contrary to the provisions of paragraphs 9.07.C or 9.07.D.
- C. **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.
- D. Neither **ENGINEER**, nor **OWNER**, nor **OWNER's** Representative will not be responsible for the acts or omissions of **CONTRACTOR** or of any Sub**CONTRACTORs**, or of the agents or employees of any **CONTRACTOR** or Sub**CONTRACTOR**, or of any other persons at the site or otherwise performing any of the Work.

PART 10 CHANGES IN THE WORK

10.01 OWNER MAY ORDER CHANGES

- A. Without invalidating the Agreement, **OWNER** may, at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by Field Orders or Change Orders. Upon receipt of a Field Order or Change Order, **CONTRACTOR** shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Agreement Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Part 11 or Part 12 on the basis of a claim made by either party.
- B. The **ENGINEER**, by Field Order only, may authorize minor changes in the Work which do not require an adjustment in the Agreement Price or the Contract Time and which are consistent with the overall intent of the Contract Documents. Only changes authorized by a Change Order or Field Order shall be binding on the **OWNER**. The **CONTRACTOR** shall perform changes authorized by a Field Order in a timely fashion and as specified in the Field Order. If, notwithstanding this Paragraph 10.01 B., a Field Order causes unavoidable additional expense or unavoidable delay in **CONTRACTOR's** prosecution of the Work, **CONTRACTOR** may make a claim therefor as provided in Part 11 or Part 12, respectively.
- C. Additional Work performed without authorization of a Change Order will not entitle **CONTRACTOR** to an increase in the Agreement Price or an extension of the Contract Time, except in the case of an emergency, as provided in paragraph 6.12 A.
- D. If Notice of any change affecting the general scope of the Work or change in the Agreement 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**.
- E. If **OWNER** and **CONTRACTOR** are unable to agree to an adjustment in the Agreement Price or Contract Time of a Change Order, as provided in Parts 11 and 12 herein, the **OWNER** may issue the Change Order without an adjustment and the Parties may proceed to Dispute Resolution. The **CONTRACTOR** shall promptly perform any such Change Order. Alternatively, the **OWNER** reserves the right to perform the Work described in the Change Order directly or to hire other

CONTRACTOR(s) to perform said Work. In this case, the **CONTRACTOR** shall not be entitled to any increase in the Agreement Price, nor to any additional cost or fees, nor to any extension of the Contract Time, and the **CONTRACTOR** shall permit free access to the site by the **OWNER** or any other **CONTRACTOR** engaged by **OWNER** to perform said Work.

PART 11 CHANGE OF AGREEMENT PRICE

11.01 AGREEMENT PRICE CHANGED ONLY BY CHANGE ORDER

- A.** The Agreement Price constitutes the total compensation (subject to authorized adjustments by Change Order) payable to **CONTRACTOR** for performing the Work and is based on unit prices. All duties, responsibilities and obligations assigned to or undertaken by **CONTRACTOR** shall be at its expense without change in the Agreement Price.
- B.** The Agreement Price may only be changed by a Change Order signed and approved by **CONTRACTOR** and **OWNER**. When **CONTRACTOR** and **OWNER** agree upon a price for extra or changed Work by way of a Change Order, **CONTRACTOR** and **OWNER** agree that the price set forth in the Change Order shall be based on unit prices set forth in the Agreement.
- C.** The **OWNER**, through the **ENGINEER** or **OWNER's** Representative, may request changes to the Agreement for additional Work or a reduction in the Work or in response to claims by **CONTRACTOR** not quantifiable by unit prices set forth in the Agreement. In such case, Change Order pricing and time extension analysis shall be in accordance with the following:
- 1.** The **ENGINEER** or **OWNER's** Representative shall submit to the **CONTRACTOR** a "Request for Proposal" outlining the scope of Work contemplated for said construction changes.
 - 2.** The **CONTRACTOR** shall submit within fourteen (14) days of receipt of a "Request for Proposal" (or within such shorter period of time as may be reasonably designated by the **OWNER**) a complete cost and fee and time extension analysis for the proposed change which shall include:
 - a.** Detailed itemization of materials and labor estimated for said Work;
 - b.** Detailed itemization from all Sub**CONTRACTORS** for their respective labor and materials for said Work;
 - c.** Copies of quotations from suppliers substantiating all materials and equipment costs;
 - d.** Itemization of overhead and fees in accordance with Paragraph 11.03A;
 - e.** Any request for Contract Time extension with all substantiating rationale therefor.
- D.** **CONTRACTOR** shall be entitled to submit a claim for additional compensation for changes ordered by **OWNER** through a Change Order, if such Change Order does not contain an agreed-upon adjustment or quantifiable by unit prices, and for changes ordered by **ENGINEER** through a Field Order, subject to the provisions of this Agreement. If the **CONTRACTOR** believes extra compensation is due him for Work or materials not clearly covered in the Agreement, or not ordered in writing by the **OWNER** or **ENGINEER**, it must, prior to beginning the Work on which it bases the claim, submit in writing to the **ENGINEER** and the **OWNER** its intention to make a claim for such extra compensation and must afford the **ENGINEER** every facility for keeping track of 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 **CONTRACTOR** and the keeping account of costs by the **ENGINEER** shall not in any way be construed to provide the validity of the claim. When such Work has been completed, the **CONTRACTOR** shall within fifteen days file its claim for extra compensation with the **ENGINEER**, including an itemization of all items for which extra compensation is requested and documentation reasonably satisfactory to **OWNER**. **ENGINEER** shall present the claim to **OWNER** with **ENGINEER's** recommendations.
- E.** The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Agreement Price shall be determined in one of the following ways:
- 1.** On a unit price basis
 - 2.** On the basis of the estimated Cost of the Work (determined as provided in Paragraph 11.02) plus a **CONTRACTOR's** Fee for overhead and profit (determined as provided in paragraph 11.03.A);
 - 3.** By mutual acceptance of a lump sum.

11.02 COST OF THE WORK

- A. 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 11.02.B. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.02.A and 11.02.B, **CONTRACTOR** will submit in form acceptable to **ENGINEER** an itemized cost breakdown together with supporting data.
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 cost 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 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.

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**.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to **CONTRACTOR** unless **OWNER** deposits funds with **CONTRACTOR** with which to make payments, in which case the cash discounts shall accrue to **OWNER**. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to **OWNER** and **CONTRACTOR** shall make provisions so that they may be obtained.
 3. Payments made by **CONTRACTOR** to the Sub**CONTRACTOR**s for Work performed by Sub**CONTRACTOR**s. If required by **OWNER**, **CONTRACTOR** shall obtain competitive bids from Sub**CONTRACTOR**s acceptable to **CONTRACTOR** and shall deliver such bids to **OWNER** who will then determine, with the advice of **ENGINEER**, which bids will be accepted. If a subcontract provides that the Sub**CONTRACTOR** is to be paid on the basis of Cost of the Work plus a fee, the Sub**CONTRACTOR**'s Cost of the Work shall be determined in the same manner as **CONTRACTOR**'s Cost of the Work. All Sub**CONTRACTOR**s shall be subject to the other provisions of the Contract Documents insofar as applicable.
 4. Costs of special consultants (including, but not limited to, engineers, testing laboratories, surveyors, lawyers and accountants) employed or services specifically related to the Work.
 5. Supplementary costs include the following:
 - a. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, 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 **CONTRACTOR**.
 - b. 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.
 - c. Any sales, use or similar taxes related to the Work, and for which **CONTRACTOR** is liable, imposed by any governmental authority.
 - d. Deposits lost for causes other than **CONTRACTOR**'s negligence, royalty payments and fees for permits and licenses.
 - e. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by **CONTRACTOR** or in connection with the execution of the Work, provided they have resulted from causes other than the negligence of **CONTRACTOR**, any Sub**CONTRACTOR**, 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 11.03.A.

- f. Cost of premiums for additional Bonds and insurance required because of changes in the Work.
 - g. The proportion of necessary transportation, travel and subsistence expenses of **CONTRACTOR**'s employees incurred in discharge of duties connected with the Work.
 - h. The cost of utilities, fuel and sanitary facilities at the site.
 - i. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.
- B.** The term Cost of the Work shall not include any of the following:
- 1. Payroll costs and other compensation of **CONTRACTOR**'s officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by **CONTRACTOR** whether at the site or in its 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 11.02.A.1-all of which are to be considered administrative costs covered by the **CONTRACTOR**'s Fee.
 - 2. Expenses of **CONTRACTOR**'s principal and branch offices other than **CONTRACTOR**'s office at the site.
 - 3. Any part of **CONTRACTOR**'s capital expenses, including interest on **CONTRACTOR**'s capital employed for the Work and charges against **CONTRACTOR** for delinquent payments.
 - 4. 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).
 - 5. Costs due to the negligence of **CONTRACTOR**, any Sub**CONTRACTOR**, 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.
 - 6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.02.A.

11.03 CONTRACTOR'S FEE

- A.** The **CONTRACTOR**'s Fee allowed to **CONTRACTOR** for overhead and profit shall be determined as follows:
- 1. A fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under paragraphs 11.02.A.1 and 11.02.A.2, the **CONTRACTOR**'s Fee shall be ten percent (10%); and
 - b. For costs incurred under paragraph 11.02.A.3, the **CONTRACTOR**'s Fee shall be five percent (5%); and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to the Sub**CONTRACTOR** as a fee for overhead and profit shall be ten percent (10%) as set forth in Paragraph 11.03A.1.a; and
 - c. No fee shall be payable on the basis of costs itemized under paragraphs 11.02.A.4, 11.02.-A.5, and 11.02.B.
- B.** 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 fee shall be figured on the basis of the net increase if any.

11.04 ADJUSTMENT OF THE UNIT PRICE

- A.** Where the quantity of Work with respect to any item that is covered by a unit price differs materially and significantly (more than a 25% increase or decrease) from the quantity of such Work indicated in the Contract Documents, an appropriate Change Order shall be issued on recommendation of **ENGINEER** to adjust the unit price.

PART 12 CONTRACT TIME AND CHANGES

12.01 DETERMINATION AND EXTENSION OF CONTRACT TIME

- A. 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 Agreement. Time will be assessed against the **CONTRACTOR** in accordance with the Notice to Proceed. If the **CONTRACTOR** does not begin the Work within the limit 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. If the satisfactory execution and completion of the Work shall require Work or materials in greater amounts or quantities than those set forth in the Contract Documents, then the Contract Time may be increased as negotiated between **CONTRACTOR** and **ENGINEER** or **OWNER's** Representative and accepted by **OWNER** as set forth in a Change Order. In general, extensions to the completion period for the Contract Documents will not be approved, regardless of cause for claim.

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 its control, the **CONTRACTOR** shall within ten (10) days from the beginning of any such delay notify the **ENGINEER** or **OWNER's** Representative 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 its judgment, the findings of fact justify such an extension, and its finding of fact thereon shall be final and conclusive. The Contract Time may only be changed by a Modification.

12.02 CONTRACT TIME CHANGED ONLY BY CHANGE ORDER

- A. The Contract Time may only be changed by a Change Order. If **CONTRACTOR** desires to make any claim for an extension in the Contract Time, it shall give immediate verbal notification to **ENGINEER** followed by written notice delivered to **OWNER's** Representative and **ENGINEER** within five days of the occurrence of the event giving rise to the Claim. Notice of the extent of the claim with supporting data shall be delivered within fifteen (15) days of such occurrence unless **ENGINEER** or **OWNER's** Representative allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by **ENGINEER** if **OWNER** and **CONTRACTOR** cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.
- B. Where, due to delays beyond the control of **CONTRACTOR** which cause unavoidable delay to the **CONTRACTOR's** prosecution of the Work, **CONTRACTOR** is prevented from completing any part of the Work within the Contract Time or within scheduled milestones, **CONTRACTOR** shall be entitled to request an extension of time equal to the time unavoidably lost if **CONTRACTOR** makes a claim therefor as provided in Paragraph 12.01.A. Such delays may be caused by acts or omissions of the **OWNER** or others performing Work as contemplated by Part 7, or to fires, floods, labor disputes, epidemics, acts of God, or to abnormally inclement weather conditions. Weather conditions shall only be considered abnormally inclement if there was greater than normal inclement weather considering the term of the contract and the ten-year average of accumulated record mean values from data compiled by the U.S. Department of Commerce National Oceanic and Atmospheric Administration for the locale of the Work.
- C. All the time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Part 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

PART 1 WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 WARRANTY AND GUARANTEE

- A. **CONTRACTOR** warrants and guarantees to **OWNER** and **ENGINEER** that, without exception, all Work will be in accordance with the Contract Documents and will not be defective. Four copies of all manufacturer's guaranties or certificates that are required by the Contract Documents shall be submitted to **OWNER** through **ENGINEER** prior to acceptance of the Work. No exceptions to Contract Documents and guarantee or warranty requirements are permitted. 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 this Part 13.

13.02 ACCESS TO WORK

- A. **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.

13.03 TESTS AND INSPECTIONS

- A. **CONTRACTOR** shall give **ENGINEER** timely Notice of Readiness of the Work for all required inspections, tests or approvals.
- B. If any law, ordinance, rule, regulation, code, or order of any public body having jurisdiction requires any Work (or part thereof) specifically to be inspected, tested or approved, **CONTRACTOR** shall assume full responsibility therefor, 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 **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 approval 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), except that the cost of retesting of materials and equipment as a direct result of a failure to pass a specified test shall be paid by **CONTRACTOR**.
- C. 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).
- D. If any Work that is to be inspected, tested or approved is covered without written 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.
- E. Neither observations by **ENGINEER** or inspections, tests or approvals by others shall relieve **CONTRACTOR** from its obligations to perform the Work in accordance with the Contract Documents.
- F. Any Work outside the normal five (5) day, forty (40) hour week may require that the Resident Project Representative be on the job. All inspection so required shall be done at the **CONTRACTOR's** expense at Resident Project Representative's current billable rates and the cost thereof shall be deducted from any funds due **CONTRACTOR**. The **CONTRACTOR** shall notify the **ENGINEER** at least 24 hours in advance of starting any such overtime Work.

13.04 UNCOVERING WORK

- A. If any Work is covered contrary to the written request of **ENGINEER**, it must, if requested by **ENGINEER**, be unCovered for **ENGINEER's** observation and replaced at **CONTRACTOR's** expense.
- B. If **ENGINEER** considers it necessary or advisable that covered Work be observed by **ENGINEER** or inspected or tested by others, **ENGINEER** shall issue a Field Order so directing and **CONTRACTOR** shall thereupon uncover, expose or otherwise make available for observation, inspection or testing, as **ENGINEER** may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, **CONTRACTOR** shall bear all the expenses of such uncovering, exposure, observation, inspection and testing, and all expenses for satisfactory correction or reconstruction of the defective Work, including, for all of the foregoing tasks, compensation for additional professional services required. **CONTRACTOR** shall not request payment for, nor shall **CONTRACTOR** be entitled to compensation for such expenses. If the Work is found not to be defective, **CONTRACTOR** shall be allowed an increase in the Agreement Price or an extension of the Contract Time, or both, for any expense or delay directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction, provided that **CONTRACTOR** submits a verified claim as provided in Parts 11 and 12 within 20 days of performing any such tasks.

13.05 OWNER MAY STOP THE WORK

- A. If the Work is defective, or **CONTRACTOR** fails to supply sufficient skilled workmen or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, **OWNER** may order **CONTRACTOR** to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of **OWNER** to stop the Work shall not give rise to any duty on the part of **OWNER** to exercise this right for the benefit of **CONTRACTOR** or any other party.

13.06 CORRECTION OR REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK

- A.** If required by **ENGINEER**, **CONTRACTOR** shall promptly, without cost to **OWNER** and as specified by **ENGINEER**, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by **ENGINEER**, remove it from the site and replace it with nondefective Work. 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.

13.07 ONE YEAR CORRECTION PERIOD

- A.** If within one (1) year after substantial completion is granted by the **OWNER** 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 Contract Documents, any Work is found to be defective, **CONTRACTOR** shall promptly, without cost to **OWNER** and in accordance with **OWNER**'s written instructions within seven (7) days after **OWNER**'s issuance of written instructions, correct the defective Work at **CONTRACTOR**'s cost. 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 correction period. **CONTRACTOR**, at **CONTRACTOR**'s cost, shall provide **OWNER** with a Warranty Bond in the amount of 10% of the cost of the Work, effective upon commencement of the initial acceptance, to serve as security or any corrections required during this period.

13.08 ACCEPTANCE OF DEFECTIVE WORK

- A.** If, instead of requiring correction or removal and replacement of defective Work, **OWNER** 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 Agreement Price; or, if the acceptance occurs after such recommendation, an appropriate amount shall be paid by **CONTRACTOR** to **OWNER**.

13.09 OWNER MAY CORRECT DEFECTIVE WORK

- A.** If **CONTRACTOR** fails within a reasonable time after written notice to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by **ENGINEER** or **OWNER**'s Representative in accordance with paragraph 13.06.A, or in accordance with paragraph 13.07.A, or if **CONTRACTOR** fails to perform the Work in accordance with the Contract Documents (including any requirements of the progress schedule), **OWNER** may, after seven days' written notice to **CONTRACTOR**, correct and remedy any such deficiency. In exercising its rights under this paragraph **OWNER** shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, **OWNER** may exclude **CONTRACTOR** from all or part of the site, take possession of all or part of the Work, and suspend **CONTRACTOR**'s services related thereto, take possession of **CONTRACTOR**'s tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which **OWNER** has paid **CONTRACTOR** but which are stored elsewhere. **CONTRACTOR** shall allow **OWNER**, **OWNER**'s representatives, agents and employees such access to the site as may be necessary to enable **OWNER** to exercise its 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 a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Agreement 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.

PART 14 CONSTRUCTION SCHEDULE, PAYMENTS TO CONTRACTORS AND COMPLETION

14.01 SCHEDULES

- A.** Within ten (10) days after issuance of the Notice to Proceed and at least ten days prior to submitting the first application for a progress payment, the **CONTRACTOR** shall prepare and submit to **OWNER** the progress schedule listing all Work tasks required, duration of tasks, sequence of Work,

and significant milestone events; a schedule for Shop Drawing submission. These schedules shall be satisfactory in form and substance to the **OWNER** and the **ENGINEER** and shall employ the CPM or PERT method if so directed in the Supplementary Conditions. The progress schedule shall be an accurate reflection of the Work to be performed by **CONTRACTOR**. The progress schedule shall be subject to the review and concurrence of **OWNER**, but **OWNER**'s concurrence shall not constitute any guarantee or warranty by **OWNER** that the Work can be performed as scheduled. Notwithstanding **OWNER**'s review and concurrence of the progress schedule, **CONTRACTOR** shall be paid only according to its completion of the items contained in the Bid Form and not according to the progress schedule. The **CONTRACTOR** shall revise the progress schedule if so requested by **OWNER**.

- B.** The schedules contained in the Bid Form shall be incorporated into the form for Application for Partial Payment. The **CONTRACTOR** shall revise the schedule contained in the Bid Form if requested by **OWNER**. The **CONTRACTOR** may include on its Application for Partial Payment, payment for materials stored at the construction site, provided that title to such materials will pass to the **OWNER** at the time of payment free and clear of all claims, security interests and encumbrances, are insured and properly stored and protected.

14.02 APPLICATION FOR PROGRESS PAYMENTS

- A.** At least ten (10) days before each progress payment falls due (but not more often than once a month), **CONTRACTOR** shall submit to **OWNER**'s Representative for review an Application for Partial Payment completed and signed by **CONTRACTOR** covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents and also as **OWNER**'s Representative may reasonably require. Each subsequent Application for Partial Payment shall include an affidavit of **CONTRACTOR** stating that all previous progress payments received on account of the Work have been applied to discharge in full all of **CONTRACTOR**'s obligations reflected in prior Applications for Partial Payment. If the Contract Price set forth in the Agreement exceeds \$150,000, it is the intent and purpose of the **OWNER** to withhold five percent (5%) of payments to **CONTRACTOR** in accordance with Article 91, Title 24.C.R.S.
- B.** The determination of quantities of Work acceptable completed under the terms of the Contract Documents, will be made by the **ENGINEER** and based on measurements taken by him or its assistants. These measurements will be taken according to the United States standard measure. All surface and linear measurements will be taken horizontally unless otherwise 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.
- C.** No progress payment except final payment will be made for a sum of 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.

14.03 CONTRACTOR'S WARRANTY OF TITLE

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

14.04 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

- A.** **OWNER**'s Representative will, within ten (10) days after receipt of each Application for Partial Payment either indicate in writing a recommendation of payment and present the Application to **OWNER**, or return the Application to **CONTRACTOR** indicating in writing **OWNER**'s Representative reasons for refusing to recommend payment. In latter case, **CONTRACTOR** may make the necessary corrections and resubmit the Application.
- B.** **OWNER**'s Representative's recommendation of any payment requested in an Application for Partial Payment will constitute a representation by **OWNER**'s Representative to **OWNER**, based on

OWNER's Representative's onsite observations of the Work in progress as an experienced and qualified design professional, and on **OWNER's** Representative's review of the Application for Partial Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of **OWNER's** Representative'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). However, by recommending any such payment, **OWNER's** Representative will not thereby be deemed to have represented that exhaustive or continuous onsite 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 moneys paid or to be paid to **CONTRACTOR** on account of the Agreement Price, or that title to any Work, materials or equipment has passed to **OWNER** free and clear of any Claims.

- C. **OWNER's** Representative may refuse to recommend, and **OWNER** may refuse to pay, the whole or any part of any payment if, in their opinion, it would be incorrect to make such payment. They may also refuse to recommend to make any such payment, or because of subsequently discover 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** or **OWNER's** opinion to protect **OWNER** from loss because:
1. The Work is defective, or completed Work has been damaged requiring correction or replacement,
 2. Written Claims have been made against **OWNER** or Claims have been filed in connection with the Work,
 3. The Agreement Price has been reduced because of modifications,
 4. **OWNER** has been required to correct defective Work or complete the Work in accordance with paragraph 13.09.A,
 5. Of **CONTRACTOR's** unsatisfactory prosecution of the Work in accordance with the Contract Documents, or
 6. Of **CONTRACTOR's** failure to make payment to Sub**CONTRACTORs** for labor, materials or equipment.

14.05 SUBSTANTIAL COMPLETION

- A. When **CONTRACTOR** considers the entire Work ready for its intended use, **CONTRACTOR** shall, in writing to **OWNER** and **ENGINEER**, certify that the entire Work is substantially complete and request that **ENGINEER** issue a certificate of Substantial Completion. Within a reasonable time thereafter, **OWNER**, **CONTRACTOR**, and **ENGINEER** shall make an inspection of the Work to determine the status of completion. If **ENGINEER** does not consider the Work substantially complete, **ENGINEER** will notify **CONTRACTOR** in writing giving its reasons therefor. If **ENGINEER** considers the Work substantially complete, **ENGINEER** will prepare and deliver to **OWNER** a tentative certificate of Substantial Completion. There shall be attached to the certificate a punch list of items to be completed or corrected before Project completion and final payment.

14.06 PARTIAL UTILIZATION

- A. Use by **OWNER** of completed portions of the Work may be accomplished prior to Substantial Completion of all the Work subject to the following:
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 periods 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 or shall object to the **ENGINEER** in writing with fifteen (15) 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.

2. In lieu of the provisions of paragraph 14.06.A.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.
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 canceled or lapse on account of any such partial use or occupancy.

14.07 FINAL INSPECTION

- A. Upon written notice from **CONTRACTOR** that the Work is complete and that all items on the punch list have been completed, **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.

14.08 FINAL APPLICATION FOR PAYMENT

- A. 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 (subject to the provisions of paragraph 14.11.A), **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 Claims 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 Claim could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which **OWNER** or its 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 Sub**CONTRACTOR**, 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 Claim.

14.09 FINAL PAYMENT AND ACCEPTANCE

- A. If, on the basis of **ENGINEER**'s observation of the Work during construction and final inspection, and **OWNER**'s Representative's review of the final Application for Payment and accompanying documentation all as required by the Contract Documents, **OWNER**'s Representative is satisfied that the Work has been completed and **CONTRACTOR** has fulfilled all of its obligations under the Contract Documents, **OWNER**'s Representative will, within ten (10) days after receipt of the final Application for Payment, indicate in writing its recommendation of payment and present the Application to **OWNER** for payment. Thereupon, **ENGINEER** will give written notice to **OWNER** and **CONTRACTOR** that the Work is acceptable subject to the provisions of paragraph 14.11.A. 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. If the Application and accompanying documentation are appropriate as to form and substance, and acceptable to **OWNER**, **OWNER** shall, within thirty (30) days after receipt thereof, cause publication to commence of Notice of Final Settlement in accordance with statutory requirements applicable to **OWNER**. 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 any claim(s) is made against **CONTRACTOR**, **OWNER**

may withhold up to twice the amount of any asserted claim against **CONTRACTOR** until said claim(s) has been resolved together with other amounts permitted by the Agreement and Part 18 hereof; however, **OWNER** shall pay **CONTRACTOR** the balance of the final payment net of the withheld amount.

