

PROJECT MANUAL AND SPECIFICATIONS

Marina Drive Slide Repair

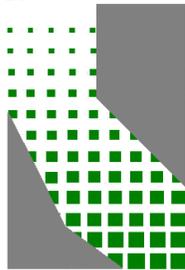
CR 266 at M.P. 0.63

Mendocino County, California

Project No. C004.001.0701.003

June 21, 2007

Prepared for:



INTEGRATED
WASTE
MANAGEMENT
BOARD

California Integrated Waste Management Board

Special Waste Division

1001 "I" Street

PO Box 4025

Sacramento, CA 95812

In Partnership With:



Mendocino County

Prepared by:



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Long Beach, CA 90802

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CONTENTS

PART 1 - BIDDING REQUIREMENTS

00020 Notice of Call for Bids
00100 Instructions to Bidders
00300 Bid Form

PART 2 - CONTRACT FORMS

00500 Agreement

PART 3 - CONDITIONS OF THE CONTRACT

00700 General Conditions
00800 Supplementary Conditions

PART 4 – TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

DIVISION 2 – SITEWORK

DIVISION 3 - CONCRETE

PART 1

BIDDING REQUIREMENTS

00020	Notice of Call for Bids
00100	Instructions to Bidders
00300	Bid Form

SECTION 00020

**NOTICE OF CALL FOR BIDS
Marina Drive Slide Repair
Mendocino County, California**

Sealed bids for the Marina Drive Slide Repair will be received at the office of Kennec Inc. (KENNEC) at 235 East Broadway Suite 311 Long Beach, CA **90802 not later than 3:00 PM on Tuesday, July 3, 2007.**

The project will include general construction services to repair a landslide on Marina Drive using tire derived aggregate as a component of the repair.

A complete bid package can be obtained from:

Kennec Inc.
Attention: Joaquin Wright
235 East Broadway Suite 311
Long Beach, CA 90802

A mandatory pre bid conference will be held on June 26, 2007 at 11:00 a.m. at the project site. The site is located on Marina Drive at mile marker 0.63 east of highway 101. Address technical questions regarding the bidding requirements, the drawings and technical specifications to Joaquin Wright 909 657 2160.

All bids must be sealed and plainly marked: **Marina Drive Slide Repair**. All bid proposals must be accompanied by a bid bond, deposit in cash, certified check, or cashier's check in an amount equal to five percent (5%) of the amount of the bid. Only properly executed proposals submitted on the forms furnished will be accepted. Kennec Inc. (OWNER) reserves the right to reject all bids.

The bid documents and drawings may be downloaded from:

<ftp://www.kennec.net/>

User Name: marinadrive
Password: sliderepair

Requests for Bidding Documents and questions regarding bidding procedures should be directed to:

**Mr. Joaquin Wright
Kennec Inc.
235 East Broadway, Suite 311
Long Beach, California 90802
909 657 2160**

INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

ARTICLE 1 – DEFINED TERMS	1
ARTICLE 2 – COPIES OF BIDDING DOCUMENTS.....	1
ARTICLE 3 – QUALIFICATIONS OF BIDDERS.....	1
ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE ...	1
ARTICLE 5 – PRE-BID CONFERENCE	4
ARTICLE 6 – SITE AND OTHER AREAS	4
ARTICLE 7 – INTERPRETATIONS AND ADDENDA.....	4
ARTICLE 8 – BID SECURITY.....	4
ARTICLE 9 – CONTRACT TIMES.....	5
ARTICLE 10 – LIQUIDATED DAMAGES	5
ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS	5
ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS.....	5
ARTICLE 13 – PREPARATION OF BID.....	6
ARTICLE 14 – BASIS OF BID; EVALUATION OF BIDS	7
ARTICLE 15 – SUBMITTAL OF BID	7
ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID.....	8
ARTICLE 17 – OPENING OF BIDS.....	8
ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE	8
ARTICLE 19 – award of contract.....	8
ARTICLE 20 – CONTRACT SECURITY AND INSURANCE	9
ARTICLE 21 – SIGNING OF AGREEMENT	9
ARTICLE 22 – SALES AND USE TAXES	9
ARTICLE 23 – RETAINAGE.....	9

ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:

- A. *Bidder*—The individual or entity who submits a Bid directly to OWNER.
- B. *Issuing Office*—The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
- C. *Successful Bidder*—The lowest responsible Bidder submitting a responsive Bid to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an award.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office.

2.02 Complete sets of Bidding Documents must 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.

2.03 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and they do not confer a license or grant for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder must submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below, upon request of the Owner.

- A. _Valid California Contractors License.
- B. _Valid Worker's Compensation Insurance.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions*

- A. The Supplementary Conditions identify:
 - 1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Bidding Documents.

2. Those drawings of physical conditions in or relating to existing surface and subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Bidding Document.

- B. Copies of reports and drawings referenced in paragraph 4.01.A will be made available by OWNER to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in paragraph 4.02 of the General Conditions has been identified and established in paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions or information contained in such reports or shown or indicated in such drawings.

4.02 *Underground Facilities*

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities, including OWNER, or others.

4.03 NOT USED

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in paragraph 4.06 of the General Conditions.

4.05 On request, OWNER will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Access to the site to perform exploratory work is subject to approval of the Mendocino County Road Department.

4.06 Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by OWNER or others, if any, (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, OWNER will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such other work.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, including any Addenda and the other related data identified in the Bidding Documents;

- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, or performance of the Work;
- D. carefully study all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and carefully study all reports and drawings of a Hazardous Environmental Condition, if any, at the Site which have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions;
- E. obtain and carefully study (or assume responsibility for doing so) examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;
- F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by OWNER and others at the Site that relates to the work as indicated in the Bidding Documents;
- H. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- I. promptly give ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by ENGINEER is acceptable to Bidder; and
- J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by ENGINEER are acceptable to Bidder, and that the Bidding Documents are generally sufficient to

indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A pre-Bid conference will be held at **11:00 AM on Tuesday June 26, 2007** at the project site. Representatives of OWNER and ENGINEER will be present to discuss the Project. Bidders are **required** to attend and participate in the conference. ENGINEER will transmit to all prospective Bidders of record such Addenda as ENGINEER considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by CONTRACTOR. **Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Bidding Documents.**

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to ENGINEER in writing. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Questions received less than three days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by OWNER or ENGINEER.

ARTICLE 8 – BID SECURITY

8.01 A bid must be accompanied by Bid security made payable to OWNER in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of paragraphs 5.01 and 5.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after 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 other Bidders whom OWNER

believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom OWNER believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) Substantially Completed and (b) also completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement. The procedure for submission of any such application by CONTRACTOR and consideration by ENGINEER is set forth in the General Conditions and may be supplemented in the General Requirements.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to OWNER in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to OWNER a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity of requested by OWNER. If the OWNER or ENGINEER after due investigation has reasonable objection to any proposed Subcontractor, or other person, or organization, the OWNER or ENGINEER may, before giving the Notice of Award, request the apparent Successful Bidder to submit an acceptable substitute in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and OWNER may consider such price adjustment in evaluating Bids and making the contract award. If the apparent Successful Bidder declines to make any such substitution and the Agreement is not awarded to such Bidder for that reason, the Bidder’s refusal will not constitute grounds for forfeiting the Bid Guaranty. Any Subcontractor,

other person, or organization so listed and to whom the OWNER or ENGINEER does not make written objections prior to giving of the Notice of Award will be deemed acceptable to the Owner and Engineer.

12.03 CONTRACTOR shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom CONTRACTOR has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid form is included with the Bidding Documents. Additional copies may be obtained from the issuing office.

13.02 All blanks on the Bid form shall be completed by printing in ink or by typewriter and the Bid signed. A Bid price shall be indicated for each Bid item listed therein.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner whose title must appear under the signature, accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.

13.06 A Bid by an individual shall show the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid form. The official address of the joint venture must be shown below the signature.

13.08 All names shall be typed or printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid form.

13.10 The address and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number for the state of the Project, if any, shall also be shown on the Bid form.