- B.** If, through no fault of **CONTRACTOR**, final completion of the Work is significantly delayed and if **ENGINEER** so confirms, **OWNER** shall, upon receipt of **CONTRACTOR**'s final Application for Payment and recommendation of **ENGINEER**, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by **OWNER** for Work not fully completed or corrected is less than the retainage stipulated in the General Conditions, and if Bonds have been furnished, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by **CONTRACTOR** to **ENGINEER** with the Application for such payment. Payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

14.10 CONTRACTOR'S CONTINUING OBLIGATION

- A.** The Contract Documents 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 by the **CONTRACTOR** or its Surety and final payment has been made by **OWNER**. The Surety Bond executed from performance of the Contract Documents shall be in full effect for a period equal to the warranty correction period following the date of initial acceptance.
- B.** Notwithstanding the provisions of Paragraph 14.10 A., **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 the issuance of a certificate of Substantial Completion, nor any payment by **OWNER** to **CONTRACTOR** under the Contract Documents, nor any use or 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 14.09.A, 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.

PART 15 SUSPENSION OF WORK AND TERMINATION

15.01 ENGINEER OR OWNER MAY SUSPEND WORK

- A.** 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 from **OWNER** or **ENGINEER**. Prior to resuming Work, **CONTRACTOR** shall give the **ENGINEER** adequate notice to afford opportunity to re-establish observation and inspection of Work being performed.
- B.** 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 suspension. No allowance will be made for anticipated profits. The period of suspension 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 the order to resume Work or such claims will not be considered. The **CONTRACTOR** shall submit with its 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 provided for in the Specifications.
- C.** **OWNER** may at any time suspend the Work or any portion thereof without cause for a period of not more than ninety (90) days by notice in writing to **CONTRACTOR** and **ENGINEER** which shall fix the date on which Work shall be resumed. **CONTRACTOR** shall resume the Work on the date so fixed. **CONTRACTOR** will be allowed an increase in the Agreement Price or an extension of the Contract Time, or both, directly attributable to such suspension if it makes a claim therefor as provided in Parts 11 and 12.

15.02 OWNER MAY TERMINATE

- A. Upon the occurrence of any one or more of the following events, **OWNER** may terminate the Agreement:
1. If **CONTRACTOR** is adjudged a bankrupt or insolvent,
 2. If **CONTRACTOR** makes a general assignment for the benefit of creditors,
 3. If a trustee or receiver is appointed for **CONTRACTOR** or for any of **CONTRACTOR**'s property,
 4. If **CONTRACTOR** files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws,
 5. If **CONTRACTOR** repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment,
 6. If **CONTRACTOR** repeatedly fails to make prompt payments to Sub**CONTRACTOR**s for labor, materials or equipment,
 7. If **CONTRACTOR** disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction,
 8. If **CONTRACTOR** disregards the authority of **ENGINEER**,
 9. Failure of the **CONTRACTOR** to start the Work on the date given in the Notice to Proceed,
 10. Substantial evidence that progress being made by the **CONTRACTOR** is insufficient to complete the Work within the specified time,
 11. Deliberate failure on the part of the **CONTRACTOR** to observe any requirement of these Specifications,
 12. 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**,
 13. If **CONTRACTOR** fails to remedy any default under the Contract Documents within seven (7) days of receipt of Notice of such default from **OWNER**, or
 14. If **CONTRACTOR** otherwise violates in any substantial way any provisions of the Contract Documents.
- B. Before the Agreement is terminated, the **CONTRACTOR** and its Surety will first be notified in writing by the **ENGINEER** of the conditions which make termination of the Agreement imminent. Seven (7) days after this is given, if a satisfactory effort has not been made by the **CONTRACTOR** or its Surety to correct the conditions, the **OWNER** may declare the Agreement terminated and notify the **CONTRACTOR** and its Surety accordingly. Upon receipt of notice from the **OWNER** that the Agreement has been terminated, the **CONTRACTOR** shall immediately discontinue all operations. The **OWNER** may then proceed with the Work in any lawful manner that it may elect until it is finally completed. **OWNER** may exclude **CONTRACTOR** from the site and take possession of the Work and 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 Agreement Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, including but not limited to fees and charges of **ENGINEERS** and attorneys and any court or arbitration costs, 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.
- C. 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 **CONTRACTOR** from liability.

15.03 CONTRACTOR MAY STOP WORK OR TERMINATE

- A. If, through no act or fault of **CONTRACTOR**, the Work is suspended for a period of more than ninety (90) days by **OWNER** or under an order of court or other public authority, or **ENGINEER** fails to act on any Application for Partial Payment within thirty (30) days after it is submitted, or **OWNER** fails for forty-five (45) days to pay **CONTRACTOR** any sum finally determined to be due, then **CONTRACTOR** may, upon seven (7) days' written notice to **OWNER** and **ENGINEER**, terminate the Agreement and recover from **OWNER** payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if **ENGINEER** has failed to act on an Application for Payment or **OWNER** has failed to make any payment as aforesaid, **CONTRACTOR** may upon seven (7) days' notice to **OWNER** and **ENGINEER** stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve **CONTRACTOR** of its obligations under paragraph 21.01 C. to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with **OWNER**.

15.04 OWNER MAY TERMINATE FOR CONVENIENCE

- A. The **OWNER** may terminate the performance of Work under the Contract Documents in accordance with this section without cause and in the **OWNER**'s sole and absolute discretion. Such termination may be in whole, or from time to time, in part. Any such termination shall be effected by delivery of a written Notice of Termination to the **CONTRACTOR** specifying the extent to which performance of Work under the Contract Documents is terminated and the date upon which termination becomes effective.
- B. After receipt of a Notice of Termination, and except as otherwise directed by the **OWNER**, the **CONTRACTOR** shall:
1. Stop Work under the Contract Documents on the date and to the extent specified in the Notice of Termination.
 2. Place no further orders or subcontracts for materials, services, or facilities except as necessary to complete the portion of the Work under the Contract Documents which is not terminated.
 3. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination.
 4. Assign to the **OWNER**, in the manner, at the times, and to the extent directed by the **OWNER**, all of the right, title, and interest of the **CONTRACTOR** under the orders and subcontracts so terminated. The **OWNER** shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.
 5. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the **OWNER** to the extent it may require. Its approval or ratification shall be final for all purposes of this clause.
 6. Transfer to the **OWNER**, and delivery in this manner, at the times, and to the extent, if any directed by the **OWNER**:
 - a. The fabricated or unfabricated parts, Work in process, completed Work, supplies, and other material produced as a part of, or acquired in connection with the performance of, the Work terminated by the Notice of Termination; and
 - b. The completed or partially completed plans, drawings, information, and other property which, if the Project had been completed would have been required to be furnished to the **OWNER**.
 7. Use its best efforts to sell, in the manner, at the times, to the extent, and at the price or prices that the **OWNER** directs or authorizes, any property of the types referred to in Paragraph 15.04.B.6, but the **CONTRACTOR**:
 - a. shall not be required to extend credit to any purchaser; and
 - b. may acquire any such property under the conditions prescribed and at a price or prices approved by the **OWNER**. The proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the **OWNER** to the **CONTRACTOR** under the Contract Documents or shall otherwise be credited to the Agreement Price or cost of the Work covered by the Contract Documents or paid in such other manner as the **OWNER** may direct.
 8. Complete performance of such part of the Work as shall not have been terminated by the Notice of Termination.

9. Take such action as may be necessary, or as the **OWNER** may direct, for the protection and preservation of the property related to the Project which is in the possession of the **CONTRACTOR** and in which the **OWNER** has or may acquire an interest.
- C. After receipt of a Notice of Termination, the **CONTRACTOR** shall submit to the **OWNER** its termination claim, in the form and with the certification the **OWNER** prescribes. Such claim shall be submitted promptly, but in no event later than sixty (60) days from the effective date of the termination, unless one or more extensions in writing are granted by the **OWNER** upon request of the **CONTRACTOR** made in writing within such one (1) year period or authorized extension. However, if the **OWNER** determines that the facts justify such action, it may receive and act upon any such termination claim at any time after such sixty (60) day period or extension. If the **CONTRACTOR** fails to submit its termination claim within the time allowed, the **OWNER** may determine, on the basis of information available to him, the amount, if any, due to **CONTRACTOR** because of the termination. The **OWNER** shall then pay to the **CONTRACTOR** the amount so determined.
- D. Subject to the provisions of this paragraph, the **CONTRACTOR** and the **OWNER** may agree upon the whole or any part of the amount or amounts to be paid to the **CONTRACTOR** because of the total or partial termination of Work under this subsection. The amount or amounts may include a reasonable allowance for profit on Work done if acceptable to **OWNER**. However, such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total Agreement Price as reduced by the amount of payments otherwise made and as further reduced by the Agreement Price of the portion of the Work not terminated. The Contract Documents shall be amended accordingly, and the **CONTRACTOR** shall be paid the agreed amount. Nothing in this paragraph prescribing the amount to be paid to the **CONTRACTOR** in the event of the failure of the **CONTRACTOR** and the **OWNER** to agree upon the whole amount to be paid to the **CONTRACTOR** because of termination of Work under this Section, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the **CONTRACTOR** pursuant to this paragraph.
- E. If the **CONTRACTOR** and the **OWNER** fail to agree on the whole amount to be paid to the **CONTRACTOR** because of the termination of Work under this section, the **OWNER** shall determine, on the basis of information available to him, the amount, if any, due to the **CONTRACTOR** by reason of the termination and shall pay the **CONTRACTOR** the amounts determined as follows:
1. For all Contract Work performed before the effective date of the Notice of Termination the total (without duplication of any items) of:
 - a. The cost of such Work.
 - b. The cost of settling and paying claims arising out of the termination of Work under subcontracts or orders as paragraph 15.04.B.3 above provides. This cost is exclusive of the amounts paid or payable on account of supplies or materials delivered or services furnished by the Sub**CONTRACTOR** before the effective date of the Notice of Termination. These amounts shall be included in the cost on account of which payment is made.
 - c. The reasonable cost of the preservation and protection of property incurred and any other reasonable costs incidental to termination of the Work under the Contract Documents, including expenses incidental to the determination of the amount due to the **CONTRACTOR** as a result of the termination of Work under the Contract Documents.
 2. The total sum to be paid to the **CONTRACTOR** shall not exceed the total Agreement Price as reduced by the amount of payments otherwise made and as further reduced by the Agreement Price of Work not terminated. Except for normal spoilage, and except to the extent that the **OWNER** shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the **CONTRACTOR** the fair value, as determined by the **OWNER**, of property to the extent that it is undeliverable to the **OWNER**, or to a Buyer under paragraph 15.04.B.7 of this Part 15. If the parties do not reach agreement under Paragraph 15.04.D and the **OWNER** utilizes this Paragraph 15.04.E, no allowance for profit shall be included in the calculation of the sum to be paid to **CONTRACTOR**.
- F. The **CONTRACTOR** shall have the right to dispute under the Disputes provision hereof any determination the **OWNER** makes under this Part 15. But, if the **CONTRACTOR** has failed to submit its claim within the time provided in paragraph 15.04.C and has failed to request an extension of time, it shall have no such right of appeal. In any case where the **OWNER** has determined the amount due, the **OWNER** shall pay to the **CONTRACTOR** the following:

1. If there is no right of appeal hereunder or if no timely appeal has been made, the amounts so determined by the **OWNER**; or
 2. If a dispute proceeding is initiated, the amount finally determined in such dispute proceeding.
- G.** In arriving at the amount due to the **CONTRACTOR** under this clause there shall be deducted:
1. All unliquidated advance or other payments on account therefor made to the **CONTRACTOR**, applicable to the terminated portion of the Work.
 2. Any claim which the **OWNER** may have against the **CONTRACTOR** in connection with the Contract Documents.
 3. The agreed price for, or the proceeds of sale of, any materials, supplies or other things kept by the **CONTRACTOR** or sold, under the provisions of this section, and not otherwise recovered by or credited to the **OWNER**.
- H.** If the termination hereunder is partial, before the settlement of the terminated portion of the Contract Documents, the **CONTRACTOR** may file with the **OWNER** or request in writing for an equitable adjustment of the price or prices specified in the Contract Documents relating to the continuing portion of the Work (the portion not terminated by the Notice of Termination). Such equitable adjustment as may be agreed upon shall be made in the price or prices. Nothing contained herein shall limit the right of the **OWNER** and the **CONTRACTOR** to agree upon the amount or amounts to be paid to the **CONTRACTOR** for the completion of the continued portion of the Work when the Contract Documents do not contain an established Price for the continued portion.

PART 16 MISCELLANEOUS

16.01 GIVING NOTICE

- A.** 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.
- Notice may also be given by facsimile, providing the notice is also immediately sent by first class mail, except in those cases which require an original to confirm the validity of a signature or other element of the document.

16.02 COMPUTATION OF TIME

- A.** 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 falls 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.

16.03 CORRECTION PERIOD

- A.** Nothing in the General Conditions concerning the correction period shall establish a period of limitation with respect to any other obligation which **CONTRACTOR** has under the Contract Documents. The establishment of time period relates only to the specific obligations under the Contract Documents which may be sought to be enforced, not to the time within which proceedings may be commenced to establish **CONTRACTOR**'s liability with respect to its obligations other than specifically to correct the Work.

16.04 GENERAL

- A.** Should **OWNER** or **CONTRACTOR** suffer injury or damage to its 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 responsible, the injured party shall notify the other party within a reasonable time of the first observance of such injury or damage.
- B.** 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** by paragraphs 5.05, 13.01.A, 13.06.A, 13.09.A, 14.03.A, and 15.02.A and all of the rights and remedies available to **OWNER** and **ENGINEER** under the Contract Documents, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to any of 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 Agreement.

- C. Should **OWNER** determine that **CONTRACTOR** is performing in such a fashion that **CONTRACTOR** will not complete the Project timely, **OWNER** shall give **CONTRACTOR** notice of **OWNER's** determination and **CONTRACTOR** shall have fifteen (15) days from the issuance of **OWNER's** notice within which to correct its performance and to furnish evidence satisfactory to **OWNER** that the Project will be completed timely. In the event that **CONTRACTOR** does not within said fifteen (15) days correct its performance and furnish evidence satisfactory to **OWNER** that the Project will be completed timely, **OWNER** shall have the right to remove the **CONTRACTOR** and retain a replacement **CONTRACTOR** to complete the Project. **OWNER** may thereupon withhold all payments to **CONTRACTOR** until the replacement **CONTRACTOR** has completed the Project and then determine what amounts, if any, are due **CONTRACTOR**.

PART 17 ADDRESSES

17.01 OWNER

- A. **OWNER** is the District named in the Agreement acting through its duly authorized agents. All notices, letters and communications directed to **OWNER** shall be addressed and delivered to **OWNER** at the address indicated in the Agreement, with one (1) copy to **ENGINEER**.

17.02 ENGINEER

- A. All duties and responsibilities assigned to **ENGINEER** in the Contract Documents, with the corresponding rights and authority will be assumed by the **ENGINEER** named in the Agreement and its duly authorized agents. All notices, letters and communication directed to **ENGINEER** shall be addressed and delivered to **ENGINEER** at the address indicated in the Agreement.

17.03 CONTRACTOR

- A. The business addresses of **CONTRACTOR** given in the Bid Form and **CONTRACTOR's** office at the site of the Work are hereby designated as the places to which all notices, letters, and other communication to **CONTRACTOR** will be delivered.

17.04 CHANGE OF ADDRESS

- A. Either **OWNER**, **CONTRACTOR**, or **ENGINEER** may change its address at any time by an instrument in writing delivered to the other two.

PART 18 LIQUIDATED DAMAGES

- A. Time is an essential condition of the Contract. In case the **CONTRACTOR** shall fail to fully perform and complete the Work in conformity to the provisions and conditions of the Contract Documents within the specified time limits set forth in Part 5 of the Agreement 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 specified time limits and any granted extension thereof, the sum set forth in Part 5 of the Agreement 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 a 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 its surety, or by either or both of these methods. Should the entire completion and final acceptance of the Work herein embraced, together with any modifications or additions, be delayed beyond the time herein set, it is understood and agreed that aside from any other penalty or damage, all costs of the **ENGINEERING**, observation and inspection on behalf of the **OWNER** which are incurred after the specified time limits have elapsed may be charged to the **CONTRACTOR** and be deducted from any estimate or payment otherwise due and payable to him.
- B. In case of joint responsibility for delay in the final completion of the Work, where two or more separate contracts are in force at the same time and cover work at the same site, liquidated damages assessed against any one **CONTRACTOR** for the delay shall be determined by, and in the judgment of, **ENGINEER**.

PART 19 EXISTING UNDERGROUND INSTALLATIONS

- A.** Existing underground installations such as water lines, gas lines, sewers, telephone lines, power lines, or similar concealed structures in the vicinity of the Work are indicated on the Drawings only to the extent such information was made available to or discovered by **ENGINEER** in preparing the Drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof is expressly disclaimed. Generally, service connections are not indicated on the Drawings.
- B.** **CONTRACTOR** shall be solely responsible for locating all existing underground installations, including service connections, in advance of excavating or trenching, by contacting the **OWNERs** thereof and prospecting. **CONTRACTOR** shall use its own information and shall not rely upon any information indicated on the Drawings concerning existing underground installations.
- C.** The General Conditions provisions regarding Unforeseen Physical Conditions do not apply to the existing underground installations indicated in the preceding paragraphs. Any delay, additional Work, or extra cost to **CONTRACTOR** caused by underground existing installations shall not constitute a claim for extra Work, additional payments, or damages.

PART 20 STREAMLINED SPECIFICATIONS

- A.** These Specifications are written in the streamlined or declarative style, utilizing incomplete sentences. Omissions of such words and phrases "The **CONTRACTOR** shall," "in conformity therewith," "shall be," "as shown on the Drawings," "a," "an," "the," and "all" are intentional in streamlined sections. Omitted words shall be supplied by inference in the same manner as when a note appears on the Drawings. The omission of such words shall not relieve the **CONTRACTOR** from providing all items and work described herein or indicated on the Drawings.

PART 21 HANDLING OF DISPUTES

21.01 DISPUTES

- A.** Any claim, dispute, or other matter in question between the **CONTRACTOR** and the **OWNER** and relating to the acceptability of the Work or the interpretation of the Contract Documents pertaining to the execution and progress of the Work shall be referred initially to **ENGINEER**, as specified in Section 9.06. Any such claim for which **ENGINEER** has rendered a decision, or any other claim between the **OWNER** and **CONTRACTOR**, may be submitted to alternative dispute resolution, including arbitration or mediation, or any other dispute resolution process, excluding litigation, upon the mutual consent of the parties. The parties shall determine whether any such arbitration shall be binding or non-binding. Neither party shall be compelled to participate in any alternative dispute resolution process and nothing in this paragraph shall preclude either party from pursuing any legal remedy available to it, subject to the conditions of Paragraph 9.06.B of the **OWNER-CONTRACTOR** Agreement.
- B.** If the parties agree to submit a claim, dispute, or other matter to arbitration, the Construction Industry Arbitration rules of the American Arbitration Association then obtaining shall be used, unless the parties mutually agree otherwise. An award rendered by an arbitrator or arbitrators in a binding arbitration shall be final and binding on all parties to the extent and in the manner provided by the Colorado Rules of Civil Procedure. All awards may be filed with the clerk of one or more courts, State or Federal, having jurisdiction over the party or parties against whom such award is rendered or its property, as a basis of judgment and of the issuance of execution for its collection.
- C.** The **CONTRACTOR** shall continue to perform the Work and adhere to the **CONTRACTOR's** construction schedule during all disputes or disagreements with the **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.

21.02 DISPUTES WITH THIRD PARTIES

- A.** All disputes which involve parties in addition to the **OWNER, ENGINEER** and **CONTRACTOR** shall not be the subject of arbitration, except by the mutual consent of all of the parties involved in the dispute.
- B.** **ENGINEER** shall not be deemed or considered a third party beneficiary of the Agreement or Contract Documents, nor a party thereto.

PART 22 DUTIES, RESPONSIBILITIES, AND LIMITATIONS OF THE AUTHORITY OF THE OWNER'S REPRESENTATIVE

22.01 DESCRIPTION

- A. The **OWNER's** Representative is the **OWNER's** agent and shall act as directed by and under the supervision of **OWNER**. It shall confer with **OWNER** regarding its actions. Its dealings in matters pertaining to the on-site work will in general be only with **ENGINEER** and **CONTRACTOR**. Its dealings with Sub**CONTRACTORS** will only be through **CONTRACTOR** or its superintendent.
- B. The **OWNER's** Representative shall be Cory Heiniger

22.02 DUTIES AND RESPONSIBILITIES

- A. CONFERENCES:
 - 1. Attend Preconstruction Conferences and regular project meetings. Arrange a schedule of progress meetings and other job conferences as required and notify in advance those expected to attend. Conduct meetings and maintain and circulate copies of minutes thereof.
- B. LIAISON:
 - 1. Serve as **OWNER's** liaison with **CONTRACTOR** and **ENGINEER**, working to help expedite the project to assure the scheduling requirements are met.
- C. MODIFICATIONS:
 - 1. Consider **CONTRACTOR's** suggestions for modifications in Drawings or Specifications and report them with recommendations to **ENGINEER**.
- D. REPORTS:
 - 1. Furnish **OWNER** with periodic reports of progress of work and of **CONTRACTOR's** compliance with the approved progress schedule, schedule of Shop Drawing submissions, and other schedules.
 - 2. Consult with **OWNER** in advance of scheduled major tests, inspections, or start of important phases of work.
- E. PAYMENT REQUISITIONS:
 - 1. In cooperation with **ENGINEER**, review Application for Payment with the **CONTRACTOR** for compliance with the established procedure for its submission and forward it with recommendation to the **OWNER** for payment.

23.03 LIMITATIONS OF AUTHORITY

- A. **OWNER's** Representative shall be limited in authority except upon written instructions of **OWNER** as follows:
 - 1. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment, modifications or Change Orders.
 - 2. Shall not undertake any of the responsibilities of **CONTRACTOR**, Sub**CONTRACTOR** or **CONTRACTOR's** superintendent.
 - 3. Shall not advise on or issue directions as to safety precautions and programs in connection with the Work.

END OF SECTION

SECTION 00 08 10

SUPPLEMENTARY CONDITIONS (Modifications to General Conditions)

PART 1 - GENERAL

1.01 DESCRIPTION

These Supplemental Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

1.02 AMENDMENTS

The modifications to the General Conditions are as follows:

Part 1 -- Definitions

- A. Add the following definitions:
1. Add -- to include in the paragraph, subparagraph or article specifically named and at the place specifically stated that which immediately follows.
 2. Amend -- To delete the paragraph, subparagraph or article specifically named and insert in its place that which immediately follows.
 3. Bad Weather Day -- A day in which work was suspended for more than four (4) hours during a normal working day because weather conditions limited work. Progress substantially less than normal.
- B. Add the following to existing definitions:
1. Substantial Completion -- The work will be considered substantially complete when all work specified as part of the contract documents is functionally complete, all tests have been performed, and the project is ready for use by the **OWNER**.

Part 2 -- Preliminary Matters

- A. Replace paragraph 2.02A with the following:
- 2..02A The **CONTRACTOR** will be furnished with out charge up to three (3) copies of the project specifications and three (3) copies of the drawings. The **CONTRACTOR** shall keep at least one copy of all specifications and plans at the job site at all times.
- Additional copies of such drawings and specifications in excess of the number furnished without charge may be obtained from the **OWNER** for the cost of printing.

Part 3 -- Contract Documents: Intent and Reuse

- A. Replace paragraph 3.01B with the following:
- 3.01B The Contract Documents are complementary; what is called for by one is as binding as if called for by all. Any discrepancies between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings and Specifications shall be immediately reported to the **ENGINEER** in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the **CONTRACTOR** after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the **CONTRACTOR's** risk if done prior to receipt of the **ENGINEER's** corrections.
- B. Add the following to paragraph 3.01.C:
- In case of conflict between the drawings and contract Technical Specifications, the drawings shall govern. Figure dimensions on drawings shall govern over scale dimensions, and detailed drawings shall govern over general drawings. Project specifications shall govern over District engineering specifications.

Part 4 -- Availability of Lands; Physical Conditions; Reference Points:

- A. Add the following to paragraph 4.01A:

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 corners 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, due to this 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 warranty period expired.

- B. Add the following to paragraph 4.02 A:

All utility locations shown on the plans are approximate and represent the **ENGINEER's** best efforts with the information given to the **ENGINEER**. **CONTRACTOR** should check with all utility companies prior to bidding. **CONTRACTOR** shall call for field location of all utilities prior to construction.

- C. Add the following to paragraph 4.03 A:

If the cost to remedy such subsurface or latent physical conditions exceed the amount appropriated for this project, the **OWNER** retains the right, after giving **CONTRACTOR** seven days written notice, to terminate the Agreement. In such case, **CONTRACTOR** shall be paid for all Work executed and any expense sustained plus reasonable termination expenses.

- D. Add the following to paragraph 4.04 A:

Professionally qualified personnel means a Professional Land Surveyor registered in the State of Colorado. The P.L.S. is to provide stamped documentation of the replacement or relocation at the **CONTRACTOR's** expense.

Part 5 -- Bonds and Insurance:

- A. In accordance with Part 5 of the General Conditions, the **CONTRACTOR** shall provide the following coverages and shall submit satisfactory documentation of such to the **OWNER** prior to commencing work at the site.

1. Worker's Compensation and Employers Liability: The **CONTRACTOR** shall be protected from all claims by employees which for any reason may not fall within the provisions of a workmen's compensation law. The limits of liability shall be not less than:

Workmen's' Compensation:	Statutory
Employers' Liability:	\$100,000 per person

2. Comprehensive General Liability: The **CONTRACTOR** shall provide comprehensive general liability insurance which shall include protection against claims insured by usual personal injury liability coverage, an "all states" endorsement to insure the contractual liability assumed by **CONTRACTOR** under the indemnification provisions of the General Conditions. The **CONTRACTOR** shall also provide "Completed Operations and Products Liability" coverage for a period of not less than two years after the final payment. To the degree that the **CONTRACTOR's** Work or Work under his direction may include blasting, explosive conditions or underground operations, the comprehensive general liability shall not exclude blasting, explosion, collapse of buildings or damage to underground property. Such liability limits shall not be less than:

Bodily Injury:	\$1,000,000.00 each person
	\$1,000,000.00 each occurrence
Property Damage:	\$1,000,000.00 each occurrence
	\$1,000,000.00 aggregate

3. Comprehensive Automobile Liability: **CONTRACTOR** shall provide comprehensive protection against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles. The policy shall cover operation on or off the site of all vehicles licensed for highway use, whether they are owned, non-owned or hired. The liability limits shall not be less than:

Bodily Injury:	\$1,000,000.00 each person \$1,000,000.00 each occurrence
Property Damage:	\$1,000,000.00 each occurrence \$1,000,000.00 aggregate

Part 6 -- **CONTRACTOR's Responsibilities:**

- A. Add the following to paragraph 6.02 A:
Regular working hours shall be defined as the daytime hours, Monday thru Friday, between 7:00 a.m. and 5:30 p.m. Mountain Standard Time.
- B. Add the following to paragraph 6.06 A:
The **CONTRACTOR** and subcontractor must hold a valid Contractor's License in the applicable jurisdictions. No substitutions will be accepted.
- C. Add the following to paragraph 6.10 A:
Record or as-built drawings shall be submitted to and approved by **ENGINEER** prior to the **CONTRACTOR's** application for final payment. Drawings and documents shall be in the form as described in the Technical Specifications to the Contract.

Part 9 -- **ENGINEER's Status During Construction:**

- A. Add the following to paragraph 9.05:
A. General:

ENGINEER shall furnish a Resident Project Representative (RPR), assistants and other field staff to assist **ENGINEER** in observing performance of the work of **CONTRACTOR**.

Through more extensive on-site observations of the work in progress and field checks of materials and equipment by the RPR and assistants, **ENGINEER** shall take reasonable measures to provide further protection for **OWNER** against defects and deficiencies in the work of **CONTRACTOR**; but, the furnishing of such services will not make **ENGINEER** responsible for or give **ENGINEER** control over construction means, methods, techniques, sequences, or procedures or for safety precautions or programs, or responsibility for **CONTRACTOR's** failure to perform the Work in accordance with the Contract Documents and in particular the specific limitations set forth in paragraph 1.6 of the Agreement are applicable.

The duties and responsibilities of the RPR are limited to those of **ENGINEER** in **ENGINEER's** agreement with the **OWNER** and in the construction Contract Documents, and are further limited and described as follows:

1. RPR is **ENGINEER's** agent at the site, will act as directed by and under the supervision of **ENGINEER**, and will confer with **ENGINEER** regarding RPR's actions. RPR's dealings in matters pertaining to the on-site work shall in general be with **ENGINEER** and **CONTRACTOR** keeping **OWNER** advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of **CONTRACTOR**. RPR shall generally communicate with **OWNER** with the knowledge of and under the direction of **ENGINEER**.
- B. Duties and Responsibilities of RPR:
 1. Schedules: Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by **CONTRACTOR** and consult with **ENGINEER** concerning acceptability.
 2. Conferences and Meetings: Attend meetings with **CONTRACTOR**, such as preconstruction conferences, progress meetings, job conferences, and other project-related meetings, and prepare and circulate copies of minutes thereof.
 3. Liaison:

- a. Serve as **ENGINEER's** liaison with **CONTRACTOR**, working principally through **CONTRACTOR's** superintendent and assist in understanding the intent of the Contract Documents; and assist **ENGINEER** in serving as **OWNER's** liaison with **CONTRACTOR** when **CONTRACTOR's** operations affect **OWNER's** on-site operations.
 - b. Assist in obtaining from **OWNER** additional details or information, when required for proper execution of the Work.
4. Shop Drawings and Samples:
 - a. Record date of receipt of Shop Drawings and samples.
 - b. Receive samples which are furnished at the site by **CONTRACTOR**, and notify **ENGINEER** of availability of samples for examination.
 - c. Advise **ENGINEER** and **CONTRACTOR** of the commencement of any Work requiring a Shop Drawing of sample if the submittal has not been approved by **ENGINEER**.
5. Review of Work, Rejection of Defective Work, Inspections, and Tests:
 - a. Conduct on-site observations of the Work in progress to assist **ENGINEER** in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to **ENGINEER** whenever RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise **ENGINEER** of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that **CONTRACTOR** maintains adequate records thereof; and observe, record and report to **ENGINEER** appropriate details relative to the test procedures and startups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to **ENGINEER**.
 6. Interpretation of Contract Documents: Report to **ENGINEER** when clarifications and interpretations of the Contract Documents are needed and transmit to **CONTRACTOR** clarifications and interpretations as issued by **ENGINEER**.
 7. Modifications: Consider and evaluate **CONTRACTOR's** suggestions for modifications in drawings or specifications and report with RPR's recommendations to **ENGINEER**. Transmit to **CONTRACTOR** and **OWNER** decisions as determined by the **ENGINEER** or the Partnering Team.
 8. Records:
 - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, **ENGINEER's** clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
 - b. Keep a diary or log book, recording **CONTRACTOR** hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Order or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to **ENGINEER**.
 - c. Record names, addresses and telephone numbers of all **CONTRACTORS**, subcontractors and major suppliers of materials and equipment.

9. Reports:
 - a. Furnish **ENGINEER** periodic reports as required of progress of the Work and of **CONTRACTOR's** compliance with the progress schedule and schedule of Shop Drawing and sample submittals.
 - b. Consult with **ENGINEER** in advance of scheduled major tests, inspections or start of important phases of the Work.
 - c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from **CONTRACTOR** and recommend to **ENGINEER** Change Orders, Work Directive Changes, and Field Orders.
 - d. Report immediately to **ENGINEER** and **OWNER** upon the occurrence of any accident.
 10. Payment Requests: Review applications for payment with **CONTRACTOR** for compliance with the established procedure for their submission and forward with recommendations to **ENGINEER**, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.
 11. Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by **CONTRACTOR** are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to **ENGINEER** for review and forwarding to **OWNER** prior to final payment for the Work.
 12. Completion:
 - a. Before **ENGINEER** issues a Certificate of Substantial Completion, submit to **CONTRACTOR** a list of observed items requiring completion or correction.
 - b. Conduct final inspection in the company of **ENGINEER**, **OWNER** and **CONTRACTOR** and prepare a final list of items to be completed or corrected.
 - c. Observe that all items on final list have been completed or corrected and make recommendations to **ENGINEER** concerning acceptance.
- C. Limitations of Authority:

Resident Project Representative:

1. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by **ENGINEER**.
2. Shall not exceed limitations of **ENGINEER's** authority as set forth in the Agreement or the Contract Documents.
3. Shall not undertake any of the responsibilities of **CONTRACTOR**, subcontractors or **CONTRACTOR's** superintendent.
4. Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences, or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
5. Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.
6. Shall not accept Shop Drawing or sample submittals from anyone other than **CONTRACTOR**.
7. Shall not authorize **OWNER** to occupy the Project in whole or in part.

8. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by **ENGINEER**.

Part 11 -- Change of Contract Price:

- A. Part 11 -- Contract Price is hereby amended as follows:

It is the intent of the Contract Documents that all payment for services of the **CONTRACTOR** shall be based on the Contract prices, except as modified by Change Order. No work shall be performed by the **CONTRACTOR** for which he intends to request a change in the Contract Price until such time as a Change Order has been executed for the work, unless an emergency condition exists requiring the **CONTRACTOR** to perform such work prior to execution of a Change Order. If such an emergency condition exists, then the **CONTRACTOR** shall keep accurate records of all labor, materials and equipment employed on such emergency work. a representative of the **ENGINEER** or **OWNER** shall validate all records of such work as near the time of the emergency work as possible. If an emergency condition exists the contractor should notify the **ENGINEER** and **OWNER** as quickly as practical of the condition and the work being performed.

If the **CONTRACTOR** is required by the **ENGINEER** or **OWNER** to perform work for which the **CONTRACTOR** feels additional compensation is due but a Change Order is not executed, then the **CONTRACTOR** shall formally notify the **ENGINEER** in writing of such prior to commencing the work and shall keep accurate records of all labor, materials and equipment employed for such work. All records shall be validated by a representative of the **ENGINEER** or **OWNER** as the work in question proceeds. The decision as to the validity of such additional compensation shall be accomplished in accordance with Part 11 of the General Conditions.

Part 12 -- Change of Contract Time:

- A. Add the following to paragraph 12.02 B:

Extension of Contract Time due to bad weather days will be considered only when the total number of such days exceed ten (10) percent of the Contract Time.

Part 13 -- Warranty and Guarantee; Tests and Inspections;
Correction, Removal or Acceptance of Defective Work:

- A. Add the following to paragraph 13.03 A:

CONTRACTOR is to give **ENGINEER** twenty-four (24) hours notice prior to all required tests and inspections. In the event or rescheduling of the test or inspection, it is the **CONTRACTOR's** responsibility to notify the **ENGINEER** as to the reason for the rescheduling and the rescheduled time.

The effective start date of the one year warranty period is the date that **OWNER** accepts improvements for the required warranty period. (See General Conditions Part 14.10 A)

Part 16 -- Miscellaneous;

- A. Add the following:

16.04 D. The **CONTRACTOR** agrees to comply, and require all subcontractors to comply, with all provisions of the Colorado Anti-discrimination Act of 1957, as amended, C.R.S., Section 24-34-301 to 308, as amended, and all provisions of any other federal or state statute regarding equal employment opportunity in the performance of this Contract, including Executive Order 11246, as amended.

END OF SECTION

Division 1 – General Requirements

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY THE TECHNICAL SPECIFICATIONS

- A. A description of the work to be performed generally includes: the replacement of a gravity sewer line, pipe boring, manholes, landscaping, revegetation, concrete repair, curb & gutter repair, sewer tie-in, asphalt placement, and other work incidental to the project as shown in the enclosed drawings and described herein. Qualifications to the Bidder should include the ability to provide proof of insurance as described in the contract documents and the ability to deliver the work in conformance with specifications within the contract time.
- B. Qualifications of the **BIDDER** and/or **BIDDER's** subcontractor(s) should include experience in pipe boring, pipeline installation, buried concrete manholes, support of existing wet and dry utilities, traffic control, the ability to post performance and payment bonds, and ability to deliver the work in conformance with the specifications within the contract time.
- C. Water, wastewater, gas, and electrical services and main lines must provide uninterrupted service to the surrounding homes at all times.
- D. A construction dewatering permit must be obtained through the Colorado Department of Public Health and Environment (CDPHE) Colorado Discharge Permit System. This cost must be included in the **BIDDER's** overall proposal.

1.02 CONTRACTOR'S RESPONSIBILITIES

- A. Supervision - The **CONTRACTOR** will supervise and direct the work. It will be solely the Contractor's responsible for the means and methods, techniques, and procedures of construction. The **CONTRACTOR** will employ and maintain on the work a qualified Supervisor or Superintendent who shall have been designated in writing by the **CONTRACTOR** and the **CONTRACTOR's** representative at the site. The Supervisor shall have full authority to act on behalf of the **CONTRACTOR**, and all communications given to the Supervisor shall be as binding as if given to the **CONTRACTOR**. The Supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work. The Supervisor shall not be changed except with the consent of the **ENGINEER**, unless the Supervisor has proven to be unsatisfactory to the **CONTRACTOR** and ceases to be in his employ.
- B. Subcontracting:
 - 1. **CONTRACTOR** may utilize the services of specialty Subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty Subcontractors.
 - 2. The **CONTRACTOR** shall not award work to Subcontractor(s) in excess of fifty (25%) percent of the Contract Price without prior written approval of the **OWNER**.
 - 3. The **CONTRACTOR** shall be fully responsible to the **OWNER** for the acts and omissions of his Subcontractors, and or persons either directly or indirectly employed by them, as he is for the acts of persons directly employed by him.
 - 4. The **CONTRACTOR** shall cause appropriate provisions to be inserted in all Subcontracts relative to the work to bind Subcontractors to the **CONTRACTOR** insofar as applicable to the work of

Subcontractors and to give the **CONTRACTOR** the same power as regards terminating any subcontract that the **OWNER** may exercise over the **CONTRACTOR** under any provision of the Contract Documents.

5. Nothing contained in this Contract shall create any contractual relations between any Subcontractor and the **OWNER**.

C. Safety and Protection

1. **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:
 - All employees on the work and other persons who may be affected thereby;
 - All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and
 - Other property at the site or adjacent thereto, including, but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.
2. **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.

D. Contractor's Use of Premises

1. **OWNER** controls all lands upon which the work is to take place. 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. The Contractor shall protect carefully from disturbance or damage, all land monuments and property corners until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed. The Contractor 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 or executing said work, due to this 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 warranty period expired.
2. The **CONTRACTOR** shall be responsible for all utilities required for construction at no cost to the **OWNER**.
3. Necessary sanitary conveniences for the use of laborers shall be properly secluded from public observation, shall be erected and maintained by the **CONTRACTOR** at such points acceptable to the **ENGINEER**.

1.03 CONSTRUCTION OBSERVATION

- A. The **OWNER** and **ENGINEER** will supply construction observation services during construction. Observation will be provided at no additional cost to the **CONTRACTOR** between the hours of 7:00 a.m. and 5:00 p.m. and on days determined by the **OWNER** and the **ENGINEER**. Any observation time required outside of the above indicated hours will be billed to the **CONTRACTOR**, or withheld from payments due the **CONTRACTOR**, at a rate of 1.5 times the **ENGINEER's** billing rate for observation plus a twenty (20%) percent administrative charge.

1.04 SEQUENCE OF WORK

- A. The **CONTRACTOR** shall coordinate his efforts with the **OWNER** so as to minimize disruption of existing service and inconvenience to adjacent property owners.
 - 1. Set forth proposed work sequence and schedule in accordance with Section 01 32 16 - Construction Schedules.
 - 2. Refer to Section 01 57 00 - Temporary Controls for additional requirements.
- B. Procedures and methods other than those specified will be considered by **ENGINEER** and **OWNER**, provided they afford equivalent continuity of operations.
- C. Submit and update Progress Schedules and subschedules in accordance with Section 01310 - Construction Schedules.
- D. Discuss Sequence of Work and Notice Required at Progress Meetings.
 - 1. Review with and obtain **ENGINEER's** and **OWNER's** input to **CONTRACTOR's** initial scheduling of Work sequence during Preconstruction Conference.
 - 2. Review any changes in scheduling at regularly scheduled Progress Meetings.
 - 3. Schedule additional construction meetings required to discuss work sequence.
 - 4. Refer to Section 01 32 16 - Construction Schedules for additional requirements on Progress Schedules.
- E. Inspection by Public Agencies

Provide proper facilities for such access and inspection.
- F. It will be the **CONTRACTOR's** responsibility to schedule and sequence his activities so as to best meet environmental conditions imposed by winter weather.
- G. The **CONTRACTOR** shall coordinate his efforts with others so as to avoid conflicts and work slowdowns.

1.05 MAINTENANCE OF ACCESS

- A. Conduct work to interfere as little as possible with public or private travel, whether vehicular or pedestrian.
 - 1. Whenever it is necessary to cross, close, or obstruct roads, driveways and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
 - 2. Give owners of private drives reasonable notice before interfering with accesses

1.06 FENCES

- A. Refer to drawings for the removal and replacement of fences.

- B. Do not relocate or dismantle fences not specifically outlined in the construction drawings which interfere with construction operations before obtaining written permission from the fence owner with an agreement as to the length of time the fence may be left relocated or dismantled.
- C. At the completion of Work, replace fences to their original condition and to their original location unless otherwise indicated on drawings or in specifications.
- D. Refer to construction drawings for additional requirements.

1.07 UNDERGROUND OBSTRUCTIONS

- A. Protect from damage any underground pipes, utilities, or structures encountered during construction.

Restore any damaged underground obstructions to their original condition at no cost to the **OWNER** unless evidence of other arrangements satisfactory to all parties is presented to the **OWNER**.

- B. Before commencing work, obtain information concerning location, type, and extent of concealed existing utilities on the site and adjacent properties.
 - 1. Consult records and personnel of local utility companies, municipal utility departments, telephone companies, and cable television company.
 - 2. File "Notice of Excavation" with these agencies prior to commencing work.
- C. Underground obstructions known to the **ENGINEER** are shown on the drawings or otherwise referred to in the specifications.
 - 1. Locations shown may prove to be inaccurate and other obstructions not shown may be encountered.
 - 2. **CONTRACTOR** is responsible to verify actual locations and to protect or restore all underground obstructions encountered.

END OF SECTION

SECTION 01 12 16

SEQUENCE OF WORK

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Work Included: This Section covers the organizing, staging and sequencing of the Work.
- B. Related Work Specified Elsewhere:
 - 1. Section 01 11 00, Summary of Work
 - 2. Section 01 31 13, Coordination

PART 2 – EXECUTION

2.01 GENERAL

- A. The **CONTRACTOR** shall coordinate his efforts with the **OWNER** so as to minimize disruption of use of existing facilities and future facilities.
- B. Procedures and methods other than those specified will be considered by **ENGINEER** and **OWNER**, provided they afford equivalent continuity of operations.
- C. Submit and update Progress Schedules and sub-schedules.
- D. Inspection by Public Agencies
- E. Provide proper facilities for such access and inspection.
- F. It will be the **CONTRACTOR's** responsibility to schedule and sequence his activities so as to best meet environmental conditions imposed by inclement weather.

2.02 WORK SEQUENCE

- A. The following phased schedule for Schedule A should be followed
 - 1. Phase I – Mobilization
 - 2. Phase II – Staging of traffic control & equipment
 - 3. Phase III – Installation of furthest upstream manhole at Dorris Ave and 1st Street
 - 4. Phase IV – Installation of midpoint manhole in Dorris Ave
 - 5. Phase V – Installation of sewerline in Dorris Ave Road
 - 6. Phase VI – Cleaning, Jetting, and TV'ing, Testing
 - 7. Phase VII – Resurfacing Dorris Ave.
 - 8. Phase IX – Landscaping / Revegetation / Final Walkthrough / Punchlist / Demobilization
 - 9. Phase X – Contract Closeout

END OF SECTION

SECTION 01 20 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Review Applications for Payment as prepared by **ENGINEER** in accordance with the General and Supplemental General Conditions and the Agreement Between **OWNER** and **CONTRACTOR**.
- B. Additional Requirements Specified Elsewhere:
 - 1. Progress Payments, Retainage and Final Payment: General Conditions and Supplemental General Conditions, Standard Specifications, and Agreement between Owner and Contractor.
 - 2. Construction Schedules: Section 01 32 16
 - 3. Contract Closeout: Section 01 77 00

1.02 FORMAT AND DATA REQUIRED

- A. Applications for Payment prepared by the **ENGINEER** with itemized data typed on white paper continuation sheets.
- B. Itemized data on continuation sheets
Format, schedules, line items, and values: Those of the approved Schedule of Values.

1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form Prepared by **ENGINEER**.
 - 1. Required information completed, including that for Change Orders executed prior to the date of submittal of application.
 - 2. Summary of dollar values to agree with the respective totals indicated on the continuation sheets.
- B. Continuation Sheets
 - 1. Total list of all scheduled component items of Work, with item number and the scheduled dollar value for each item.
 - 2. Dollar value in each column for each scheduled line item when work has been performed.
 - 3. Each Change Order executed prior to the date of submission shall be listed at the end of the continuation sheets.
List by Change Order the number and description as for an original component item of work.
- C. **CONTRACTOR** shall execute certification with the signature of a responsible officer of the **CONTRACTOR's** firm.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When **OWNER** or **ENGINEER** requires substantiating data, **CONTRACTOR** shall submit suitable information with a cover letter identifying:
 - 1. Project name and number
 - 2. Application number and date
 - 3. Detailed list of enclosures

- B. Submit one (1) copy of data and cover letter for each copy of application.

1.05 SCHEDULE OF VALUES

- A. Refer to General Conditions for requirements.
- B. Where payment is to be based on unit bid prices, correlate Schedule of Values with bid items.
- C. Where payment is to be based on fixed price correlate Schedule of Values with divisions and sections of specifications unless otherwise approved by the **ENGINEER**.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. **ENGINEER** shall complete Application form as specified for progress payments.
- B. Continuation sheets used for presenting the final statement of accounting as specified in Section 01 77 00-Contract Closeout.

1.07 SUBMITTAL PROCEDURE

- A. Review Applications for Payment as prepared by **ENGINEER** as stipulated in the Contract Documents and specified in the pre-construction conference.

CONTRACTOR shall execute certification with the signature of a responsible officer of the **CONTRACTOR's** firm.

- B. When certification by **CONTRACTOR** is completed, **ENGINEER** will transmit a Certification for Payment to **OWNER**, with a copy to **CONTRACTOR**.

1.08 BID SCHEDULE PRICES

- A. Where lump sum prices are given for a described portion of the work, that price shall cover all installation and materials incidental to completing that portion of work, as shown on the drawings and as described in the Project Manual.
- B. Quantities given for lump sum items are estimates only. The **CONTRACTOR** should satisfy himself as to the actual quantities required to complete the work described in the plans and these specifications.
- C. Quantities given in the bid form are estimates for the purpose of evaluating bids, consequently, some differences may arise in actual and bid quantities.

D. BID SCHEDULE A

1. **Item 1 – General Requirements:** This item shall be quoted as “lump sum” (LS), and shall include all general requirements necessary by the **CONTRACTOR** to enter into a contract with the **OWNER** as well as the necessary requirements to complete the Work as described in the Summary of Work, including bonds, insurance certificates, mobilization, demobilization, coordination, materials, labor, equipment, and all work incidental thereto to perform the Work as shown on the drawings and specified herein.
2. **Item 2 – 60” Manholes:** This item shall be quoted as “each” (EA) and shall include all materials, equipment and labor necessary to perform all excavation, installation, trenching, dewatering, backfill, pipe, crossings, bypass operations, grade rings, lids, steps, bases, layout, bituminous damp-proofing, compaction, traffic control, asphalt repair, curb/gutter repair, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein.