ARTICLE 14 – BASIS OF BID; EVALUATION OF BIDS

14.01 *Unit Price*

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
- B. The total of all estimated prices will be determined as the sum of the products of the estimated quantity of each item and the unit price Bid for the item. The final quantities and Contract Price will be determined in accordance with paragraph 11.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

14.02 The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in paragraph 11.02 of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

15.01 Each prospective Bidder is furnished one copy of the Bidding Documents with one separate unbound copy each of the Bid form and, if required, the Bid Bond. The unbound copy of the Bid form is to be completed and submitted with the Bid security and the following data:

- [A. _____.]
- [B. _____.]
- [C. _____.]
- [D. _____.]

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title, the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to :

Mr. Joaquin Wright
Kennec Inc.
235 East Broadway, Suite 311
Long Beach, California 90802
909 657 2160

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid 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 prior to the date and time for the opening of Bids.

16.02 If within 24 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 its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened privately. An abstract of the Bids may be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid form, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – AWARD OF CONTRACT

19.01 OWNER reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. OWNER further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. OWNER may also reject the Bid of any Bidder if OWNER believes that it would not be in the best interest of the Project to make an award to that Bidder. OWNER also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, OWNER will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.04 In evaluating Bidders, OWNER will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 OWNER may conduct such investigations as OWNER deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, OWNER will award the Contract to the Bidder whose Bid is in the best interests of the Project.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth OWNER's requirements as to performance and payment Bonds and insurance. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by such Bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When OWNER gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within 10 calendar days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER. Within ten calendar days thereafter, OWNER shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – SALES AND USE TAXES

22.01 Include all sales and use taxes in contract unit prices.

ARTICLE 23 – RETAINAGE

23.01 Provisions concerning CONTRACTOR's rights to deposit securities in lieu of retainage are set forth in the Agreement.

BID FORM

BID FORM

PROJECT IDENTIFICATION:

MARINA DRIVE SLIDE REPAIR, CR 266 AT MILEPOST 0.63

CONTRACT IDENTIFICATION AND NUMBER:

OWNERS PROJECT NUMBER COO4.001.0701.003

THIS BID IS SUBMITTED TO:

Kennec Inc.
235 East Broadway, Suite 311
Long Beach, California 90802
909 657 2160

1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

2.01 Bidder accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER.

3.01 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:

- A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except

Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and (2) reports and drawings of a Hazardous Environmental Condition, if any, which has been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions.

- E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site, which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the unit prices bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by OWNER and others at the Site as indicated in Section 01010 of the Division 1 Technical Specifications that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- I. Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by ENGINEER is acceptable to Bidder.
- J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

4.01 Bidder further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity 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 individual or entity to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following unit prices:

BID SCHEDULE
MARINA DRIVE SLIDE REPAIR AT MILE MARKER 0.63

ITEM NO.	BID ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
	GENERAL ITEMS				
1	Mobilization and Other Division 1 Requirements	1	LS		
2	Surveying	1	LS		
	Demolition and Excavation				
3	Clear and Grubb	1	LS		
4	Remove and and Salvage Existing Roadway Paving	1	LS		
5	Remove and Salvage Existing CMP's	1	LS		
6	Excavation		CY		
7	Excavation to Off Site Disposal		CY		
	Subdrain System				
8	Furnish and Install 4-inch Perforated HDPE Subdrain		LF		
9	Furnish and Install 4-inch Solid HDPE Subdrain		LF		
	Backfill				
10	Install Type B TDA Backfill		CY		
11	Excavation to Low Permeable Cover Soil		CY		
12	Furnish and Install Geotextile Separator		SF		
13	Excavation to Reinforced Soil Backfill		CY		
14	Furnish and Install Geogrid Soil Reinforcement		SF		
	Drainage Structures				
15	Furnish and Install Type A V-Ditch		SF		
16	Furnish and Install Type B V-Ditch		SF		
17	Furnish and Install 30" CMP Riser Inlet and Basin		EA		
18	Furnish and Install 24" CMP Culvert		LF		
19	Furnish and Install 24" CMP Downdrain		LF		
20	Furnish and Install 18" CMP Extention		LF		
21	Furnish and Install Rip Rap Pad and Outlet for 18" & 24" CMP		SF		
22	Furnish and Install Rip Rap Slope Protection		SF		
23	Furnish and Install Surface Placed Rip Rap		SF		
24	Furnish and Install Concrete Cut-Off Wall		LF		
	Sliver Fill				
25	Excavation to Engineered Sliver Fill		CY		
26	Furnish and Install Geogrid Soil Reinforcement		SF		
	Erosion Control				
27	Provide Stormwater Pollution Prevention Plan (SWPPP)	1	LS		
28	Furnish and Install Hydroseeding and Fiber Roll		SF		
29	Force Account	1	EA		
	TOTAL BID AMOUNT				

Unit Prices have been computed in accordance with paragraph 11.03.B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents.