3. **Item 3 – 8” SDR26 PVC Along Dorris Ave.** This item shall be quoted per “linear foot” (LF) and shall include all materials, equipment and labor necessary to perform all excavation, installation, trenching, dewatering, backfill, pipe, crossings, bypass operations, grade rings, lids, steps, bases, layout, bituminous damp-proofing, compaction, traffic control, asphalt repair, curb/gutter repair, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein
4. **Item 4 – Private Service Connections.** This item shall be quoted as “Each” (EA) and shall include all materials, equipment and labor necessary to perform all excavation, installation, trenching, dewatering, backfill, pipe, crossings, bypass operations, grade rings, lids, steps, bases, layout, bituminous damp-proofing, compaction, traffic control, asphalt repair, curb/gutter repair, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein
5. **Item 5 - Tie-in to 2nd Ave. Sewerline/Manhole:** This item shall be quoted as “lump sum” (LS) and shall include all materials, equipment and labor necessary to perform all excavation, installation, trenching, dewatering, backfill, pipe, bypass operations, grout, inverts, invert modifications, knockouts, covers, grade rings, lids, steps, bases, layout, bituminous damp-proofing, compaction, traffic control, asphalt repair, curb/gutter repair, bypass pumping, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein.
6. **Item 6 – Dorris Ave Resurfacing:** This item shall be quoted as “lump sum” (LS) and shall include all materials, equipment and labor necessary to perform all excavation, installation, trenching, dewatering, backfill, grade rings, lids, steps, bases, layout, bituminous damp-proofing, compaction, traffic control, asphalt repair, curb/gutter repair, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein.
7. **Item 7 – Dewatering.** This item shall be quoted as “lump sum” (LS) and shall include all materials, equipment and labor necessary to perform all excavation, installation, trenching, dewatering, bypass operations, compaction, traffic control, asphalt repair, curb/gutter repair, permitting, treatment, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein.
8. **Item 8 –Traffic Control** This item shall be quoted as “lump sum” (LS) and shall include all materials, equipment and labor necessary to perform all layout, compaction, traffic control, asphalt repair, curb/gutter repair, bypass pumping, final grading, cleanup, testing and all work incidental thereto to complete the work as shown on the drawings and specified herein that provides continuous access to private residences, including notifications of construction to individual properties as required.
9. **Item 9 – Erosion & Stormwater Control & Permit:** This item shall be quoted as “lump sum” (LS) and shall include all silt fencing, erosion-control blankets, spoil removal/disposal, inlet protection, drainageway protection, acquisition of all permits, and all work incidental thereto to perform the work as shown on the drawings and specified herein.

END OF SECTION

SECTION 01 31 13

COORDINATION

PART I – GENERAL

1.01 DESCRIPTION

- A. Coordinate job operations to achieve the most efficient work progress.
- B. Coordinate efforts with OWNER to minimize utility disruptions and customer inconveniences.

1.02 GENERAL

- A. Work included in these Technical Specifications is to be performed under the responsibility of a single prime contract.
- B. CONTRACTOR is responsible for coordination of all Work, whether performed by his own personnel or his subcontractors.
- C. CONTRACTOR shall maintain procedures necessary to keep his workmen and suppliers informed of project progress so as not to unnecessarily delay completion of the Work.

1.03 COORDINATION WITH UTILITIES

- A. The CONTRACTOR is to coordinate construction activities with affected utilities.

1.04 COORDINATION WITH OTHERS

- A. The CONTRACTOR is to coordinate construction activities with affected utilities.
- B. The CONTRACTOR is to coordinate construction activities with the Town of Paonia. CONTRACTOR must indicate to the Town of Paonia 48 hours in advance any activities which may require the shutdown or bypassing of any utilities or other facilities.
- C. The CONTRACTOR must coordinate and reimburse the Town of Paonia for any construction or dewatering activities which may require the use of Town of Paonia equipment, facilities, or power.

END OF SECTION

SECTION 01 32 16

CONSTRUCTION SCHEDULES

PART I

1.01 GENERAL

- A. Within ten (10) after the **OWNER** awards the project for construction, the **CONTRACTOR** shall prepare and submit to the **ENGINEER** estimated construction progress schedules for the Work, with sub-schedules of related activities which are essential to the progress of the Work.
- B. Submit revised progress schedules periodically.
- C. **OWNER** may require **CONTRACTOR** to add to his plant, equipment or construction forces, as well as increase the working hours, if operations fall behind schedule at any time during the construction period.
- D. Related Requirements Specified Elsewhere
 - 1. Standard Specifications
- E. Additional Requirements Specified Elsewhere
 - 1. Summary of Work: Section 01 11 00
 - 2. Shop Drawings: Section 01 33 32

1.02 FORM OF SCHEDULES

- A. Prepare schedules in the form of a horizontal bar chart.
 - 1. Provide separate horizontal bar for each trade or operation.
 - 2. Horizontal time scale: Identify the first work day of each week.
 - 3. Scale and spacing: To allow space for notations and future revisions.
 - 4. Maximum sheet size: 24" x 36".
- B. Computer generated schedule
 - 1. Network analysis system may be utilized in lieu of bar chart.
- C. Format of Listings
 - 1. The chronological order of the start of each item of work.

1.03 CONTENT OF SCHEDULES

- A. Construction Progress Schedules to include:
 - 1. The complete sequence of construction by activity.
 - 2. The dates for the beginning, and completion of, each major element in each major area of construction, including but not limited to:
 - a. Mobilization
 - b. Submittals
 - c. Site preparation
 - d. Installation of new manholes
 - e. Installation of collection pipeline
 - f. Bypass and dewatering services, as required
 - g. Substantial completion
 - h. Final completion
 - i. Demobilization

3. Projected percentage of completion for each item, as of the date on which each scheduled Application for Payment is due.
 4. Complete projected progress payment schedule.
- B. Schedule of Submittals for Shop Drawings and Product Data to include:
1. The dates for **CONTRACTOR**'s submittals.
 2. The dates approved submittals will be required from the **ENGINEER**.
Extensions of time for delays in submittal review and distribution will only be allowed as provided for in Section 01 33 32.
- C. Products Delivery Schedule
- Show delivery dates for all major items of material and equipment.

1.04 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule.
1. Major changes in scope
 2. Activities modified since previous submission
 3. Revised projections of progress and completion
 4. Revisions to projected progress payment schedule
 5. Other identifiable changes
- C. Provide a narrative report as needed to define:
1. Problem areas, anticipated delays, and the impact on the schedule
 2. Corrective action recommended and its effect

1.05 SUBMISSIONS

- A. Submit initial schedules within ten (10) days after effective date of Agreement.
1. **ENGINEER** will review Schedules and return review copy within ten (10) days after receipt.
 2. If required, resubmit within seven (7) days after return of review copy.
- B. Submit revised progress schedules with each Application for Payment.
- C. Number of copies required at each submission: One electronic copy to Owner and Engineer

1.06 DISTRIBUTION

- A. After review, **ENGINEER** will distribute copies of schedules to:
1. **OWNER**.
 2. Resident Project Representative.
 3. One (1) copy to be retained in **ENGINEER**'s file.
 4. One (1) copy to **CONTRACTOR** to be kept on file at **CONTRACTOR**'s field office.
 5. Remainder to **CONTRACTOR** for his distribution following modifications if required.
- B. Schedule recipients will report promptly to **ENGINEER** and **CONTRACTOR**, in writing, any problems anticipated by the projections shown on the schedules.

END OF SECTION

SECTION 01 32 23

SURVEY DATA

PART I – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. CONTRACTOR is responsible for all surveying and construction staking.
- B. OWNER will provide required benchmarks to initiate and control construction staking.
- C. CONTRACTOR will be responsible for the maintenance of control points, bench marks and construction stakes.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

The CONTRACTOR shall submit to the ENGINEER for approval all submittals required by the General Conditions and these Specification sections. Submittal shall be submitted on form 01300-A or equal.

1.02 INSURANCE CERTIFICATES

Refer to original set of General Conditions for submittal requirements. Submit updated certificates as necessary to verify current coverage.

1.03 SCHEDULE OF VALUES

Refer to original set of General Conditions for requirements. Where payment is to be based on unit bid prices, correlate schedule of values with Divisions and Sections of Specifications unless otherwise approved by the ENGINEER. If separate payment is to be requested for materials suitably stored but not installed, segregate delivered costs from installation costs, including overhead and profit.

1.04 CONSTRUCTION SCHEDULE

(See Section 01 32 16 for Construction Schedule Submittal details).

1.05 SHOP DRAWINGS

(See Section 01 33 32 for Shop Drawing Submittal details).

1.06 PROJECT RECORD DOCUMENTS

A. Maintenance of Documents:

1. Maintain at job site one record copy of Contract Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, other modifications to the Contract, field test records, and other approved documents submitted by CONTRACTOR in compliance with specification requirements.
2. Maintain documents at the project site apart from documents used for construction. Do not use record documents for construction purposes. Maintain records in clean, legible condition. Make documents available at all times for inspection by the ENGINEER and OWNER.

B. Recording: Label each document "PROJECT RECORD COPY" in 2 inch high printed letters. Keep record documents current. Do not permanently conceal any work until required information has been recorded.

1. Contract Documents: Legibly mark most appropriate drawing to record, where applicable:

- Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
- Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

- Field changes of dimension and detail made during construction process.
 - Changes made by Change Order or Field Order.
 - Details not on original Contract Drawings.
2. Specifications and Addenda: Legibly mark up each section to record:
- Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - Changes made by Change Order or Field Order.
 - Other matters not originally specified.
3. Submittal:
- At completion of project, deliver record documents to the ENGINEER.
 - Accompany submittal with transmittal letter, in duplicate, containing date; project title and number; CONTRACTOR's name and address; title and number of each record document; certification that each document has been prepared and approved by either the CONTRACTOR or his authorized representative.

END OF SECTION

Submittal Description: _____ Submittal No.: _____
 Spec. Section: _____

	Routing	Date Sent	Date Received
OWNER:	Contractor/Engineer		
PROJECT:	Engineer/Contractor		
CONTRACTOR:			

- We are sending you: Attached
 Under separate cover via _____
 Submittals for review and comment
 Product data for information only

Remarks: _____

Item	Copies	Date	Section No.	Description	Review action ^a	Reviewer initials	Review comments attached

^aNote: NET = No exceptions taken; MCN = Make corrections noted; A&R = Amend and resubmit; R = Rejected, Develop Replacement
 Attach additional sheets if necessary.

Contractor

Certify either A or B:

- A. We have verified that the material or equipment contained in this submittal meets all the requirements, including coordination with all related work, specified (no exceptions).
 B. We have verified that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

No.

Deviation

Certified by: _____
 Contractor's Signature

SECTION 01 33 32

SHOP DRAWINGS

PART I – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The CONTRACTOR shall submit to the ENGINEER for approval all shop drawings required by the Specification sections.

1.02 SHOP DRAWINGS

- A. Shop drawings shall be prepared by a qualified detailer for CONTRACTOR, subcontractor, supplier, or manufacturer, and shall illustrate some portion of the work, showing fabrication, layout, setting, or erection details.
- B. Identify details by reference to sheet and detail numbers shown on Contract Drawings. Use same symbols used on Contract Drawings to identify shop drawing details wherever practicable.

1.03 PRODUCT DATA

- A. Submit manufacturer's standard schematic drawings:
 - 1. Modify drawings to delete information which is not applicable to the project.
 - 2. Supplement standard information to provide additional information applicable to project.
- B. Submit manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required, performance characteristics and capabilities, wiring diagrams and controls, and any other pertinent data applicable to the project.
- C. Submit manufacturer's certificate of compliance certifying to compliance with specification requirements, applicable reference standards and test data requirements. Include reference to the specification section and paragraph with which the product or materials is intended to comply.

1.04 CONTRACTOR RESPONSIBILITIES

- A. CONTRACTOR shall submit five (5) copies of each shop drawing required.
- B. Submittals shall be made by CONTRACTOR to the ENGINEER with a transmittal form or letter and not by subcontractors, suppliers or manufacturers. CONTRACTOR shall review, stamp with his approval, and submit in orderly sequence all submittals required by the specifications. By approving and submitting items, CONTRACTOR represents that he has verified all field measurements, field construction criteria, materials, catalog numbers, and similar data, and has coordinated each shop drawing with requirements of the project.
- C. The CONTRACTOR shall not begin work which requires submittals until the ENGINEER reviews and approves submittals. The ENGINEER will return an approved copy of the submittal to the CONTRACTOR.
- D. CONTRACTOR's responsibility for errors and omissions in submittals, or for deviations in submittals from requirements of the Contract Documents, shall not be relieved by review of submittals unless ENGINEER gives written acceptance of specific deviations. The CONTRACTOR shall notify ENGINEER in writing at time of submission of deviations in submittals from requirements of the Contract Documents.

END OF SECTION

SECTION 01 42 13

ABBREVIATIONS

PART I – GENERAL

1.01 DESCRIPTION

- A. This Section defines abbreviations used in the Specifications.
1. AASHTO: American Association of State Highway and Transportation Officials
 2. ACI: American Concrete Institute
 3. AFBMA: Antifriction Bearing Manufacturers Association
 4. AGA: American Gas Association
 5. AGMA: American Gear Manufacturers Association
 6. AI: Asphalt Institute
 7. AIA: American Institute of Architects
 8. AISC : American Institute of Steel Construction
 9. AISI: American Iron and Steel Institute
 10. ANSI: American National Standards Institute
 11. APA: American Plywood Association
 12. ASCE: American Society of Civil Engineers
 13. ASTM: American Society for Testing and Materials
 14. AWWA: American Water Works Association
 15. AWS: American Welding Society
 16. AWWA: American Water Works Association
 17. BHMA: Builders Hardware Manufacturers Association
 18. cfm: Cubic Feet per Minute
 19. cfs: Cubic Feet per Second
 20. CISPI: Cast Iron Soil Pipe Institute
 21. CMP: Corrugated Metal Pipe
 22. CRSI: Concrete Reinforcing Steel Institute
 23. CS: U.S. Department of Commerce, Commercial Standard
 24. cu: Cubic
 25. dia: Diameter
 26. EDB: Ethylene Dibromide
 27. E.F.: Each Face
 28. ELEV./EL: Elevation
 29. E.W.: Each Way
 30. Fed. Spec. (FS): Federal Specifications
 31. FES: Flared End Section
 32. ft: Foot
 33. ga: Gage
 34. GAC: Granular Activated Carbon
 35. GACAS: Granular Activated Carbon Adsorption System
 36. gal: Gallon
 37. gpm: Gallons per Minute
 38. hr: Hour
 39. I.D.: Inside Diameter

40. IEEE: Institute Electrical and Electronics Engineers
41. in: Inch
42. KW: Kilowatt
43. lf: Lineal Foot
44. lb: Pound
45. max: Maximum
46. MH: Manhole
47. MIL: Military Specifications
48. min: Minimum
49. mg/l: milligrams per liter
50. MUTCD: Manual on Uniform Traffic Control Devices
51. NAAMM: National Association of Architectural Metal Manufacturers
52. NBS: National Bureau of Standards
53. NEC: National Electric Code
54. NEMA: National Electrical Manufacturers Association
55. NPT: National Pipe Thread
56. O.C.: On Center
57. O.D.: Outside Diameter
58. PCI: Prestressed Concrete Institute
59. PS: U.S. Department of Commerce, Product Standard
60. ppd: pounds per day
61. ppm: parts per million
62. psig: pounds per square inch (gauge)
63. PVC: Polyvinyl Chloride
64. RCP: Reinforced Concrete Pipe
65. RPM: Revolutions per Minute
66. sq: Square
67. SSPC: Steel Structures Painting Council
68. UBC: Uniform Building Code
69. UL: Underwriter's Laboratory
70. UMC: Uniform Mechanical Code
71. UPC: Uniform Plumbing Code
72. USBR: U.S. Bureau of Reclamation
73. USBS: U.S. Bureau of Standards
74. yd: Yard

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

1.01 RELATED REQUIREMENTS

- A. General Conditions
- B. Supplementary Conditions
- C. Section 01 45 29, Testing Laboratory Services

1.02 TESTING – GENERAL

- A. Provide such equipment and facilities as the ENGINEER may require for conducting field tests and for collecting and forwarding samples. Do not use any materials or equipment represented by samples until tests, if required, have been made and the materials or equipment found to be acceptable. Any product which becomes unfit for use after approval thereof shall not be incorporated into the work.
- B. All materials or equipment proposed to be used may be tested at any time during their preparation or use. Furnish the required samples without charge and give sufficient notice of the placing of orders to permit the testing. Products may be sampled either prior to shipment or after being received at the site of the work.
- C. Tests shall be made by an accredited testing laboratory selected by the OWNER. Except as otherwise provided, sampling and testing of all materials and the laboratory methods and testing equipment shall be in accordance with the latest standards and tentative methods of the American Society for Testing Materials (ASTM).
- D. Where additional or specific information concerning testing methods, sample sizes, etc., is required, such information is included under the applicable sections of the Specifications. Any modification of, or elaboration on, these test procedures which may be included for specific materials under their respective sections in the Specifications shall take precedence over these procedures.
- E. Failed tests shall be paid for by the CONTRACTOR, as per paragraph 1.05, A.3 in this section.

1.03 FILL AND BACKFILL TESTS

- A. Control test of fill and backfill shall be made at such times and in such numbers as specified in Section 31 23 33, "Trenching". Testing will be paid for by the OWNER.

1.04 CONCRETE TESTS

- A. Control tests of concrete work shall be made at such times and in such number as specified in Section 03 30 00, "Cast-in-Place Concrete". Testing will be paid for by the OWNER.

1.05 OTHER TESTING

- A. If required, the following testing shall be performed at the expense of the CONTRACTOR installing the material being tested:
 - 1. Material Substitution: Any tests of basic material or fabrication equipment offered as a substitute for specified item on which a test may be required in order to prove its compliance with the Specifications.

2. Mechanical/Electrical: Tests on mechanical or electrical systems required to insure their proper installation and operation.
 3. Any test that fails shall be paid for by the installing CONTRACTOR subject to the following conditions:
 - a. Quantity and nature of tests will be determined by the ENGINEER.
 - b. All tests shall be taken in the presence of the ENGINEER or his representative.
 - c. Proof of noncompliance will make the installing CONTRACTOR liable for any corrective action which the ENGINEER feels is prudent, including complete removal and replacement of defective material.
- B. Nothing contained herein is intended to imply that the installing CONTRACTOR does not have the right to have tests performed on any material at any time for his own information and job control so long as the OWNER does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

1.06 TEST REPORTS

- A. Reports of all tests made by testing laboratories shall be distributed by the testing laboratory as follows:
- | | | |
|--------------|---|--|
| 1 copy | - | CONTRACTOR |
| 1 copy | - | OWNER |
| 1 copy | - | ENGINEER |
| 1 copy | - | RESIDENT PROJECT REPRESENTATIVE |
| Other copies | - | As Directed |

1.07 CONTRACTOR'S QUALITY CONTROL SYSTEM

- A. General: Establish a quality control system to perform sufficient inspection and tests of all items of work, including that of subcontractors, to ensure conformance to the Contract Documents for materials, workmanship, construction, finish, functional performance and identification. Establish this control for all construction except where the Contract Documents provide for specific compliance tests by testing laboratories or engineers employed by the OWNER. CONTRACTOR's control system shall specifically include all testing required by the various sections of the Specifications.
- B. CONTRACTOR's quality control system is the means by which he assures himself that his construction complies with the requirements of the Contract Documents. Controls shall be adequate to cover all construction operations and shall be keyed to the proposed construction schedule.
- C. Records: Maintain correct records on an appropriate form for all inspections and tests performed, instructions received from the ENGINEER and actions taken as a result of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken. Document inspections and tests as required by each section of the Specifications.

END OF SECTION

SECTION 01 45 29

TESTING LABORATORY SERVICES

PART I – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Cooperation with testing laboratory services employed by the OWNER.
- B. Provision of specified testing laboratory services.

1.02 DESCRIPTION

- A. OWNER will employ and pay for services of an independent testing laboratory through the ENGINEER who shall perform specified field tests.
- B. Employment of testing laboratory shall in no way relieve CONTRACTOR of obligation to perform work in accordance with requirements of Contract Documents.

1.03 REFERENCES

- A. ANSI/ASTM D-3640 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- B. ANSI/ASTM E-329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction.

1.04 LABORATORY REQUIREMENTS

- A. Test samples of mixes submitted by CONTRACTOR.
- B. Provide qualified personnel at site after due notice; cooperate with ENGINEER and CONTRACTOR in performance of services.
- C. Perform specified inspection, sampling and testing of products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify ENGINEER and CONTRACTOR of observed irregularities or non-conformance work or products.
- F. Perform additional inspections and tests required by ENGINEER.
- G. Attend preconstruction conferences and progress meetings, as needed.

1.05 LABORATORY REPORTS

After each inspection and test, promptly submit one copy of laboratory report to ENGINEER, OWNER, CONTRACTOR, RESIDENT PROJECT REPRESENTATIVE, and Record Documents file. Include date issued, project title, number and name of inspector, date and time of sampling or inspection, identification of product and specifications section, location in the project, type of inspection or test, date of test, results of tests, and conformance with Contract Documents. When requested by ENGINEER, provide interpretation of test results.

1.06 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, evoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the work.
- C. Laboratory may not assume any duties of CONTRACTOR.
- D. Laboratory has no authority to stop work.

1.07 CONTRACTOR RESPONSIBILITIES

- A. Cooperate with laboratory personnel. Provide access to work and to manufacturer's operations.
- B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.
- D. Furnish copies of product test reports as required.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested
 - 2. To obtain and handle samples at the project site or at the source of the product to be tested
 - 3. To facilitate inspections and tests
 - 4. For storage and curing of test samples of concrete cylinders
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
- G. Pay for the services of the independent testing laboratory to perform additional inspections, sampling and testing required: When initial tests indicate work does not comply with Contract Documents.
- H. Make arrangements with laboratory and pay for additional samples and tests required for CONTRACTOR's convenience.

END OF SECTION

SECTION 01 55 26

TRAFFIC REGULATIONS

PART I – GENERAL

1.01 DESCRIPTION

- A. This section covers traffic regulations to be provided in addition to any requirements of the appropriate governing agency.
- B. Construction activities shall be in conformance with the "Manual of Uniform Traffic Control Devices" except as superseded by the regulation or requirements of an appropriate governing authority.
- C. Traffic control plan, if required, shall be submitted to the **ENGINEER** prior to the start of construction.
- D. Traffic shall be maintained with at least one open lane in each direction throughout the project. Access to private residences must be maintained continuously throughout the duration of the project. If it becomes necessary to temporarily close traffic in one or both directions, a traffic control plan governing the closure shall be submitted for approval to the **ENGINEER** and **OWNER** 72 hours prior to planned closure.
- E. Traffic disruption shall be minimized during peak driving times, weekdays from 6 a.m. to 9:00 a.m. and 4:00 p.m. to 6 p.m.

1.02 FLAGMEN

- A. Flagmen shall be equipped with the appropriate protective clothing and provided adequate signing or flagging equipment.
- B. Flagmen shall be required to regulate traffic as required by the appropriate governing authority.

1.03 WARNING SIGNS AND BARRICADES

- A. When construction activities are within or adjacent to public right-of-ways adequate warning signs shall be provided.
- B. Any excavations, equipment or material stockpiles or other obstruction or hazard exists it shall be properly barricaded and marked to protect traffic.
- C. Any signs or barricades needed during nighttime shall be adequately lighted or illuminated.

1.04 PRIVATE RIGHT-OF-WAY

- A. Private drives shall not be blocked overnight. **CONTRACTOR** should notify any resident 24 hrs in advance of blocking a driveway.
- B. The **CONTRACTOR** shall plan construction so as to minimize disruption of access to commercial properties adjacent to the project.

1.05 PERMITS

- A. The **CONTRACTOR** shall obtain all necessary approvals and permits required by appropriate governing agencies.

- B. The State Highway Department Permit for accessing Highway N/A will include traffic and control requirements for N/A. It will be the **CONTRACTOR'S** responsibility to prepare and submit traffic control plans and construction schedules for crossing the Highway. The **OWNER** will obtain the permit.
- C. Delta County road permits will control activities within the Delta County Roads. It will be the **CONTRACTOR'S** responsibility to meet the conditions of the permits.

1.06 MEASUREMENT AND PAYMENT

- A. Incidental to Project. When traffic control is not shown in the bid schedule as a separate item, the work shall not be paid for separately, but will be considered as incidental to the Project.

END OF SECTION

SECTION 01 57 00

TEMPORARY CONTROLS

PART I – GENERAL

1.01 NOISE CONTROL

- A. Take precautions against unnecessary construction noise levels when in inhabited areas.
- B. Provide and maintain appropriate mufflers on construction equipment.

1.02 DUST CONTROL

- A. Where construction activities expose earth surfaces allowing dusting, water shall be used in controlling dust.

1.03 POLLUTION CONTROL

- A. Protect waterways from pollution by debris, sanitary wastes, runoff, and spills.
- B. Protect water systems from any contamination.
- C. Protect storm sewers from sanitary wastes, sediment or other substance except storm water.
- D. Protect sanitary sewers from runoff or any other substance except sanitary sewer wastewater.

1.04 DRAINAGE CONTROL

- A. Provide site grading which shall prevent excess runoff from entering construction area.

1.05 SANITARY FACILITIES

- A. CONTRACTOR shall provide and maintain, throughout project duration, adequate temporary toilet facilities in a neat and sanitary condition for all employees and authorized visitors at the site. Place facilities at approved locations near the work at each location.

1.06 TEMPORARY UTILITIES

- A. Electric Power and Lighting:
 - 1. The CONTRACTOR shall be responsible for locating a temporary source of electrical energy for use during the construction period, and for providing needed power to the site.
 - 2. Temporary electrical work shall meet the requirements of the National Electrical Code (NEC 70), latest edition.
 - 3. CONTRACTOR may use permanent electrical system for construction purposes provided that use is regulated to prevent interference with orderly progress of the work or adjacent facilities in use, and permanent system (including lamps) is restored to a condition as good as new upon completion of construction.
- B. Temporary Heat and Protection:
 - 1. CONTRACTOR shall provide and maintain temporary enclosures, weather barriers, heat and ventilation as necessary to properly protect and cure all portions of the work, whether or not permanently incorporated into the project, at all times during the construction period. Do not use solid fuel burning space heaters or use or leave unattended any equipment or apparatus which might create an unsafe condition.

1.07 FENCING AND BARRIERS

- A. Refer to General Conditions for responsibilities with respect to protection of persons and property.
- B. Provide and maintain temporary fences, barricades, lights, and guardrails as indicated in the Contract Documents or as necessary to regulate vehicular and pedestrian traffic, to secure the Work and adjacent property, and to protect persons and property.
 - 1. Obtain necessary approvals and permits and provide temporary expedients as necessary to accommodate controls.
 - 2. All barricading and traffic controls shall be in accordance with a traffic control plan prepared and submitted by the CONTRACTOR in accordance with the Manual on Uniform Traffic Control Devices.
 - 3. Refer to Section 01 55 26, Traffic Regulations for additional requirements on the construction traffic control.

1.08 FIELD OFFICES AND STORAGE FACILITIES

- A. Provide and maintain storage sheds, trailers or other facilities as necessary to store and protect materials, tools and equipment.

END OF SECTION

SECTION 01 65 00

PRODUCT DELIVERY, STORAGE AND HANDLING

PART I – GENERAL

1.01 RELATED REQUIREMENTS

- A. General and Supplementary Conditions

1.02 PRODUCTS

- A. Products include material, equipment and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.

1.03 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.04 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

END OF SECTION

SECTION 01 74 00

CLEANUP

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope
 - 1. Maintain premises and public properties free from accumulations of wastewater and debris caused by work on this project.
 - 2. At project completion, leave all new and existing facilities affected by the Work clean and ready for occupancy.
- B. Related Requirements Specified Elsewhere
 - 1. Cleaning of certain parts of the Work described in various sections of the Specifications
- C. Failure by **CONTRACTOR** to maintain project site and facilities in a state of cleanliness shall be adequate reason for **ENGINEER** to recommend that **OWNER** withhold any present and future progress payments until **CONTRACTOR** complies with specification requirements.

1.02 STIPULATIONS

- A. Hazards Control: As required by regulatory agencies.
- B. Conduct cleaning and disposal operations in compliance with laws and safety orders of governing authorities including anti-pollution laws.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned or finish to be applied.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 – EXECUTION

3.01 DURING CONSTRUCTION

- A. Prevent dust nuisance attributable to this work.
- B. Provide trash receptacles
 - 1. Strategically located around site
 - 2. Fifty-five (55) gallon drums, minimum
 - 3. Promptly empty when full, do not allow overflowing. Keep surrounding area free from trash accumulation.

- C. At reasonable intervals during progress of work, legally dispose of waste materials, debris, and rubbish from the site.
 - 1. Waste materials shall not be burned or buried on site or disposed of into storm drains, sanitary sewers, streams, or waterways.
- D. Handle materials in a controlled manner with as few handlings as possible.
- E. Neatly stack construction materials such as concrete forms when not in use.

3.02 FINAL CLEANING

- A. Repair, patch, and touch-up marred surfaces to specified finish to match adjacent surfaces.
- B. Broom clean paved surfaces; rake clean other surfaces of grounds.
- C. Restore site to condition equal to or better than that which existed prior to commencement of Work.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 – ADMINISTRATIVE PROCEDURES

1.01 GENERAL

- A. Comply with requirements stated in general conditions and in Specifications for administrative procedures in closing out the Work.
- B. Additional Requirements Specified Elsewhere.
 - 1. Fiscal provisions, legal submittals, and additional administrative requirements: General Conditions, Supplemental General Conditions, Standard Specifications, and the Agreement.

1.02 SUBSTANTIAL COMPLETION

- A. When CONTRACTOR considers the Work is substantially complete, he shall submit to ENGINEER:
 - 1. A written notice that the Work is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, ENGINEER will make an inspection to determine the status of completion.
- C. Should ENGINEER determine that the Work is not substantially complete:
 - 1. ENGINEER will promptly notify the CONTRACTOR in writing, and give the reasons therefore.
 - 2. CONTRACTOR shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to ENGINEER.
 - 3. ENGINEER will re-inspect the Work.
- D. When ENGINEER finds that the Work is substantially complete, he will
 - 1. Prepare and deliver to OWNER a tentative Certificate of Substantial Completion with a tentative list of times to be completed or corrected before final payment.
 - 2. After consideration of any objections made by the OWNER as provided in General Conditions and when ENGINEER considers the Work substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a definite Certificate of Substantial Completion with a revised list of items to be completed or corrected.

1.03 FINAL INSPECTION

- A. When CONTRACTOR considers the Work is complete, he shall submit written certification that:
 - 1. Contract Documents have been reviewed
 - 2. Work has been inspected for compliance with Contract Documents
 - 3. Work has been completed in accordance with Contract Documents
 - 4. Systems have been tested and are operational
 - 5. Work is completed and ready for final inspection

- B. ENGINEER OR OWNER will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification
- C. Should ENGINEER consider that the Work is incomplete or defective:
 - 1. Engineer will promptly notify the CONTRACTOR in writing, listing the incomplete or defective work.
 - 2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to ENGINEER that the Work is complete.
 - 3. ENGINEER will re-inspect the Work.
- D. When the ENGINEER finds that the Work is acceptable under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

1.04 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Project Record Documents
- B. Certificates of Compliance: As specified in individual sections

1.05 FINAL ADJUSTMENT OF ACCOUNTS

- A. Review the Final Statement of Accounting as prepared by the ENGINEER
- B. Statement will reflect all adjustments to the contract sum
 - 1. The original Contract Sum
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders
 - b. Deductions for uncorrected work
 - c. Deductions for liquidated damages
 - d. Deduction for retesting payment, Section 01 45 00 - Quality Control.
 - e. Deduction for additional review of Shop Drawing or Product Data Submittals, Section 01 33 32 - Shop Drawings.
 - f. Other adjustments
 - 3. Total Contract Sum, as adjusted
 - 4. Previous payments
 - 5. Sum remaining due

1.06 FINAL APPLICATION FOR PAYMENT

- A. Contract shall review and certify the final Application for Payment as prepared by the ENGINEER in accordance with procedures and requirements stated in the General Conditions, Standard Specifications.

PART 2 – FINAL PAYMENT

2.01 GENERAL

- A. Final payment will not be made until the OWNER has completed the statutorily required public advertisement of a notice of final payment and any claims filed with the OWNER have been resolved to the satisfaction of the OWNER and the applicable governing agency.

PART 3 – POST-CONSTRUCTION INSPECTION

3.01 GENERAL

- A. Prior to expiration of two (2) years from date of Substantial Completion, ENGINEER will make visual inspection of project site in company with the OWNER to determine whether correction of work is required.
- B. CONTRACTOR to attend inspection if requested by the ENGINEER.

END OF SECTION

Division 3 – Concrete

SECTION 03 11 00

CONCRETE FORMWORK

PART I – GENERAL

1.01 SCOPE

- A. Work Included: This section shall apply to all concrete formwork and supporting falsework used for on-site casting of concrete. Forms shall be of wood, metal or other materials, as specified or shown on the Drawings or as approved by the **ENGINEER**.
- B. Related Work:
 - 1. Section 03 20 00, Concrete Reinforcement
 - 2. Section 03 30 00, Cast-In-Place Concrete

1.02 SUBMITTALS

- A. Detailed plans for formwork, falsework or centering shall be furnished the **ENGINEER** if requested by him; however, the **CONTRACTOR** will not be relieved of responsibility for results obtained by the use of these plans.
- B. A sample of the form ties shall be submitted to the **ENGINEER** for approval.

1.03 DESIGN CRITERIA

- A. Design of formwork shall include consideration of the following factors:
 - 1. Rate and method of placing concrete
 - 2. Loads, including live, dead, lateral, and impact
 - 3. Selection of materials and stresses
 - 4. Deflection, camber, eccentricity, and uplift
 - 5. Horizontal and diagonal shore bracing
 - 6. Shore splices
 - 7. Cross-grain compression
 - 8. Vibration of concrete
 - 9. Loads on ground or on previously placed structure
- B. Falsework:
 - 1. Falsework shall be designed to provide the necessary rigidity and to support the loads without appreciable settlement.
 - 2. A design weight of 150 lbs. per cubic foot shall be assumed for fresh concrete.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Wood Forms:

1. Unexposed Concrete Surfaces: Wood forms for unexposed concrete surfaces shall be No. 2 common or better lumber.
2. Exposed Concrete Surfaces: Wood forms for exposed surfaces shall be plywood, or shall be shiplap or tongue and groove boards, of uniform thickness and width not exceeding 6 inches.
3. Smooth Surfaces: Wood forms for smooth concrete surfaces shall be made of plywood or shall have a form lining as specified in Part B below.
4. Plywood for forms shall be Commercial Douglas fir, moisture-resistant, concrete-form plywood not less than 5-ply and at least 9/16" thick.

B. Form Lining:

1. Plywood: Plywood for form lining shall be Commercial Douglas Fir, concrete-form exterior, 3-ply, not less than 1/4" thick.
2. Fiberboard: Fiberboard for form lining shall conform to the requirements of Federal Specification LLL-F-311, Class B, not less than 3/16" thick
3. Absorptive Type Lining: Absorptive type lining shall be a material or combination of materials highly absorptive to water, readily removable from the concrete surface at the end of the curing period. The material shall be easily cut for fitting, free from any element which may discolor the concrete or interfere with the normal chemical reaction of the cement, and shall have an absorptive coefficient to eliminate voids and pitting while producing a dense and uniform concrete surface.

C. Metal Forms:

1. Metal forms shall be of a type approved by the ENGINEER that will produce surfaces equal to those specified for wood forms.
2. Holes shall be plugged and uneven surfaces eliminated in a manner approved by the **ENGINEER**.

D. Form Coating:

1. Form coating shall be of a clear amber color and shall form a continuous, tough, hard film highly resistant to alkali and moisture.
2. The film shall not be deposited upon or absorbed with the concrete.
3. The form coating shall be approved by the **ENGINEER** prior to application.

E. Form Ties:

1. Ties shall be adjustable in length and free of devices which will leave a hole or depression back of the exposed surface of the concrete no larger than 7/8" in diameter.
2. Ties shall be of such make that when forms are removed, no metal shall be within one inch of the finished surface.

3. Wire ties will not be permitted except in unexposed locations where discoloration will not be objectionable.

PART 3 – EXECUTION

3.01 PREPARATION

A. Falsework:

1. Falsework shall be designed and constructed to provide the necessary rigidity and to support the loads without appreciable settlement or deformation.
2. The **CONTRACTOR** may be required to employ screw jacks or hardwood wedges to take up any settlement in the formwork either before or during the placing of concrete.
3. Falsework that cannot be founded on a satisfactory footing shall be supported on piling that shall be spaced, driven and removed in a manner approved by the **ENGINEER**.
4. Falsework shall be so set that after its removal, the finished structure will have the finished grade specified or indicated on the drawings.
5. Arch centering: Provision shall be made by means of suitable wedges, sand boxes or other devices for the gradual lowering of centers and rendering the arch self-supporting. When directed, centering shall be placed upon approved jacks to take up and correct any slight settlement that may occur after the placing of masonry has begun.

B. Form Coating:

1. The original application shall consist of two coatings evenly applied.
2. Subsequent reuses of the forms without recoating shall be permitted at the discretion of the **ENGINEER**, but forms shall not be used more than three times without recoating.
3. After application, any surplus material on the form surfaces and/or the reinforcing steel shall be removed.
4. Forms for unexposed surfaces may be thoroughly wetted with water in lieu of coating immediately before the placing of concrete.

3.02 INSTALLATION

A. General:

1. Forms, complete with centering, cores and molds, shall be constructed to conform to the shape, form and grade required, and shall be maintained sufficiently rigid to prevent deformation under load.
2. For narrow walls and columns, where the bottom of the form is inaccessible, the lower form boards shall be left loose so that they may be removed for cleaning out extraneous material immediately before placing the concrete.
3. The forms shall be maintained at a temperature that will not adversely affect the curing of the concrete.
4. Formed voids in concrete, where used, shall be of accurate dimensions in size and location in order that the thickness of surrounding concrete shall not be reduced from drawing dimensions.

- B. Joints: All corners of columns, girders, beams and walls, and other exposed joints, unless otherwise indicated on the Drawings or directed by the **ENGINEER**, shall be beveled, rounded, or chamfered by moldings placed in the form.
- C. Liners:
1. Forms for exposed surfaces shall have a form liner of an approved type and shall be mortar-tight.
 2. Unless otherwise specified, the forms for exposed surfaces down to an elevation of one foot below low water or 2 feet below final ground line above water, shall be faced with metal, plyboard or other approved smooth-faced composition material constructed to provide a minimum of joints and leakage.
 3. All fittings for metal ties shall be of such design that, upon their removal, the cavities that are left will be of the smallest possible size.
 4. The cavities shall be filled with cement mortar and the surface left sound, smooth, even and uniform in color.
- D. Removal:
1. Forms shall not be disturbed until the concrete has adequately hardened. See following Schedule.
 2. Care shall be taken to avoid spalling the concrete surface.
 3. The concrete shall present a uniform and smooth surface upon removal of forms without requiring touch-up or surface finishing.
 4. Any uneven joint protrusions in excess of 1/8 inch shall be removed.
 5. Formwork shall not be removed, and construction of superimposed elements shall not occur until the minimum requirements of the following table are met (see following page):

**REQUIREMENTS FOR REMOVAL OF FORMWORK
AND CONSTRUCTION OF SUPERIMPOSED ELEMENTS**

<u>Structural Element</u>	<u>Removal of Formwork</u>		<u>Forming for Superimposed Elements</u>		<u>Placing Concrete in Superimposed Elements</u>	
	<u>Time Days</u>	<u>Strength %f*</u>	<u>Time Days</u>	<u>Strength %fc*</u>	<u>Time Days</u>	<u>Strength %fc*</u>
Arch (centering)	14	85	18	90	21	95
T-beam (centering)	14	85	18	90	21	95
T-beam (side forms)	2	30	----	----	----	----
Deck slab	7	60	10	70	14	85
Wall carrying load**	7	60	10	70	14	85
Column carrying load**	7	60	10	70	14	85
Footing	2	30	3	40	5	50
Pier or abutment cap	7	60	10	70	14	85
Part not carrying load**	2	30	----	----	----	----

* Design minimum compressive strength as specified in Section 03 30 00.

** The "load" referred to is the immediate load which will be transmitted to the structural element as a result of the removal of falsework, etc., not the load which will eventually be placed on the structural element. Curb and parapet face forms may be removed as soon as concrete has attained sufficient set to stand without slumping.

F. Reuse:

1. The shape, strength, rigidity, water-tightness, and surface smoothness of reused forms shall be maintained at all times.
2. Any warped or bulged lumber must be resized before being reused.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCEMENT

PART I – GENERAL

1.01 SCOPE

- A. This work shall include furnishing and placing all reinforcing steel or wire mesh used in cast-in-place concrete construction except pre-stressed strands and wires.
- B. Related work specified elsewhere:
 - 1. Section 03 11 00 - Concrete Formwork
 - 2. Section 03 30 00 - Cast-In-Place Concrete

1.02 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Reinforcing steel shall be stored on platforms, skids or other supports which will keep the steel above ground, well drained and protected from damage.

1.03 SUBMITTALS

- A. Shop Drawings: Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports. Indicate bar schedules, stirrup spacing and diagrams of bent bars.
- B. Certificates: Mill test certificates identifying chemical and physical analysis of each load of reinforcing steel delivered.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Reinforcement Bars:
 - 1. Bars shall be deformed and shall conform to ASTM A-615, Grade 60, as specified on the plans.
 - 2. Unless otherwise shown on the drawings, bars less than 3/8" in diameter (No. 3) shall not be used in the work, except for stirrups, ties and distribution steel.
- B. Wire mesh shall be furnished in flat sheets and shall conform to ASTM A-185.
- C. Wire ties shall be 18-gage black annealed wire, or patented wire ties approved by the ENGINEER.

2.02 FABRICATION

- A. Bends:
 - 1. Bent bar reinforcement shall be cold bent to the shape shown on the drawings.
 - 2. Unless otherwise specified or shown on the drawings, bends shall be made in accordance with the requirements of ACI 315.
- B. Reinforcing details, shown on the drawings, shall govern the furnishing, fabrication and placing of reinforcement, insofar as they apply.

PART 3 – EXECUTION

3.01 PREPARATION

A. Cleaning:

1. Before placing, all reinforcement shall be thoroughly cleaned of rust, mill scale or coatings, including ice, which would reduce or destroy the bond.
2. Reinforcement appreciably reduced in section shall not be used.
3. Following any substantial delay in the work, previously placed reinforcement left for future bonding shall be inspected and cleaned.

B. Reinforcement shall not be cut with a torch or in such a manner as to alter the mechanical properties of the reinforcement material.

C. Bars with kinks or bends not shown on the drawings shall not be placed.

3.02 INSTALLATION

A. Ties and Supports:

1. All steel reinforcement shall be accurately placed in the positions shown on the drawings and firmly held during the placing and setting of concrete.
2. Bars shall be tied at every intersection.
3. Wire tie ends shall point away from the form.

B. Splices:

1. All reinforcement shall be furnished in full lengths as indicated on the drawings.
2. Splicing of bars, except where shown on the drawings, will not be permitted without written approval of the ENGINEER.
3. Splices shall be staggered as far as possible.
4. Unless otherwise shown on the drawings, bars shall be lapped sufficiently to secure full bond, but in no case less than 30 diameters to make the splice. The bars shall be placed in contact and wired together.
5. Welding of reinforcing steel shall be done only if shown on the drawings or authorized in writing.
6. Sheets of mesh or bar mat reinforcement shall overlap each other sufficiently to maintain a uniform strength, shall be securely fastened at the ends and edges, and shall overlap at least one mesh in width.
7. No splicing of main bars in girders, beams or slabs will be permitted.

C. Anchor Bolts:

1. Where anchor bolts interfere with reinforcing steel, the steel position shall be adjusted to permit the placement of the anchors in their proper locations.
2. The ENGINEER shall approve such adjustments prior to placement of concrete.

3.03 WELDED WIRE FABRIC

- A. Lay welded fabric continuously, with edges and ends overlapping adjoining sheets a minimum of one full mesh plus 2", tied and placed over all piping and conduit. Lift the fabric by approved methods to the center of slabs during the placing of concrete, or properly support in this position. Where required, construct bulkheads at construction joints and screeds to place the fabric in the proper position.

3.04 CLEANING

- A. Clean reinforcement prior to placing concrete to remove scale, oil, ice or other coatings that will destroy or reduce the bond, including mortar from previous concrete pours.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART I – GENERAL

1.01 SCOPE

- A. Furnish and Install:
 - 1. Formed Cast-in-Place Concrete
 - 2. Concrete Flatwork
 - 3. Cast-in-Place Concrete for thrust restraint, encasement, cutoff walls or other work required by the Specifications or Drawings.

1.02 RELATED WORK

- A. Section 03 11 00, Concrete Formwork
- B. Section 03 20 00, Concrete Reinforcement

1.03 QUALITY ASSURANCE

- A. Testing Agency: An approved testing laboratory will conduct all testing. See Section 01410, Testing Laboratory Services.
- B. Source Quality Control: The **ENGINEER** shall be offered uninterrupted access to the ready-mix batching plant while the work is in progress.
- C. Record of Work: Keep a record listing the time and date of placement of concrete for the structure. Such record shall be kept until the completion of the project and shall be available to the **ENGINEER** for examination at any time.

1.04 REFERENCES

Reference Standards: Except as modified or supplemented in these specifications, structural concrete shall meet the requirements of the following standards. Refer to the standards for detailed requirements.

- A. ACI 301-72 – Specifications for Structural Concrete for Buildings (Revised 1981).
- B. ACI 304-73 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- C. ACI 305R-77 – Hot Weather Concreting
- D. ACI 306R-78 – Cold Weather Concreting
- E. ACI 318-83 – Building Code Requirements for Reinforced Concrete

1.05 SUBMITTALS:

- A. Mix Designs: Prior to placing any concrete, submit concrete mixes for approval in accordance with Section 01 33 00 if requested by ENGINEER. Separate mix design shall be submitted for each type of concrete to be used in the project. Submittals shall include all information used in designing the mixes.
- B. Test Reports: Reports of control tests, special tests and the testing laboratory in accordance with Section 01 45 00 shall distribute core tests.

- C. Submit delivery ticket for each load delivered to site. Include:
 - 1. Mix identification
 - 2. Time water added
 - 3. Time unloaded
 - 4. Amount of initial and supplemental water added

1.06 DELIVERY, STORAGE AND HANDLING

- A. Hauling Time: Discharge concrete transmitted in a truck mixer, agitator or other transportation device within 1-1/2 hours after the mixing water has been added.
- B. Extra Water: Deliver concrete to the job in exact quantities required by the design mix. Should extra water be required before depositing the concrete, the **Contractor's** superintendent shall have sole authority to authorize the addition of water. Any additional water added to the mix after leaving the batch plant shall be indicated on the truck ticket and signed by the person responsible. Where extra water is added to the concrete it shall be mixed thoroughly for 40 revolutions of the drum or 3-1/2 minutes at mixing speed, whichever is greater. Samples for control tests shall be taken after additional water has been thoroughly mixed into concrete.
- C. Store cement in watertight enclosures and protect against dampness, contamination and warehouse set.
- D. Stockpile aggregates to prevent excessive segregation or contamination with other materials or other sizes of aggregates. Use only one supply source for each aggregate stockpile.
- E. Store admixtures to prevent contamination, evaporation, or damage. Protect liquid admixtures from freezing or harmful temperature ranges.
- F. Remove all mud, oil, loose rust or mill scale and other foreign material, from reinforcing steel prior to placing concrete.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Cold Weather Concreting:
 - a. Refer to ACI 306, "Recommended Practice for Cold Weather Concreting".
 - b. Temperature of concrete when placed shall not be less than the following:

Air Temp. °F	Minimum Concrete Temp °F	
	Sections with Least Dimension Under 12"	12" and Over
30 to 45	60	50
0 to 30	65	55
Below 0	70	60

- c. When placed, heated concrete shall not be warmer than 70°F.
- d. Prior to placing concrete, all ice, snow, surface and subsurface frost shall be removed, and the temperature of the surfaces to be in contact with the new concrete shall be raised above 35°F.

- e. Protect the concrete from freezing during specified curing period.
 - f. Heated enclosures shall be strong and windproof to insure adequate protection of corners, edges and thin sections. Do not permit heating units to locally heat or dry the concrete. Do not use combustion heaters during the first 24 hours unless the concrete is protected from exposure to exhaust gases, which contain carbon dioxide.
2. Hot Weather Concreting:
- a. Refer to ACI 305, "Recommended Practice for Hot Weather Concreting".
 - b. Take precautions when the ambient air temperature is 90°F or above. Temperature of concrete when placed shall not exceed 80°F.
 - c. Cool forms and reinforcing to a maximum of 90°F by spraying with water prior to placing concrete.
 - d. Do not place concrete when the evaporation rate (actual or anticipated) equals or exceeds 0.20 pounds per square foot per hour.
 - e. Approved set-retarding and water reducing admixtures may be used with **ENGINEER'S** approval when ambient air temperature is 90°F or above to offset the accelerating effects of high temperature.
3. Do not place concrete during rain, sleet or snow unless adequate protection is provided. Do not allow rainwater to increase the mixing water or damage the surface finish.
- B. Protection: Protect newly finished slabs from rain damage. Cover walls, glazing and other finish materials with polyethylene or otherwise protect from damage due to placing of slabs or sidewalks.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete Materials:

- 1. General: Provide ready-mixed concrete conforming to ASTM C94. On-site mixed concrete will not be allowed.
- 2. Cement: ASTM C150-Type II for all concrete unless indicated otherwise.
- 3. Aggregate: Fine aggregate shall be natural sand and coarse aggregate shall be gravel or crushed stone, all conforming to ASTM C33. Maximum coarse aggregate size shall not be greater than 3/4".
- 4. Air Entraining Agent: ASTM C260.
- 5. Admixtures: Use only as specified or as approved by **ENGINEER**.
- 6. Mineral Admixtures: ASTM C618.
- 7. Water: Use clean, fresh potable supply.