6.01 Bidder agrees that the Work will be substantially complete within 30 calendar days after issuance of a Notice to Proceed, and completed and ready for final payment in accordance with paragraph 14.07.B of the General Conditions within 40 calendar days after issuance of a Notice to Proceed.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified above, which shall be stated in the Agreement.

7.01 The following documents are attached to and made a condition of this Bid:

- A. Required Bid security in the form of _____;
- B. A tabulation of proposed Subcontractors, Suppliers;

8.01 The terms used in this Bid with initial capital letters have the meanings indicated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

SUBMITTED on _____, 20_____.

State Contractor License No. _____.

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____ (SEAL)
(Individual's signature)

Doing business as: _____

Business address: _____

Phone No: _____ FAX No.: _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____
(Signature of general partner – attach evidence of authority to sign)

Name (typed or printed): _____

Business address: _____

Phone No: _____ FAX No.: _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____

(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Attest: _____ (CORPORATE SEAL)

(Signature of Corporate Secretary)

Business address: _____

Phone No: _____ FAX No.: _____

Date of Qualification to do business is _____

A Joint Venture

Joint Venturer Name: _____ (SEAL)

By: _____

(Signature of joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

Phone No: _____ FAX No.: _____

Joint Venturer Name: _____ (SEAL)

By: _____

(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

Phone No: _____ FAX No.: _____

Phone and FAX Number, and Address for receipt of official communications:

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

PART 2
CONTRACT FORMS

00500 Agreement

**STANDARD FORM OF AGREEMENT BETWEEN
OWNER AND CONTRACTOR ON THE BASIS OF A
STIPULATED PRICE**

THIS AGREEMENT is by and between **Kennec Inc.**
(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

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

General construction to repair a landslide on Marina Drive in Mendocino County using tire derived aggregate (TDA) as an element of the project.

ARTICLE 2 – THE PROJECT

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

MARINA DRIVE SLIDE REPAIR, CR 266 AT M. P. 0.63, MENDOCINO COUNTY, CALIFORNIA

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by

Kennec Inc.

who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities of ENGINEER and OWNER, and have the rights and authority to ENGINEER and OWNER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within 30 **days** after Issuance of a Notice to Proceed, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within 40 **days** after issuance of a Notice to Proceed.

4.03 *Liquidated Damages*

- A. CONTRACTOR and OWNER 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 times specified in paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, 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 **\$2,500** for each day that expires after the time specified in paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER **\$2,500** for each day that expires after the time specified in paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 5.01.A below:

- A. For all Work, at the prices stated in CONTRACTOR's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. OWNER shall make monthly progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment within 60 days of receiving an acceptable Application for Payment during performance of the Work as provided in paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values (Bid Schedule) established in paragraph 2.07.A of the General Conditions, and in the case of Unit Price Work based on the number of units completed.:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of

payments previously made and less such amounts as ENGINEER may determine or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions:

- a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50% completed as determined by ENGINEER, and if the character and progress of the Work have been satisfactory to OWNER and ENGINEER, OWNER, on recommendation of ENGINEER, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no retainage on account of Work subsequently completed, in which case the remaining progress payments prior to Substantial Completion will be in an amount equal to 100% of the Work completed less the aggregate of payments previously made; and
 - b. 95 percent of the cost of materials and equipment not incorporated in the Work, with the balance being retainage.
2. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 100 percent of the Work completed, less such amounts as ENGINEER shall determine in accordance with paragraph 14.02.B.5 of the General Conditions and less 100 percent of ENGINEER's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 7 – NOT USED

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. CONTRACTOR has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. CONTRACTOR has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the