B. Miscellaneous Materials:

- 1. Curing and Sealing Compounds:

Curing and Sealing Compound shall be Master Builders, Masterseal; A.C. Horn Inc., Horn Clearseal EM180; Burke Company Spartan-Cote WB Cure Seal Hardener; or equal; conforming to ASTM C309. Curing compounds shall be clear and shall be applied in accordance with the manufacturer's instructions, except as otherwise specified.

2. Bonding Materials:

Epoxy resin bonding compounds shall be used for wet areas and shall be Adhesive Engineering, Congresive Nos. 1001, 1001-LPL or 1180 as applicable; Sika Chemical Corporation, Sikadur 35, Hi-Mod, or Sikadur 31, Hi-Mod Gel as applicable; Burke Company 881 LPL Epoxy; or equal. Non-epoxy bonding compounds shall be used for dry areas and shall be Burke Company, Acrylic Bondcrete; Imperial Chemical Industrial, Inc., Thoro System Products, Acryl 60; Thorobond; or equal. Bonding compounds shall be applied in accordance with the manufacturer's instructions.

2.02 MIXES

A. Design: Design mixes shall conform to the mix type specified in Section 2.03. Proportion ingredients for mixes in accordance with ACI 301-84, Section 3.9. Obtain this information in accordance with the latest ASTM Specifications. Should a special mix be required due to structural requirements, weather or materials, submit samples of cement and aggregate to be used to an approved testing laboratory. The testing laboratory will make an analysis of the materials and design the proper mix to be used.

B. Admixtures:

1. General: No admixtures will be allowed except as specified herein unless authorized by the ENGINEER. All requests for approval or substitution must be made by the CONTRACTOR and be accompanied by sufficient information and test data for evaluation. All admixtures shall be chemically compatible with cementitious materials and all other admixtures used in the mix. All admixtures shall be chloride free. No calcium chloride shall be added to concrete.

2. Acceptable Manufacturers: Admixtures shall be approved by the ENGINEER and supplied by one of the following manufacturers:

- a. Protex
- b. Master Builders
- c. Gifford-Hill
- d. Sika

3. Accelerating Admixtures: Conform to ASTM C494 Type C or E. Accelerators shall be chloride free. Dosage shall be per manufacturer's recommendations.

4. Water Reducing and Set Controlling Admixtures: Conform to ASTM C494, Type A or D. Dosage shall be per manufacturer's recommendations.

C. Chloride Ion Content: The maximum water soluble chloride ion concentration in the concrete mix shall not exceed 0.15% by weight of water.

D. Slump: Design water-cement ratio to provide slumps indicated under mix type at placement. Concrete to be placed by pumping shall have a maximum slump of 6" at the pump.

E. Mixing: Ready-mix concrete shall conform to provisions of ASTM C-94.

2.03 CONCRETE MIX TYPES

A. The following concrete mixes will be required:

Mix A- For Structural Concrete.

4000 psi

Type II Cement

3/4" Maximum Aggregate Size

5-8% Entrained Air

4" Maximum Slump

0.45 Maximum Water/Cement Ratio

Mix B- For Thrust Blocks, Encasements and Unformed Cut-off Walls.

3000 psi

Type II Cement

3/4" Maximum Aggregate Size

6% Plus or Minus 2% Entrained Air

4" Maximum Slump

Mix C- For Sidewalks, Curb and Gutter, Driveways, Crosspans, Pedestrian Ramps and Flatwork.

4000 psi

Type II Cement

3/4" Maximum Aggregate Size

5-8% Maximum Entrained Air

4" Maximum Slump

Minimum 540 lbs of Cementitious Material Per Cubic Yard.

Mix D – Structural Topcoats

3000 psi

Type II Cement

Pea Gravel Maximum Aggregate Size

5-8% Entrained Air

4" Maximum Slump

0.45 Maximum Water/Cement Ratio

Fiber Reinforcement

B. All mix designs shall be identified by the mix identification letter.

2.04 REINFORCING STEEL

A. Bars refer to ASTM A615, Grade 60 unless specified otherwise.

B. Welded Wire Fabric, refer to ASTM A135 or A497.

C. Fabrication, refer to ACI 315 and 318 unless shown otherwise on drawings.

2.05 BAR SUPPORTS

A. Bar supports coming into contact with forms shall be CRSI Class 1 plastic protected or Class 2 stainless steel protected and shall be located in accordance with CRSI MSP-1 and placed in accordance with CPSI PRB. Concrete block supports shall be provided for footing and slabs on grade. Stainless steel or plastic protected plain steel supports shall be provided for other work.

2.06 GROUT

A. Daypack Grout: Daypack grout shall be a mixture of approximately one part cement, 1-1/2 to 2 parts sand, water reducing admixture, and sufficient water to make a stiff workable mix.

B. Non-shrink Grout: Non-shrink grout shall have non-metallic aggregate. Acceptable products are Sikagrout 212, by Sika Corporation, Five Star grout; or equal.

- C. Epoxy Grout for Crack Repair and Dowel Anchorage: Except as noted below, epoxy grout shall be high modulus, two-component, moisture insensitive, 100 percent solids, thermosetting modified polyamid epoxy compound. The consistency shall be a paste form capable of not sagging in horizontal or overhead anchoring configurations. Material shall conform to ASTM C881 Type 1, Grade 3, such as Adhesive Engineering Concrete 1440 series, Sika Corporation Sikadur Hi-Mod Series, Adhesive Technology Corporation Solidbond 200 or equal, and shall have a heat deflection temperature in excess of 130° F.
- D. Epoxy for pressure grouting / crack injection shall be a two-component, moisture intensive, high modulus, injection grade, 100 percent solids, blend of epoxy-resin compounds. The consistency shall be as required to achieve complete penetration in hairline cracks and larger. Material shall conform to ASTM C881 Type 1 Grade 1, such as site a corporation Sikadur 52, Adhesive Engineering Company, SCB products, Adhesive Technology, Corporation SLV 300 series or equal.

PART 3 – EXECUTION

3.01 INSPECTION

- A. **ENGINEER's** Inspection: Provide ample notice to the ENGINEER to allow him to examine forms and reinforcement just before concrete is poured and to observe the placing of concrete. Do not begin placement until inspection of ENGINEER is obtained.

3.02 PREPARATION

- A. Do not begin concrete work until all operations are complete enough to allow placement to be carried on as a continuous operation for the entire section that is to be placed. Clean all equipment for mixing and transporting the concrete. Forms shall be cleaned of all debris and ice and shall be wetted (except in freezing weather) and coated as specified under Concrete Formwork. If water accumulates in the forms it shall be pumped out before concrete is deposited. Clearly mark finish top surface of vertical members on the form walls.
- B. Protection: Cover walls, glazing, and other finish materials with polyethylene or otherwise protect from damage due to pouring of slabs or sidewalks.

3.03 FORMING

- A. Insure that forms are sufficiently braced to hold position and shape during placing and curing.
- B. Leave forms in place until concrete has achieved sufficient strength.
- C. Exercise care in removing forms so as not to chip, crack or damage concrete.

3.04 REINFORCEMENT

- A. Install reinforcing steels where shown on drawings or specified.
- B. Support reinforcing steel as required by ACI 315.

3.05 PLACEMENT

- A. General: Follow recommendations of ACI 301-84, Chapter 8.
- B. Placement: Place concrete in approximately uniform horizontal layers not over 2 feet in height. Piling up of the concrete in the forms or chuting in such a manner to separate the aggregates will not be permitted. Concrete shall not be dropped over 4'-0".
- C. Water: Prevent accumulations of water on the surface of the concrete due to water gain, segregation, or other causes, during placement or compacting, as far as possible by adjustments in the mixture.

Make provision for removal of such water as may accumulate so that under no circumstances will concrete be placed in such accumulation.

- D. Compaction: Compact concrete during and immediately after depositing by means of mechanical vibrators. Supplement by hand spading at corners and angles of the forms and in other difficult areas. Mechanical vibrator to cycle at 10,000 cycles per minute or more.
- E. Finishing: Where tops of poured walls are to form a finished surface, concrete shall be immediately finished in the form by a skilled cement finisher. Walls or surfaces not finished to a level will be ordered removed and replaced.
- F. Mechanical vibrators need not be used for thrust restraints.

3.06 JOINTS

A. Expansion and Contraction Joints:

- 1. Provide expansion joint filler at locations indicated on the drawings. Do not extend reinforcement continuously through the joint.
- 2. Where "break bond" or "isolation" joint is indicated form joint with 30 pound asphalt saturated felt extending full depth of joint or approved metal keyed joint.

B. Construction Joints:

- 1. Obtain **ENGINEER's** approval for location of construction joints not shown on the drawings.
- 2. Obtain bond at construction joints by cleaning and roughening concrete surface and removing laitance, wetting the surface and applying neat cement grout prior to placing concrete.

C. Watertight Joints:

- 1. Provide waterstop at construction joints where shown on the drawings.
- 2. Butt-splice waterstop with an electrical welding iron in accordance with manufacturer's printed instructions.

3.07 EMBEDMENTS

- A. Accurately position and securely fasten all anchor bolts, casting, steel shapes, conduit, sleeves, masonry anchorage, and other materials to be embedded in the concrete.
- B. Install conduits between reinforcing steel in walls or slabs with reinforcing in both faces and below reinforcing in slabs with only one layer of reinforcing steel.
- C. Embedments shall be clean when installed. Remove concrete spatter from all surfaces not in contact with concrete.

3.08 FINISHING FORMED SURFACES

A. Rough Form Finish:

- 1. Rough form finish is acceptable for surfaces not exposed to view such as surfaces in contact with earth backfill.
- 2. Repair and patch all tie holes and defects with mortar.

3. Remove all fins.

3.09 SLAB FINISHES

A. Trowled Finish:

1. Use for floors intended as walking surfaces or to receive floor coverings.
2. Float surface prior to troweling. Power-trowel surface to smooth finish with tolerance of 1/4 inch in 10 feet.
3. Hand trowel areas inaccessible to power trowel.

B. Broom or belt finish:

1. Use for sidewalks, ramps, curbs, gutters and driveways.
2. After completion of floated finish draw a broom or a burlap belt transverse cross the surface.

3.10 TREATMENT OF FORMED SURFACES

- A. Form Removal: Finish concrete surfaces covered by formwork immediately after forms have been removed. Do not expose more surface area than can be finished in one working day.
- B. Patching: Patch voids honeycombs or damaged areas in accordance with Chapter 9 of ACI 301. Cut out large defective areas a minimum of 1" deep, and patch as specified. Add white cement to patching grout, as required, to match color of existing concrete where patches are exposed to view. Patch all tie holes.
- C. Laitance: Remove deposits of laitance occurring on the top of the concrete surfaces as soon as the concrete has hardened sufficiently to prevent injury to the concrete. Repair areas where laitance is removed as specified for patching.
- D. Unexposed Concrete Surfaces: Treat surfaces of concrete wall, slabs, beams and columns, which are to be covered by subsequent work, as specified under Patching.
- E. Unpainted Exposed Concrete Surfaces: Concrete surfaces, both interior and exterior, to remain exposed but unpainted shall be carefully protected from damage and soiling during the progress of the work. Patch where required as specified under Patching. Upon completion of the work, re-clean damaged or soiled surface as required to make clean, smooth and finished in every respect.

3.11 SANITARY SEWER MANHOLES

- A. Provide smooth steel trowel finish on inverts.
- B. Provide broom finish on benches.
- C. Provide invert to lines, grades, and elevations indicated on the construction drawings.

3.12 DEFECTIVE CONCRETE

- A. Remove and replace defective concrete as directed by the **ENGINEER**.
- B. Repair in accordance with ACI 301, Chapter 9.

3.13 CURING AND PROTECTION

- A. Protection: Protect exposed surfaces of concrete from premature drying and frost. Protect freshly placed concrete from rain damage. Protect finished slabs from mortar leakage from pouring of slabs above.
- B. Form Removal: Do not remove forms until such time as specified. Remove carefully to not injure the concrete surface. Protect edges and corners to prevent cracking, chipping or other damage and premature drying.
- C. Vertical Surfaces: Clean surfaces of loose sand, mortar, debris and grout; spray lightly with water and coat with a clear or translucent curing compound as soon as possible after removing forms. Apply curing compound the same working day that the forms are removed.
- D. Horizontal Surfaces: As soon as possible after placing concrete, coat exposed horizontal surfaces with curing compound as specified and cover with a white polyethylene sheeting of a minimum of 6 mil nominal thickness. Give special attention to securing adequate curing of slab edges. Provide polyethylene sheeting as wide as practical, edges lapped a minimum of 6", weighted to prevent blowing, and sealed to prevent loss of moisture. Keep sheeting in place a minimum of seven (7) days.
- E. Cleaning: Clean off all stains or discolorations from exterior exposed concrete walls using methods approved by the ENGINEER. If diluted acid is used, surfaces shall be thoroughly flushed with clean water to remove all acid following cleaning. Use only fiber brushes if brushing is required.
- F. Protect concrete surfaces from staining, cracking, chipping, and other damage during progress of the work, and leave in good condition upon completion.
- G. Keep concrete continuously moist for at least 7 days after placement by use of wet burlap, wet absorptive mats, waterproof sheets, or membrane curing.
- H. Maintain concrete within 50o to 70oF range during curing.
- I. Do not use membrane curing compounds when the surface is to be painted, or other material is to be bonded to the surface.

3.14 FIELD QUALITY CONTROL

- A. General: Testing will be conducted by an approved testing laboratory. See Section 01 45 29, Testing Laboratory Services.
- B. Test Priority: Control tests shall be used to determine the concrete quality throughout the project; however, special tests shall have precedence over control tests, and core tests shall have precedence over all previous tests.
- C. Tests: Cooperate fully with those making tests. The following test and procedures are subject to change during construction at the discretion of the **ENGINEER**.
 - 1. Test Reports: In accordance with Section 01 45 29.
 - 2. Slump Tests: Provide necessary equipment and make tests in conformity with ASTM C143-78 as frequently as directed by the **ENGINEER**. The tests shall be made by a person thoroughly familiar with the requirements specified. Should the slump exceed the limits stated for Concrete Mix Types in Part 2, the batch shall be rejected. Keep an accurate record of the time, location in the work, and the results of the slump tests, which shall be available for inspection by the **OWNER** and the **ENGINEER**. When concrete is placed by pumping, slump tests shall be made at the end of the discharge hose. Conduct test for each strength test sample and whenever consistency of concrete appears to vary.

3. Strength Tests: Control tests of concrete work shall be made on every 50 cubic yards or fraction thereof of concrete placed including site concrete and, in any case, a minimum of once during each day's pour. Each test sample shall consist of three standard 6" test cylinders cast and cured in accordance with ASTM C31-83 and ASTM C172-82. One cylinder shall be broken at the end of 7 days after placing, two cylinders shall be broken at the end of 28 days after placing. The **ENGINEER** reserves the right to stop future concrete work when the 7 or 28 day tests indicate unsatisfactory results until, in his opinion, proper corrective measures have been taken to insure quality concrete in future work and corrections deemed necessary have been made. Tests shall be made at the time control tests are taken and so stated in the reports to determine the slump, air content, unit weight and temperature of the concrete. All tests shall be made in accordance with ASTM C138-81 or ASTM C231-82.
4. Air Content: Conduct test from one of first three batches mixed each day and for each strength test sample.
5. Special Test: Should the **CONTRACTOR** desire control tests to facilitate the early removal of forms, they shall be made in addition to those specified for control tests and shall be completely site-cured. The expense for making additional test cylinders, testing, curing and protection shall be the **CONTRACTOR's**.
6. Core Tests: If, at any time, the concrete control test specimens show a compressive strength at 28 days of less than that required in the Specifications, or if the concrete has been frozen before it has taken the final set, so severely that, in the opinion of the **ENGINEER**, its strength has been adversely affected, the **CONTRACTOR** shall, at his own expense, have sufficient core tests taken, the number and location to be approved by the **ENGINEER** on such portions of the work as may have been affected to determine the actual conditions of the concrete. The securing, preparing and testing shall be in accordance with ASTM C42-82. Should the tests reveal that the concrete does not meet the requirements of this specification, the **CONTRACTOR** shall, at his own expense, replace the entire section involved or make corrections deemed necessary by the **ENGINEER**.

END OF SECTION

SECTION 03 33 10

CONCRETE CURBS AND SIDEWALKS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section covers the installation of concrete walkways, curb and gutter, crosspans, pedestrian ramps, and aprons.
- B. Related Work:
 - 1. Formwork: Section 03 11 00, Concrete Formwork
 - 2. Concrete: Section 03 30 00, Cast-in-Place Concrete

1.02 QUALITY ASSURANCE

- A. Testing Agency: Testing will be conducted by testing laboratory. See Section 03 30 00, Cast-in-Place Concrete, and Section 01 45 29, Testing Laboratory Services.
- B. Record of Work: Keep record listing the time and date of placement of concrete.

Keep record until the completion of the project and make available to the ENGINEER for examination at any time.

1.03 REFERENCES

- A. Reference Standard--Concrete Work: Section 03 30 00, Cast-in-Place Concrete.

1.04 SUBMITTALS

- A. Mix Designs: Prior to placing any concrete, submit concrete mixes for approval. Separate mix designs shall be submitted for each type of concrete to be used in the project. Submittals shall include all information used in designing the mixes.
- B. Test Reports: Reports of control tests, special tests or core tests specified under Section 03300 shall be distributed by the testing laboratory in accordance with Section 01 45 29.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Hauling Time: Comply with Section 03 30 00.
- B. Extra Water: Comply with Section 03 30 00.

1.06 PROJECT CONDITIONS

Environmental Requirements: Comply with Section 03 30 00.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Formwork: Comply with Section 03 11 00

- B. Concrete: Provide ready mixed concrete in accordance with Section 03 30 00. On-job mixed concrete not allowed.
- C. Reinforcement: Comply with Section 03 20 00.

2.02 CONCRETE MIX

- A. Mix Design: See Section 03 30 00.
- B. Air Entrainment and Admixtures: Comply with Section 03 30 00.
- C. Mixing: Comply with Section 03 30 00.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Subgrade: Inspect subgrade to verify elevation and compaction requirements. See Section 31 23 33, Earthwork. Do not proceed with work until acceptable conditions have been corrected. Beginning of installation means acceptance of subgrade.
- B. Engineer's Inspection: Provide ample notice to the Engineer to allow him to examine forms and reinforcement just before concrete is deposited and to observe the placing of concrete. Do not begin placing concrete until inspection of ENGINEER is obtained.

3.02 PREPARATION

- A. Subgrade: Perform minor cut and fill required to bring the grade to the correct level to receive concrete work. Recompact to comply with Section 31 23 33.
- B. Concrete Work Preparation: Comply with Section 03 30 00.
- C. Protection: Comply with Section 03 30 00.
- D. Existing Asphalt: Where new curb and gutter abuts existing asphalt paving, cut asphalt to a straight line and pour toe of gutter against asphalt to avoid necessity of patching asphalt.

3.03 FORMWORK

- A. Formwork: Install in conformance with Section 03 11 00.
- B. Reinforcement: Install in conformance with Section 03 30 00.

3.04 CONCRETE PLACEMENT

General: Place concrete in conformance with Section 03 30 00.

3.05 CURBS AND SIDEWALKS

- A. Finish: In depositing concrete against the forms, care shall be taken to work the fine portions of the aggregate surface so as to leave the surface in a uniform and smooth condition. The concrete shall be worked sufficiently to produce a dense mass. The surface shall be struck off with a straight-edge. When the concrete has set sufficiently, the surface shall first be trowelled, then broomed with a fine hair push broom at right angles to the centerline of the sidewalk.
- B. Thickness: Total thickness of sidewalks shall be full 4" unless otherwise indicated.

C. Joints: Provide expansion and contraction joints as indicated and specified.

1. Expansion Joints: Expansion joints shall be one-half (1/2") inch premolded and joints shall be placed where sidewalks end at curb returns, against fixed objects, at points of sharp radius, and between sidewalk and all driveway slabs. Expansion joints shall be placed every fifty (50) feet.
2. Contraction Joints: Contraction joints shall be installed at intervals not to exceed five feet (5') and shall be at least one and one half (1 1/2") inch in depth.

D. Slope: Slope slabs next to building away from building unless otherwise indicated.

3.06 CURING AND PROTECTION

General: Cure and protect in accordance with Section 03 30 00.

3.07 FIELD QUALITY CONTROL

General: Comply with Section 03 30 00 and Section 01 45 00.

END OF SECTION

SECTION 03 60 00

GROUT

PART I – GENERAL

1.01 SCOPE

- A. The **CONTRACTOR** shall furnish all materials for grout in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished grout, in accordance with the requirements of the Contract Documents.
- B. The following types of grout shall be covered in this Section:
 - 1. Non-Shrink Grout
 - 2. Epoxy Grout
 - 3. Cement Grout

1.02 RELATED WORK

- A. Contract Drawings
- B. Section 33 05 61, Pre-Cast Manholes.

1.03 QUALITY ASSURANCE

- A. Compression test specimens will be taken during construction from the first placement of each type of grout, at intervals thereafter as selected by the **ENGINEER** to insure continued compliance with these specifications. The specimens will be made by the testing agency as delineated in Section 01 45 29.
- B. Source Quality Control: The **ENGINEER** shall be offered uninterrupted access to the ready-mix batching plant while the work is in progress.
- C. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C 109 at intervals during construction as selected by the **ENGINEER**. A set of three specimens will be made for testing at 7 days, 28 days, and each additional time period as appropriate.
- D. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM 579, Method B, at intervals during construction as selected by the **ENGINEER**. A set of three specimens will be made for testing at 7 days, and each earlier time period as appropriate.
- E. All grout, already placed, which fails to meet the requirements of these specifications, is subject to removal and replacement at the cost of the **CONTRACTOR**.
- F. The cost of all laboratory tests on grout will be borne by the **OWNERS**, but the **CONTRACTOR** shall assist the testing agency in obtaining specimens for testing. However, the **CONTRACTOR** shall be charged for the cost of any additional tests and investigations on work performed which does not meet these specifications. The **CONTRACTOR** shall supply all materials necessary for fabricating the test specimens.
- G. Record of Work: Keep a record listing the time and date of placement of concrete for the structure. Such record shall be kept until the completion of the project and shall be available to the **ENGINEER** for examination at any time.

1.04 REFERENCES, CODES, AND STANDARDS

Reference Standards: Except as modified or supplemented in these specifications, structural concrete shall meet the requirements of the following standards. Refer to the standards for detailed requirements.

- A. CRD-C 621 Corps of Engineers Specification for Non-Shrink Grout.
- B. ASTM C 109 Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2” Cube Specimen).
- C. ASTM C 531 Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical Resistant Mortars, Grouts, and Monolithic Surfacing
- D. ASTM C 579 Test Method for Compressive Strength of Chemical Resistant Mortars and Monolithic Surfacing
- E. ASTM C 827 Test Method for Early Volume Change of Cementitious Mixtures
- F. ASTM D 696 Test Method for Coefficient of Linear Expansion of Plastics

1.05 SUBMITTALS:

- A. Mix Designs: Prior to placing any concrete, submit concrete mixes for approval in accordance with Section 01 33 00 if requested by **ENGINEER**. Separate mix design shall be submitted for each type of concrete to be used in the project. Submittals shall include all information used in designing the mixes.
- B. Test Reports and Literature: The **CONTRACTOR** shall submit certified test results, verifying the compressive strength, shrinkage, and expansion requirements specified herein; and manufacturer’s literature containing instructions and recommendations on the mixing, handling, placement, and appropriate uses for each type of non-shrink and epoxy grout used in the work.
- C. Submit delivery ticket for each load delivered to site (Cement Grout Only). Include:
 - 1. Mix identification
 - 2. Time water added
 - 3. Time unloaded
 - 4. Amount of initial and supplemental water added

PART 2 – PRODUCTS

2.01 CEMENT GROUT

- A. Cement Grout: Cement Grout used for patching applications shall be composed of one part cement, three parts sand, and the minimum amount of water necessary to obtain the desired consistency. Where needed to match the color of adjacent concrete, white portland cement shall be blended with regular cement as needed. The minimum compressive strength at 28 days shall be 4000 psi.
- B. Structural Cement Grout: Cement grout used in structural applications (i.e. grouting rip rap) shall match the mix design set forth in Section 03 30 00 for Mix Design B.
- C. Cement grout materials shall be as specific in Sections 03 30 00 Cast In Place concrete.

2.02 PREPACKAGED GROUT

A. Non-Shrink Grout

1. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout specified herein shall be that recommended by the manufacturer for the particular application.
2. Class A non-shrink grouts shall have a minimum 28 day compressive strength of 5000 psi; shall have no shrinkage (0.0%) and a maximum 4.0% expansion in the plastic state when tested in accordance with ASTM C-827; and shall have no shrinkage (0.0%) and a maximum of 0.2% expansion in the hardened state when tested in accordance with CRD C-621.
3. Class B non-shrink grouts shall have a minimum 28 day compressive strength of 5000 psi and shall meet the requirements of CRD C 621.
4. Applications:
 - a. Class A non-shrink grout shall be used for the repair of all holes and defects in concrete members which are water bearing or in contact with soil or other fill materials, grouting under all equipment base plates, and at all locations where grout is specified in the contract documents; except for those applications for Class B non-shrink grout and epoxy grout specified herein. Class A non-shrink grout may be used in place of Class B non-shrink grout for all applications.
 - b. Class B non-shrink grout shall be used for the repair of all holes and defects in concrete members which are not water-bearing and not in contact with soil other fill material, grouting under all base plates for structural steel members, and grouting railing posts in place.

B. Epoxy Grout:

1. Epoxy grout shall be a pourable, non-shrink, 100% solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged.
2. The chemical formulation of the epoxy grout shall be that recommended by the manufacturer for the particular application.
3. The mixed epoxy grout system shall have a minimum working life of 45 minutes at 75° F.
4. The epoxy grout shall develop a compressive strength of 5000 psi in 24 hours and 10,000 psi in seven days when tested in accordance with ASTM C 579, Method B. There shall be no shrinkage (0.0%) and a maximum 4.0% expansion when tested in accordance with ASTM C 827.
5. The epoxy grout shall exhibit a minimum effective bearing area of 95%. This shall be determined by a test consisting of filling a 2" diameter by 4" high metal cylinder mold covered with a glass plate coated with a release agent. A weight shall be placed on the glass plate. At 24 hours after casting, the weight and plate shall be removed and the area in plan of all voids measured. The surface of the grout shall be probed with a sharp instrument to locate all voids.
6. The peak exotherm of a 2" diameter by 4" high cylinder shall not exceed 95° F when tested with 75° F material at laboratory temperature. The epoxy grout shall exhibit a maximum thermal coefficient of 30×10^{-6} inches/degree F when tested according to ASTM C 531 or ASTM D 696.
7. Application: Epoxy grout shall be used to embed anchor bolts, reinforcing steel, and manhole steps required to be set in grout, and for all other applications set forth in the Contract Documents.

2.03 CURING MATERIALS

- A. Curing materials shall be as specified in Section 03 30 00 Cast In Place Concrete for cement grout and as recommended by the manufacturer of prepackaged grout.

2.04 CONSISTENCY

- A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where “dry pack” is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as specified herein for the particular application

2.05 MEASUREMENT OF INGREDIENTS

- A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurements shall not be allowed.
- B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

PART 3 – EXECUTION

3.01 GENERAL

- A. All surface preparation, curing, and protection of cement grout shall be completed as follows:
 - 1. Remove all loose, spalled, exfoliated, etc. topcoat grout from the existing clarifier surface as directed by the contract drawings.
 - 2. Concrete surface to receive grout topping shall be rough. If any smooth surfaces exist which are to receive grouted topping contract shall roughen using mechanical means.
 - 3. Hose down exposed concrete surface and clean of all laitance and loose debris.
- B. The manufacturer of Class A non-shrink grout and epoxy grout shall provide on-site technical assistance upon request.
- C. All mixing, surface preparation, handling, placing, consolidation, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

3.02 CONSOLIDATION

- A. Grout shall be placed in such manner, for the consistence necessary for each application, so as to assure that the space to be grouted is completely filled.
- B. Protection: Cover walls, glazing, and other finish materials with polyethylene or otherwise protect from damage due to pouring of slabs or sidewalks.

END OF SECTION

Division 31 – Earthwork

SECTION 31 23 19

DEWATERING

PART 1 – GENERAL

1.01 RELATED WORK

- A. Trenching, Backfilling & Compacting: Section 31 23 33.

1.02 QUALITY CONTROL

- A. Groundwater level varies in depth. **CONTRACTOR** shall be prepared to encounter groundwater at various depths.
- B. It shall be the sole responsibility of the **CONTRACTOR** to control the rate and effect of dewatering operations in such a manner as to avoid all objectionable settlement and subsidence.
- C. All dewatering operations shall be adequate to assure the integrity of the finished project and shall be the responsibility of the **CONTRACTOR**.
- D. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points should be established and observed at frequent intervals to detect any settlement which may develop.
- E. The responsibility of conducting dewatering operations in a manner which will protect adjacent structures and facilities rests solely with the **CONTRACTOR**. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the **CONTRACTOR**.

PART 2 – PRODUCTS

2.01 EQUIPMENT

- A. Before operations begin, the **CONTRACTOR** shall have available on site sufficient pumping equipment and/or other machinery to ensure that the operation of the dewatering system can be maintained.

PART 3 – EXECUTION

3.01 METHODS

- A. Dewatering shall be done by such methods as the **CONTRACTOR** may elect.
- B. Dewatering, sufficient to maintain the groundwater level at or below the surface of the trench bottom, base of the bedding course, or foundation or lagoon bottom as necessary for lining, shall be accomplished prior to pipe laying and jointing, if not prior to excavation and placing of the bedding as called for in other sections of the Specifications. The dewatering operations, however accomplished, shall be carried out so that they do not destroy or weaken the soil under or alongside the excavation.
- C. The normal water table shall be restored to its natural level in such a manner as not to disturb the pipe and its foundation.
- D. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or other means used to prevent pumping of fine sands or silts from the subsurface. A continual check by the **CONTRACTOR** shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

- E. Dewatering shall be considered incidental to the construction, and all costs associated with dewatering shall be included in various unit contract prices in the Bid Form.
- F. Dispose of water so as not to cause injury to public or private property, or to cause a nuisance or menace to the public and in accordance with the requirements of regulatory agencies.
- G. Construction of temporary facilities to dispose of water shall be incidental to the construction.
- H. Permanent, above-ground piping systems shall not be incorporated in the dewatering system.

END OF SECTION

SECTION 31 23 33

TRENCHING, BACKFILLING AND COMPACTING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Work Included: This section covers site preparation, earthwork and surface restoration for underground pipelines, conduits, cables, and appurtenances shown on the drawings and required by the specifications.
- B. Related Work:
 - 1. Section 01 45 29: Testing Laboratory Services

1.02 QUALITY ASSURANCE

- A. Maintain all trench backfill and resurfacing in a satisfactory condition for a period of two years after final acceptance by the **OWNER**.
- B. See Field Quality Control

1.03 JOB CONDITIONS

- A. Surface Improvements: Protect from damage or restore to their original condition all surface improvements encountered during trenching or construction. Said improvements shall include but not be limited to the following: surfacing; sidewalks; curbs; valley gutters; trees and shrubs; other surface vegetation; driveways; mailboxes; utilities; signs; or other improvements.
- B. Notify **ENGINEER** of unexpected subsurface conditions and discontinue work in affected area until notification to resume work.
- C. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.
- D. Underground Obstructions:
 - 1. Protect from damage any underground pipes, utilities or structures encountered during construction. Restore any damaged underground obstructions to their original condition at no cost to the **OWNER** unless evidence of other arrangements satisfactory to all parties is presented to the **OWNER**.
 - 2. Before commencing work, obtain information concerning location, type and extent of concealed existing utilities on the site and adjacent properties. Consult records and personnel of local utility companies, municipal utility departments and telephone company. File Notice of Excavation with these agencies prior to commencing work.
 - 3. Underground obstructions known to the **ENGINEER** (except service lines) are shown on the drawings or otherwise referred to in the specification. The locations shown may prove to be inaccurate, and other obstructions not shown may be encountered. In any case, it shall be the responsibility of the **CONTRACTOR** to protect or restore all underground obstructions encountered.
- E. When construction operations are located within streets, make provisions at cross streets and walks for free passage of vehicles and pedestrians by bridging or other approved methods. Do not block streets or walks without prior approval.

F. Rock Excavation:

1. Removal of solid rock in ledges, bedded deposits or un-stratified masses which, in **ENGINEER'S** opinion, has a hardness when first exposed, of 3 or greater on scale of mineral hardness, which corresponds to hardness of transparent variety of calcite and, in fact, systematically drilled and blasted for removal.
2. Term "rock excavation" shall be understood to indicate method of removal and not geological formation.
3. Boulders larger than 1 cu. yd. will be classified as rock, if drilling and blasting required and actually used for removal.

PART 2 – PRODUCTS

1.01 STABILIZATION MATERIAL

Stabilization material may be required to support the bedding were unstable trench conditions exist. Where required, stabilization material must be washed aggregate meeting the ASTM 467 specification.

1.02 BEDDING MATERIALS

- A. Pipe bedding material shall conform to ASTM D2321-05 at a minimum.
- B. Concrete: Compressive Strength: 3,000 psi at 28 days minimum.
- C. The bedding material shall be a clean well graded sand or squeegee sand free of corrosive properties and shall conform to the following gradation limits when tested by means of laboratory sieves:

Well-Graded Sand

Colorado Department of Transportation
Section 703-1: M-6 gradation

Sieve Size	Total Percent Passing by Weight
3/8 inch	100
No. 4	95-100
No. 16	45-80
No. 50	10-30
No. 200	0-5

Squeegee Sand

Sieve Size	Total Percent Passing by Weight
3/8 inch	100
No. 200	0-5

No rock or stone larger than that allowed by the sieve analysis, or any other detrimental substance, shall be placed closer to the pipe than six inches (6").

- D. Select Soil: Selected soil free from rocks, clods and stones greater than 1-1/2" in any dimension, as approved by **ENGINEER**. Select soil may be used as bedding material only where Class "C" hand-shaped trench is permitted.

1.03 TRENCH BACKFILL MATERIAL

- A. Trench backfill material shall conform to ASTM D2321-05 at a minimum.

- B. Excavated or imported material, free from frozen material, stumps, roots, brush, other organic matter, cinders, peat, or other corrosive material, debris, and rocks or stones greater than the following dimensions:
 - 1. 12 inches in any dimension for material placed within one foot of finished surface. Where material larger than 3 inches is placed in the trench, care should be taken to assure that no voids exist in the backfill.
 - 2. 2 inches in any dimension for material placed within one foot of pipe.
 - 3. 12 inches in any dimension for remainder of trench, provided they are distributed in finer material.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Verify that stockpiled fill to be reused is approved.
- B. Verify that areas to be backfilled are free of debris, snow, ice, or water, and that ground surfaces are not frozen.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Clearing:
 - 1. Remove all stumps, roots, brush, other vegetation, and debris from areas that will be disturbed by the construction operations.
 - 2. Legally dispose of all cleared materials at public or private dumping areas off the **OWNER's** property.
- C. Top-soiling: Strip existing topsoil from areas to be disturbed by construction operations. Stockpile in areas designated by the **ENGINEER**. Keep topsoil segregated from non-organic trench excavation materials and debris.

3.03 PERFORMANCE

- A. Excavation:
 - 1. No classification of excavated materials will be made except as necessary for conformance with ASTM D2321-05. Perform excavation of every description and of whatever substance encountered to the depths indicated or as otherwise specified.
 - 2. Trenching: Excavate trenches by open cut except where tunneling is indicated on plans or considered necessary and proper by the **ENGINEER**. The pipe must be safely and properly installed and backfill properly tamped in the tunnel sections.
 - 3. Stockpiling Excavated Material:
 - a. Pile suitable material for backfilling in an orderly manner a sufficient distance from banks of the trench to avoid overloading and to prevent slides or cave-ins.
 - b. Remove any waste excavated materials not suitable or not required for backfilling off the site.
 - 4. Excavation to Grade: Accurately grade trench bottoms to provide uniform bearing and support for each section of pipe on undisturbed soil at every point along its entire length, except portions of

pipe sections where it is necessary to excavate for bell holes and for proper sealing of pipe joints. Remove stones as necessary to avoid point bearing.

5. Bell Holes: Dig bell holes and depressions for joints after trench bottom has been graded. Bell holes and depressions shall be only of such length, depth and width as required for properly making the particular type of joint. The use of earth mounds for bedding the pipe will not be allowed.
6. Rock Excavation
 - a. Adhere to federal, state, and local ordinances regulating blasting operation where blasting to be done.
 - b. **CONTRACTOR** responsible for damage due to blasting operations.
 - c. Mats shall be utilized to control flying debris.
 - d. Building inspection
 - Make building to building inspection of all buildings abutting project site where blasting will be utilized and also inspect those buildings which may be affected by the blasting operations.
 - Inspection to be performed by **CONTRACTOR** or his agent prior to the start of construction.
 - Prepare report of structural condition of exterior and interior, including foundation, of each building and have report signed by property owner or his agent.
 - Report should be accompanied by pictures or video to document structural condition
 - Document those building where entrance is denied and send copies of documentation to **OWNER, ENGINEER,** and property owner.
 - Submit one copy of structural report to **OWNER,** one copy to **ENGINEER,** and one copy to property owner.
 - Report shall be submitted prior to blasting operations and prior to submittal of first payment request.
 - e. During blasting operation, shock waves shall be continuously monitored by Seismograph. Readings shall not exceed prescribed governmental guidelines over which damage would be caused to existing buildings.
 - f. Pipe Clearance in Rock: Where rock excavation is necessary, over excavate trench bottom a minimum of 6 inches below the bottom of the pipe for pipe 24 inches in diameter or less and 9 inches for pipe larger than 24 inches. Backfill over-depths with bedding material specified.
7. Unstable Pipe Subgrade: Whenever wet or otherwise unstable material that is incapable of supporting pipe is encountered in the bottom of the trench, over excavate such material to a depth suitable for construction of stable pipe bedding. Bed pipe to proper grade with compacted granular material and stabilization material, if necessary. Backfill of trench will be select fill.
8. Limiting Trench Widths:
 - a. Excavate trenches to provide adequate working space and pipe clearances for proper pipe installation, jointing and embedment. Provide a minimum clearance inside trench or trench box whichever is smaller, of 6 inches on each side of the pipe for pipe 12 inches in diameter or less, 8 inches for pipe between 14 inches and 30 inches in diameter and 12 inches for pipe larger than 30 inches in diameter.

- b. Maximum trench width measured at the top of the pipe shall not exceed the outside diameter of the pipe plus 30 inches for pipe 24 inches in diameter or smaller and plus 30 inches for pipe larger than 24 inches.
 9. Excavation for Appurtenances: Make excavations for manholes, vaults and similar structures sufficient to leave at least 12 inches clear space between outer surface of structure and the bank shoring material that may be used to hold and protect the banks.
- B. Bedding Pipe:
 1. Pipe bedding shall conform to ASTM D2321-05 at a minimum with a minimum of 8 inches placed below pipe.
 2. Place material under and around the pipe as shown on the drawings using the bedding material specified.
 3. Employ a placement method so as not to disturb or damage pipe.
 4. Support pipe during placement and compaction of bedding fill.
 5. Hand chink bedding around and under pipe to compact bedding material around the haunches of the pipe.
- C. Trench Backfilling:
 1. Trench backfilling shall conform to ASTM D2321-05 at a minimum.
 2. Backfill trenches to contours and elevations. Do not backfill over porous, wet or spongy subgrade surfaces. Backfill as early as possible.
 3. Place and compact select fill materials in continuous layers not exceeding 8 inches loose depth.
 4. Place and compact common fill material in continuous layers.
 5. Remove surplus backfill materials.
 6. Leave stockpile areas completely free of excess fill materials.
- D. Compaction:
 1. Compaction in pipe zone shall conform to ASTM D2321-05 at a minimum.
 2. Maintain at +/- 2% of optimum moisture content of backfill materials to attain required compaction density.
 3. Within 1 foot of the top of the pipe, care should be taken to avoid damage to the pipe through compaction.
 4. In general, backfill shall be mechanically compacted by means of tamping rollers, sheeps-foot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers.
 5. Compaction by jetting shall not be permitted unless material is of suitable granular material as determined by the **ENGINEER**. In no case will compaction by jetting be permitted in State Highways or paved or gravel roadways.

3.04 FIELD QUALITY CONTROL

- A. Density Testing and Control: Refer to Section 01 45 29, Testing Laboratory Services.
- B. Soil Compaction Tests:

1. Compaction testing within the pipe embedment zone shall conform to ASTM D2321-05 at a minimum.
2. Conduct in accordance with requirements of ASTM D698-00 or AASHTO T99 -- Standard Method of Test for Moisture Density Relations of Soils Using a 5.5 lb. Rammer and a 12-inch Drop.
3. Alternate Soil Compaction Tests: (Where specified by the **ENGINEER**) Conduct in accordance with requirements of ASTM D1557- 02 or AASHTO T180 -- Modified Method of Test for Moisture Density Relations of Soils Using a 10.0 lb. Rammer and a 18-inch Drop.
4. Use method A, B, or C as appropriate, based on soil condition and judgment of the testing laboratory. Samples tested shall be representative of materials to be placed (or altered). Obtain optimum moisture density curve for each type of material or combination of materials encountered or utilized. Use test results as a basis for compaction control. Testing includes Atterberg Limits, grain size determination and specific gravity.

C. Density Control:

1. Density Control shall conform to ASTM D2321-05 at a minimum.
2. Conduct tests for density control during compaction operations in accordance with the requirements of ASTM D2922-04 -- tests for Density of Soil and Soil-Aggregate-in-Place by Nuclear Methods.
3. Conduct a minimum of four (4) tests for every 100 lineal feet of trench at locations and depths where directed by the **ENGINEER**. Excavate to depths directed to accommodate testing and backfill test holes in accordance with the above provisions.

3.05 SURFACE RESTORATION

- A. Final Grading: Fine grade all areas disturbed by the construction operations after completion of backfilling and compacting. Areas which are to receive pavements, surfacing, topsoil, or landscaping shall be graded as required to allow installation of the specific surface treatment. Grade all other areas to match the existing ground line.
- B. Top-soiling: Replace suitable topsoil to the depth of stripping over all areas disturbed by the construction that do not receive other surface treatment. Do not compact topsoil during stripping, stockpiling or placing.
- C. Surface Improvement Repair and Replacement: Replace and repair any surface improvements damaged or removed. Meet the requirements specified for the particular type of improvement to be repaired or replaced.

END OF SECTION

SECTION 31 25 00

EROSION CONTROL

PART 1 – GENERAL

1.01 RELATED WORK

- A. Trenching, Backfilling and Compacting: Section 31 23 33
- B. Department of Highways, State of Colorado, Division of Highways Temporary Erosion Control (M-Standards).

1.02 QUALITY CONTROL

- A. Conform to regulatory requirements.
- B. Sedimentation control systems depicted on drawings are intended to be minimum requirements to meet anticipated site conditions.
- C. When no sedimentation control system is shown on the drawing, the CONTRACTOR shall provide and design system to prevent siltation of adjacent property, lakes, or streams.

1.03 SCHEDULE

- A. Required sedimentation control facilities must be constructed and in operation prior to land clearing and/or other construction to ensure that sediment laden water does not enter the natural drainage system.
- B. Sediment facilities shall be maintained in a satisfactory condition until such time that clearing and/or construction is completed and potential for on-site erosion has passed.
- C. The implementation, maintenance, replacement and additions to erosion/sedimentation control systems shall be the responsibility of the CONTRACTOR.

PART 2 – PRODUCTS

2.01 STRAW

- A. Be in an air dried condition free of noxious weeds, weed seeds, and other materials detrimental to plant life.
- B. Be seasoned before baling or loading and shall be acceptable to the ENGINEER.

2.02 JUTE MATTING

- A. Be of a uniform open plain weave of unbleached, single jute yam treated with a fire retardant chemical.
- B. The yam shall be of a loosely twisted construction and shall not vary in thickness by more than 1/2 of its nominal diameter.
- C. Furnished in rolled strips 48 inches wide by approximately 50 yards long.
- D. Average weight of 0.92 pounds per square yard with an allowable tolerance of plus or minus 1 inch in width and 5 percent in weight.

2.03 FILTER FABRIC

- A. Filter fabric shall be Mirafi 140, or equivalent.

2.04 WIRE

- A. Wire for the erosion protection barriers shall be 2 x 2 mesh, 14 gauge galvanized wire.

2.05 SUPPORT POSTS

- A. Support posts for the erosion protection barriers shall be 2-inch by 4-inch, Doug-FR No. 1 or better wood posts or 1-1/2 inch by 4/8-inch medium weight steel fence posts.

2.06 CLEAR PLASTIC COVERING

- A. Clear plastic covering for protection of slopes and cuts shall meet the requirements of the NBS Voluntary Product Standard, PS 17 for Polyethylene sheeting having a minimum thickness of 6 mil.

PART 3 – EXECUTION

3.01 EROSION CONTROL

- A. Erosion control provisions shall meet or exceed the requirements of the agency or agencies having jurisdiction.
- B. When provisions are specified and shown on the Drawings, they are the minimum requirements.
- C. Contractor shall not permit sediment laden waters to enter drainage facilities.
- D. As construction progresses and seasonal conditions dictate, more siltation control facilities may be required. It shall be the responsibility of the CONTRACTOR to address new conditions that may be created and to provide additional facilities over and above minimum requirements as may be required.

3.02 SILTATION/SEDIMENTATION PONDS

- A. Siltation/sedimentation ponds shall be installed on site to desilt all stormwater or water pumped from excavations.
- B. If additional siltation control is required, check dams or silt fences may be placed in streams or ditches receiving stormwater from areas disturbed by construction.
- C. Siltation/sedimentation ponds shall be constructed in accordance with the requirements of the agencies having jurisdiction over facilities to receive discharge from siltation/sedimentation ponds.

3.03 FILTER FABRIC FENCES

- A. Filter fabric fence shall consist of filter fabric fastened to wire fabric with staples or wire fasteners.
- B. Wire shall be fastened to posts set at 4-foot centers.
- C. Fabric shall be buried into ground approximately 8 inches to prevent silt from washing under fabric.
- D. Fence shall be located to catch silt and prevent discharge to drainage courses.

3.04 STRAW BALE FILTER

- A. Installed in drainageway to catch silt
- B. Dig bales into ground approximately 6 inches and stake in place with 2 wooden stakes in each bale.
- C. Bales to extend above anticipated surface of stream.

3.05 PLACING JUTE MATTING

- A. Seed and fertilizer shall be placed prior to placing of matting.
- B. Jute matting shall be unrolled parallel to the flow of water. Where more than 1 strip of jute matting is required to cover the given area, it shall overlap the adjacent mat a minimum of 4 inches. The ends of matting shall overlap at least 6 inches with the upgrade section on top.
- C. The up-slope end of each strip of matting shall be staked and buried in a 6-inch deep trench with the soil firmly tamped against the mat. Three stakes per width of matting (1 stake at each overlap) shall be driven below the finished ground line prior to backfilling of the trench.
- D. The ENGINEER may require that any other edge exposed to more than normal flow of water or strong prevailing winds be staked and buried in a similar manner.
- E. Check-slots shall be placed between the ends of strips by placing a tight fold of the matting at least 6 inches vertically into the soil. These shall be tamped and stapled the same as upslope ends. Check-slots must be spaced so that one check-slot or one end occurs within each 50 feet of slope.
- F. Edges of matting shall be buried around the edges of catch basins and other structures as herein described. Matting must be spread evenly and smoothly and in contact with the soil at all points.
- G. Matting shall be held in place by approved wire staples, pins, spikes or wooden stakes driven vertically into the soil. Matting shall be fastened at intervals not more than 3 feet apart in 3 rows for each strip of matting, with 1 row along each edge and 1 row alternately spaced in the middle. All ends of the matting and check slots shall be fastened at 6-inch intervals across their width. Length of fastening devices shall be sufficient to securely anchor matting against the soil and driven flush with the finished grade.

3.06 PLACING CLEAR PLASTIC COVERING

- A. Clear plastic covering shall be installed on erodible embankment slopes as shown in the plans or as designated by the ENGINEER.
- B. The clear plastic covering shall be installed immediately after completion of the application of roadside seeding.
- C. The CONTRACTOR shall maintain the cover tightly in place by using sandbags or tires on ropes with a minimum 10-foot grid spacing in all directions. All seams shall be taped or weighted down full length. There shall be at least a 12-inch overlap of all seams.
- D. The CONTRACTOR shall be responsible to immediately repair all damaged areas.

3.07 EXISTING DRAINAGE FACILITIES

- A. Should a storm sewer or culvert become blocked or have its capacity restricted due to discharge siltation from CONTRACTOR's operations, the CONTRACTOR shall make arrangements with the jurisdictional agency for the cleaning of the facility at no additional expense to the OWNER.

3.08 DRAINAGE DIVERSION

- A. CONTRACTOR shall divert the surface runoff water around the site as may be required.
- B. Drainage shall be restored to condition existing prior to construction unless otherwise shown on the Drawings.

END OF SECTION

Division 32- Exterior Improvements

SECTION 32 01 17

PAVEMENT REPAIR AND RESURFACING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section covers surface obstructions which the CONTRACTOR must remove and restore, such as pavement, drives, curbs, gutters, sidewalks, and similar surfaces, as required to perform the work.
 - 1. CONTRACTOR has the option of protecting instead of removing and replacing obstructions that interfere with the work.

PART 2 – MATERIALS

2.01 AGGREGATE, ASPHALT AND CONCRETE

- A. All materials, such as but not limited to aggregate, bituminous material, and concrete shall conform to Sections 32 12 16, 32 11 23, 03 33 10, 03 11 00, 03 20 00, and 03 30 00.

PART 3 – EXECUTION

3.01 MANHOLE FRAMES AND VALVE BOXES

- A. Prior to placing the base course, manhole frames and water valve boxes shall be raised to level as shown on details in Contract Drawings.
- B. Foreign matter which is introduced into manholes and valve boxes by the work, shall be removed immediately to provide free access to these facilities.
- C. All valve boxes and manhole rings shall be straight and properly aligned.
 - 1. Valve boxes shall be inspected by placing a valve key on the operating nut to assure a proper alignment.

3.02 ASPHALT AND CONCRETE, INCLUDING BASE AND GRAVEL SURFACING

- A. CONTRACTOR shall remove, dispose of, and restore asphalt, concrete pavement, curbs, drives, sidewalks and gravel surfacing in accordance with the plans and Sections 32 12 16, 32 11 23, 03 33 10, 03 11 00, 03 20 00, and 03 30 00.

3.03 CONCRETE SURFACING

- A. With the exception of improvements on private property, asphalt, concrete drives, curbs, gutters, sidewalks, and similar structures shall be removed, disposed of, and restored in accordance with the following minimum thicknesses:
 - 1. Driveways and slabs shall be 6 inches thick.
 - 2. Patios shall be 5.5 inches thick.
 - 3. Gutters shall be 6 inches thick.
 - 4. Concrete bases for brick pavers and concrete pavement shall be 6 inches thick.
 - 5. Sidewalks shall be 5.5 inches thick.
 - 6. Cross pans shall be 8 inches thick.

B. Reference Section 03300.

3.04 FIELD QUALITY CONTROL

A. Subgrade, aggregate base course, and bituminous pavement shall be compacted in accordance with Sections 31 23 33, 32 12 16 and 32 11 23.

B. Concrete

1. Reference Section 03 30 00.

C. Asphalt

1. Asphalt shall be cut back 8" beyond trench cut prior to asphalt replacement.

2. Asphalt shall be replaced no more than 4 weeks from the initial disturbance.

END OF SECTION

SECTION 32 11 23

AGGREGATE BASE COURSE

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope
 - 1. Gravel surfacing for maintenance road as indicated on the drawings.
- B. Related Requirements Specified Elsewhere
 - 1. Section 31 23 33, Trenching.

1.02 QUALITY ASSURANCE

- A. Reference Standards

Colorado State Department of Transportation

1.03 SUBMITTALS

- A. Test Reports: Perform and submit test reports for the following products in accordance with above general reference standards and specific standards set forth hereafter.
- B. Aggregates
 - 1. Source
 - 2. Type
 - 3. Gradation
 - 4. Deleterious substances
 - 5. Saturated surface dry specific gravity
 - 6. Resistance value as determined by Hveem stabilometer method.

PART 2 – PRODUCTS

2.01 PERFORMANCE AND DESIGN REQUIREMENTS

- A. Aggregate Base Course (ABC).
 - 1. Class 5 or 6 Colorado State Department of Transportation
 - 2. Source of aggregate base course not designated.
 - 3. Resistance value greater than or equal to 77 as determined by the Hveem stabilometer method.

2.02 MATERIALS

- A. Aggregates for Base Course (ABC)
 - 1. Conform to Standard Specification, Section 300, Class 5 or 6 acceptable.

PART 3 – EXECUTION

3.01 GRAVEL SURFACING

- A. Six (6) inch minimum thickness of base course (ABC) material.
- B. Install to limits indicated on drawings.
- C. Compact to 95% of maximum density at +/- 2% of optimum moisture content per ASTM D-698.

END OF SECTION

SECTION 32 12 16

ASPHALTIC CONCRETE PAVING

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Furnish and Install:
 - 1. Soil Sterilization
 - 2. Asphaltic Concrete Paving

1.02 RELATED WORK

- A. Site Grading: Section 31 23 33, Trenching.
- B. Concrete Curb and Gutter: Section 03 33 10, Concrete Curbs and Sidewalks.

1.03 QUALITY ASSURANCE

- A. Record of Work: A record shall be kept by the **CONTRACTOR** listing the time and date of placement of all asphalt work. Retain until the completion of the project and make available to the **ENGINEER** for examination at any time.
- B. Inspection of Batching Plants: The **ENGINEER** shall be offered uninterrupted access to the batching plant at all times while the work is in progress.

1.04 REFERENCES

- A. Comply with Sections 400, Pavements; 702, Bituminous Materials; and 703, Aggregates, of the Colorado State Highway Department Standard Specifications, 1981 edition, which shall be made a part of these specifications by reference.

1.05 SUBMITTALS

- A. Prior to starting asphalt work, submit asphalt concrete mixes to the **ENGINEER** for approval. Include information used in designing mixes.

PART 2 – PRODUCTS

2.01 PRIME COAT/TACK COAT

- A. Grade CSS-1 h emulsified asphalt as defined by Paragraph 702.04 of Colorado State Highway Department Standard Specifications.

2.02 ASPHALTIC CONCRETE MIXTURE

- A. Grade C and CX as defined by Colorado State Highway Department Standard Specifications.

2.03 SOIL STERILIZER

- A. Treflan manufactured by Elanco or approved substitute.

PART 3 – EXECUTION

3.01 PREPARATION OF SUBGRADE

- A. Subgrade under all asphalt shall be prepared by the site grading **CONTRACTOR** who shall perform all cut and fill work required to bring the grade to the correct level to receive base course material. Asphalt paving **CONTRACTOR** shall plow or scarify all subsurface to the depth of 8" and recompact near optimum moisture to a minimum of 95% Modified Proctor Density ASTM. Asphalt paving **CONTRACTOR** shall then proof roll the subgrade with a heavily loaded pneumatic tired vehicle. Areas which deform shall be reported to the **ENGINEER** before proceeding.
- B. Proctor Density tests will be taken by the Soils Engineer and his written approval obtained before proceeding.

3.02 SOIL STERILIZATION

- A. Immediately prior to application of base course material, apply soil sterilizer to subgrade. Mix sterilizer with water per manufacturer's recommendations, 4 gallons Treflan per 46 gallons of water, and uniformly spray-apply to subgrade at the rate of 50 gallons of mixture per acre. Apply as recommended by the manufacturer taking extreme care not to sterilize the adjacent area.

3.03 PRIME COAT APPLICATION

- A. General: Prime all prepared surfaces of aggregate base course with emulsified asphalt in accordance with these specifications.
- B. Surface Preparation: Before applying the prime coat, remove all loose material from the surface. That portion of the surface prepared for treatment shall be dry and in satisfactory condition.
- C. Placing:
 - 1. Place prime coat by means of an approved pressure distributor capable of applying the prime coat uniformly to the surface to be treated in the required quantity. Apply at the rate of 0.1 gallons per square yard.
 - 2. Do not apply prime coat when the surface is wet or when the atmospheric temperature is less than 40° F., or when precipitation is imminent.
 - 3. Carefully apply the prime coat. If excessive amounts of curb, sidewalk or other structures are sprayed with liquid asphalt, they shall be cleaned as directed by the **ENGINEER** at the **CONTRACTOR's** expense. Allow prime coat to cure for a minimum of 24 hours prior to the paving operation.
- D. Tack Coat: Apply tack coat of emulsified asphalt to edge of curb and all other concrete surfaces adjoining asphalt paving.

3.04 PLACEMENT OF ASPHALT CONCRETE

- A. Comply with requirements of Section 401, Colorado State Highway Department Standard Specifications.
- B. Second lift must be placed within 48 hours of preceding lift or a tack coat will be applied.
- C. The top lift or any lift less than 2" shall be Grade EX asphalt.

3.05 SEAL COATING

- A. Seal Coating is not required.

3.06 FIELD QUALITY CONTROL

- A. Testing of base course compaction and sampling and testing of asphalt concrete mixtures for quality control during paving operations will be done by the testing laboratory using applicable ASTM and AASHTO testing procedures.

END OF SECTION

SECTION 32 92 00

LANDSCAPING AND REVEGETATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Work Included: This section covers seeding, landscaping, fertilizing, mulching, watering, and initial care.

1.02 QUALITY ASSURANCE

- A. Source Quality Control: Manufacturer's test for purity and germination of seed, dated within six months of seeding.
- B. Certificates: Manufacturer's certification that materials meet specification requirements.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

Store and handle seed in environmental conditions specified by the manufacturer.

PART 2 – PRODUCTS

2.01 NATIVE GRASS

- A. Mixture and application rates shall be as follows:

<u>Plant Species</u>	<u>Recommended Varieties</u>	<u>Seeding Rate Lbs. Pure Live Seed/Acre</u>
Blue Grama	Lovington	0.8
Little Bluestem	Pastura	2.4
Side-oats Grama	Butte or Vaughn	3.2
Prairie sandreed	Goshen	2.2
Sand	Dropseed	0.1
Green	Needlegrass	3.4
Streambank Wheatgrass	Sodar	<u>4.0</u>
		16.1 lbs. PLS

- B. All seeding rates are for broadcast method of seeding and may be halved if an adapted grass drill is used.

2.02 PLANT MATERIALS

N/A

2.03 FERTILIZER

- A. Fertilizer for native grass:
 - 1. All areas to be seeded should be fertilized.
 - 2. Commercial product to be applied at a rate of not less than 50 pounds per acre.

3. Ratio of available nutrients (Nitrogen/Phosphorous/Potassium) shall be 10-6-4. The fertilizer should be uniformly and evenly applied to the areas and worked into the soil during seed bed preparation.
- B. Fertilizer for other plant materials: All other plants shall be fertilized at the time of planting with 21 grams Agriform slow release fertilizer tablets 10-10-5 in accordance with the quantities listed in the plant list. Tablets shall be placed in the backfill mixture below grade.

2.04 MULCH

- A. For native grass and erosion control: Cereal grain straw or grass hay. Grass hay is preferred.
- B. The material should not be musty, moldy, decayed, caked or of otherwise low quality and should be free of weeds and viable seeds.
- C. At least half of the material should be 10 inches or more in length. Do not use fine materials.
- D. For other areas designated as "Mulch" shall be Forest Litter Mulch, 3" minimum depth over Mirafi 140-N underlayment.

2.05 EROSION CONTROL BLANKETS

- A. Erosion control blankets shall be SCI50 erosion control blanket manufactured by North American Green or equivalent.

PART 3 – EXECUTION

3.01 SEEDING (NATIVE GRASS)

- A. Apply by broadcasting or drilling at the rate specified herein.
 1. Reseeding to take place between September 1 and November 30; & March 15 until May 31.
 2. Rework previously prepared areas that have become compacted or damaged by rains.
 3. Do not drill or sow during windy weather or when ground is frozen or un-tillable.
- B. Cover seed to depth between 1/4 to 1/2-inch by raking or harrowing.
- C. Firm seeded areas with roller weighing maximum of 100 pounds per foot to width.
- D. Do not use seed which has become wet, moldy or otherwise damaged in transit or in storage.

3.02 MULCHING (NATIVE GRASS AND EROSION CONTROL)

- A. Apply mulch on all seeded areas (except as noted on the plans).
- B. Spread uniformly at rate of 2 tons per acre.
- C. Mulching may be accomplished by the crimping method using straw or hay, by the hydraulic method using wood cellulose fiber or by other acceptable mulching methods.

3.03 EROSION CONTROL

- A. Apply erosion control blanket on areas as shown on the construction drawings.

- B. Immediately following the spreading of hay or straw mulch, anchor the material into the soil a minimum of 3 inches by means of a mulch anchoring machine equipped with large golder-type discs spaced at approximately 8-inch centers.

3.04 FERTILIZATION

Broadcast fertilizer over seeded area after germination of seed but prior to emergence of three to five leaves per plant.

3.05 RESEEDING AND REPAIR (NATIVE GRASS)

Reseed and mulch areas where there is not a satisfactory strand of grass at the end of one year after seeding. Minimum satisfactory stand: 4 plants per square foot.

3.06 AREAS TO BE REVEGETATED AND LANDSCAPED

- A. Reseed and revegetate all disturbed areas on the project with native grass except the following:
 - 1. Roadways and shoulders
 - 2. Areas receiving concrete or asphalt

END OF SECTION

Division 33- Utilities

SECTION 33 05 05.30

TESTING GRAVITY PIPING SYSTEMS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section covers the pressure and leakage testing of gravity piping systems. CONTRACTOR shall provide all equipment, taps, plugs, temporary thrust restraint and valves necessary to perform the work in connection with the testing procedure.
- B. Related Work:
 - 1. Section 33 05 31.29, Wastewater Collection Systems.

1.02 QUALITY ASSURANCE

- A. Air Tests:
 - 1. The CONTRACTOR shall perform these tests with suitable equipment specifically designed for air testing gravity piping systems. A suitable gauge shall be used for readings not to exceed 15 # maximum reading. The gauge shall be located at the surface.
 - 2. The air test shall be made when the pipe is clean. The pipe, or section of pipe, to be tested may be wetted before the air test. The line shall be plugged at each manhole with pneumatic balls. Low pressure air shall be introduced into the plugged line until the internal pressure reaches four (4.0) psig greater than the average back pressure of any groundwater pressure that may submerge the pipe. At least (2) minutes shall be for the air temperature to stabilize before readings are taken and the timing started.
 - 3. The portion of main including stubs being tested shall pass if it does not lose air at a rate to cause the pressure to drop from 3.6 to 3.0 psig (greater than the average back pressure of any ground water that may submerge the pipe) in less time than listed below:

Pipe Diameter (inches)	Minimum Allowable Time (Minutes - seconds) 3.6 to 3.0 psig pressure
4	0-50
6	1-10
8	1-40
10	2-00
12	2-20
15	3-00
18	3-40
21	4-10
24	4-50

- 4. If the installation fails the test, the testing equipment may be used to determine the location of the pipe leak. All service plugs shall be secured in place to prevent displacement during test operations.
- 5. If results of these tests are not satisfactory, the CONTRACTOR at his expense will make the necessary repairs or pipe replacement until the ENGINEER is satisfied that the leakage requirements are being met.

1.03 PERFORMANCE

- A. Preparation and Testing:
 - 1. Provide equipment, materials and personnel to complete tests as specified.
 - 2. Record times, leakage readings and pressure over test period.

B. Inspection:

1. Notify ENGINEER and OWNER at least 48 hours in advance of testing.
2. ENGINEER or District Inspector must be present during testing.

C. Acceptance:

1. Locate and repair defective materials and joints if the tests disclose failure.
2. Repeat tests until the pipe system is within the permitted allowance.

END OF SECTION

SECTION 33 05 31.11

NON-PRESSURE PVC SEWER PIPE

PART 1 -- GENERAL

1.01 DESCRIPTION

- A. Work Included: This section covers the specifications for materials and installation of underground non-pressure PVC pipe and fittings for use as sanitary sewer facilities.
- B. Related Work:
 - 1. Section 33 05 05.30, Testing Gravity Piping Systems
 - 2. Section 31 23 33, Trenching, Backfilling and Compaction
 - 3. Section 33 05 31.29, Wastewater Collection System

1.02 SUBMITTALS

- A. Certification: Submit manufacturer's certification that products meet requirements of referenced specifications, in accordance with Section 01 33 32.
- B. Shop Drawings: Submit drawings and data showing details of joints, gasket material and pipe length, in accordance with Section 01 33 32.

1.03 PRODUCT DELIVERY, HANDLING AND STORAGE

- A. Do not damage the pipe and fittings by impact, bending, compression or abrasion during handling and storage.
- B. Store pipe on a flat surface which provides even support for the barrel with bell ends overhanging.
- C. Do not stack pipe higher than 5 feet.
- D. Do not use pipe and fittings stored in direct sunlight for periods in excess of six months. Any pipe showing any visible signs of sun-burning or fading shall be removed from the site.
- E. Ship rubber gaskets in cartons and store in clean area away from grease, oil, ozone producing electric motors, heat, and the direct rays of the sun.
- F. Use only nylon protected slings or bands to handle pipe. Do not use hooks or bare cables.

PART 2 - PRODUCTS

2.01 POLYVINYL CHLORIDE NON-PRESSURE PIPE (PVC)

- A. Pipe and Fittings: 4" through 15", ASTM D3034, Type PSM, SDR 26 (or approved equal).
- B. Pipe and Fittings: 18" through 27", ASTM F679 Type 1: Thickness T-1
- C. Joints: ASTM D3212, Push-On

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the pipe and fittings for cracks, dents, abrasions, or other flaws prior to installation.
- B. Mark rejected pipe and remove from site.

3.02 CUTTING THE PIPE

- A. Cut the pipe square with saw or pipe cutter designed specifically for the material.
- B. Bevel the end in accordance with the manufacturer's recommendations.

3.03 JOINT INSTALLATION FOR PVC SEWER PIPE

- A. Push-On-Joints:
 - 1. Clean the inside of the bell and the outside of the spigot to remove dirt, oil, excess coating, and other foreign matter.
 - 2. Insert the gasket.
 - 3. Apply a thin film of lubricant to either the inside surface of the gasket, the spigot end of the pipe, or both.
 - 4. Do not permit the joint surface to come into contact with the ground.
 - 5. Assure that pipe is marked with a depth mark before assembly to assure the spigot end is inserted the full depth of the joint.
 - 6. Complete the joint making certain the spigot is inserted to the depth mark.
 - 7. Do not use excessive force in joining the pipe.

END OF SECTION

SECTION 33 05 31.29

WASTEWATER COLLECTION SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. All applicable portions of Division 1 - General Requirements are to be considered as included with this section.
- B. Furnish and install sewer lines and appurtenances.
- C. Furnish equipment, labor and incidentals necessary to conduct tests.

1.02 SUBMITTALS

- A. Certification: Submit manufacturer's certification that products meet requirements of referenced specifications in accordance with Section 01 33 32.

PART 2 - PRODUCTS

2.01 PIPE MATERIALS (Reference Section 33 05 31.11)

2.02 MANHOLE MATERIALS (Reference Sections 33 05 61, 03 30 00 and 33 05 61)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Perform excavation in accordance with Section 31 23 33, Trenching, Backfilling and Compacting.
- B. Provide stabilization and bedding as specified in the drawings or as directed by Engineer to meet trench conditions.

3.02 INSTALLATION

- A. Pipe-laying:
 - 1. Begin pipe-laying at the lowest point, with the bells pointing uphill.
 - 2. Lay the pipe in accordance with the applicable pipe material specification.
 - 3. Close all openings in the pipeline with watertight plugs whenever pipe-laying is not in progress. Do not lay pipe in water.
 - 4. Do not allow trench water to float or lift pipe from installed position.
 - 5. Lay pipe true to line and grade as shown on the drawings. Do not allow manhole or pipe inverts to deviate from elevations on drawings more than 0.03 feet.

B. Waterline Crossings:

1. Where sewer lines cross water mains, and the sewer is above the water main or less than 18 inches clear distance vertically below the water main, construct the crossing using one length of pipe, PVC, or DIP, at least 18 feet long centered over or under the water main.
2. In lieu of above, provide a 20 foot casing pipe centered on the waterline crossing.

C. Manhole Construction:

1. Install and construct manholes in accordance with Sections 33 05 61, 03 30 00 and 33 05 61.
2. Construct manholes at locations indicated on the Drawings.
3. Unless directed otherwise in the Contract Documents, the inside diameter (I.D.) of the manhole shall not be less than the following:

PIPE SIZE (In.)	MANHOLE DEPTH (Ft.)	MANHOLE SIZE (I.D.)
8" and 10"	0' to 12'	48" (where no more than 2 lines)
8" and 10"	0' to 12'	60" (where 3lines)
12" to 18"	13' to 19'	60"
24" and larger	20' to 25'	72"

Use manholes with eccentric cones where manhole depth is 60 inches or greater on 48 inch manholes and 72 inches in depth or greater on 60 inch manholes. Use flat top manholes when manhole depth is less than the above and on all 72 inch diameter manholes.

4. Provide a flexible joint or pipe joint between 18 and 30 inches from outside manhole walls.
5. Apply bituminous damp-proofing compound per manufacturer's recommendations to exterior of manholes noted to receive damp-proofing on plans.

3.03 FIELD QUALITY CONTROL

- A. Cleaning: Prior to other tests, all sewer lines shall be cleaned and inspected for major defects. Pre-cleaning by appropriately sized sewer cleaning ball or by high velocity jet or other method may be necessary.
- B. Visual test: All sewer lines shall be inspected visually to verify accuracy of alignment and freedom from debris and obstructions. The full diameter of the pipe for straight alignments shall be visible when viewed between consecutive manholes. The method of test shall be photography, closed circuit television, or visually lamping with mirrors and lights.
- C. Manholes and pipe lines shall not have any visible leaks or damp spots.
- D. Repair and retest lines that fail tests until satisfactory results are obtained.

END OF SECTION

SECTION 33 05 61

PRECAST CONCRETE MANHOLES

PART 1 - GENERAL

1.01 SCOPE

- A. Work Included: This section covers the specifications for pre-cast concrete manhole materials.
- B. Related Work:
 - 1. Section 33 05 05.30, Testing Gravity Piping Systems
 - 2. Section 31 23 33, Trenching, Backfilling and Compaction.
 - 3. Section 33 05 31.29, Wastewater Collection System

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Commercial Standards:
 - 1. ANSI/NFPA 70-1984 National Electric Code
 - 2. ASTM A 48-83 Specification for Gray Iron Castings.
 - 3. ASTM C 150-85 Specification for Portland Cement.

1.04 CONTRACTOR SUBMITTALS

- A. Shop Drawings: The **CONTRACTOR** shall furnish complete shop drawings for all precast manhole sections, cast iron frames and covers, and appurtenances for review by the **ENGINEER** in accordance with Section entitled, "Shop Drawings" 01 33 32.

1.05 QUALITY ASSURANCE

- A. Inspection: After installation, the **CONTRACTOR** shall demonstrate that all manholes have been properly installed, level, with tight joints, at the correct elevations and orientations, and that the backfilling has been carried out in accordance with the Contract Documents.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Manholes: Manholes shall be constructed of precast concrete manhole rings as shown. Manholes shall be precast and manufactured in accordance with ASTM Standard C478 Precast concrete rings shall be manufactured by a process that will produce a dense, homogeneous concrete ring of first quality. The rings shall have a minimum wall thickness of 4 inches if steel-reinforced and 6 inches if not reinforced. Cement used in manufacturing the rings shall be Type II portland cement as specified in ASTM C 150. Manhole sections shall be provided with plastic-encapsulated steel or fiber glass reinforced plastic steps cast in place, with maximum spacing of 12 inches. Mortar for bonding joints shall consist of one part cement to 2-1/2 parts of sand, by volume. All manholes shall have concrete bases as shown.
- B. Castings: Castings for manhole frames and covers shall conform to the requirements of ASTM A 48 Class 30. Cast iron covers and frames shall be heavy traffic type, diameter as noted, to meet the requirements of the city or the local utility company. Manhole frame and covers shall be double lid frost-proof design.
- C. Castings Suppliers, or equal:
 - 1. Maclear, Inc.,
 - 2. Neenah Foundry Co.,

D. Steps:

1. Material: Aluminum, Fed. Spec. QQ-A-200/A.
2. Provide plastic coating or bituminous coating to protect from corrosion with concrete or mortar.
3. Manufacturers: Comco 12653B, Neenah R-1982-W, or equal.

E. Sealant:

1. Material: Sonneborn Hydrocide 700B emulsified asphalt dampproofing compound or approved equal.
2. Apply to manhole exterior per manufacturers recommendations for exterior surfaces below grade – dense surfaces, 2 coats applied by brush or spray. Apply only to manholes noted to receive bituminous dampproofing on plans to prevent groundwater intrusion.

PART 3 – EXECUTION

3.01 WORKMANSHIP

- A. All precast concrete manholes shall be installed in strict conformance with the manufacturer's written instruction, on a well compacted foundation, as specified in Section 31 23 33, Trenching.

END OF SECTION

Drawings