Supplementary Conditions as provided in paragraph 4.02 of the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to _____, inclusive);
2. Performance Bond (pages _____ to _____, inclusive);
3. Payment Bond (pages _____ to _____, inclusive);
4. Other Bonds (pages _____ to _____, inclusive);
 - a. _____ (pages _____ to _____, inclusive);
 - b. _____ (pages _____ to _____, inclusive);
 - c. _____ (pages _____ to _____, inclusive);
5. General Conditions (pages _____ to _____, inclusive);
6. Supplementary Conditions (pages _____ to _____, inclusive);
7. Specifications as listed in the table of contents of the Project Manual;
8. Drawings consisting of a cover sheet and sheets numbered _____ through _____, inclusive, with each sheet bearing the following general title:
_____;
9. Addenda (numbers _____ to _____, inclusive);
10. Exhibits to this Agreement (enumerated as follows):
 - a. Notice to Proceed (pages _____ to _____, inclusive);
 - b. CONTRACTOR's Bid (pages _____ to _____, inclusive);
 - c. Documentation submitted by CONTRACTOR prior to Notice of Award (pages _____ to _____, inclusive);
 - d. _____;

11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
- a. Written Amendments;
 - b. Work Change Directives;
 - c. Change Order(s).
- B. The documents listed in paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in paragraph 3.05 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings indicated in the General Conditions.

10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract 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.

10.03 *Successors and Assigns*

- A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Other Provisions (Not Used)*

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

This Agreement will be effective on _____, _____ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

By: _____
[CORPORATE SEAL]

By: _____
[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices:

Address for giving notices:

(If OWNER is a corporation, attach evidence of authority to sign. If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of OWNER-CONTRACTOR Agreement.)

License No. _____
(Where applicable)

Agent for service of process: _____

(If CONTRACTOR is a corporation or a partnership, attach evidence of authority to sign.)

Designated Representative:

Designated Representative:

Name: _____

Name: _____

Title: _____

Title: _____

Address: _____

Address: _____

Phone: _____

Phone: _____

Facsimile: _____

Facsimile: _____

PART 3

CONTRACT CONDITIONS

00700 General Conditions
00800 Supplementary Conditions

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
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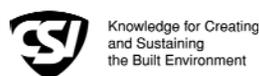
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Construction Specifications Institute

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These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

TABLE OF CONTENTS

Page

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY.....	6
1.01 <i>Defined Terms</i>	6
1.02 <i>Terminology</i>	8
ARTICLE 2 - PRELIMINARY MATTERS	9
2.01 <i>Delivery of Bonds and Evidence of Insurance</i>	9
2.02 <i>Copies of Documents</i>	9
2.03 <i>Commencement of Contract Times; Notice to Proceed</i>	9
2.04 <i>Starting the Work</i>	9
2.05 <i>Before Starting Construction</i>	9
2.06 <i>Preconstruction Conference</i>	9
2.07 <i>Initial Acceptance of Schedules</i>	9
ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE	10
3.01 <i>Intent</i>	10
3.02 <i>Reference Standards</i>	10
3.03 <i>Reporting and Resolving Discrepancies</i>	10
3.04 <i>Amending and Supplementing Contract Documents</i>	11
3.05 <i>Reuse of Documents</i>	11
3.06 <i>Electronic Data</i>	11
ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS.....	11
4.01 <i>Availability of Lands</i>	11
4.02 <i>Subsurface and Physical Conditions</i>	12
4.03 <i>Differing Subsurface or Physical Conditions</i>	12
4.04 <i>Underground Facilities</i>	13
4.05 <i>Reference Points</i>	13
4.06 <i>Hazardous Environmental Condition at Site</i>	13
ARTICLE 5 - BONDS AND INSURANCE	14
5.01 <i>Performance, Payment, and Other Bonds</i>	14
5.02 <i>Licensed Sureties and Insurers</i>	15
5.03 <i>Certificates of Insurance</i>	15
5.04 <i>Contractor’s Liability Insurance</i>	15
5.05 <i>Owner’s Liability Insurance</i>	16
5.06 <i>Property Insurance</i>	16
5.07 <i>Waiver of Rights</i>	17
5.08 <i>Receipt and Application of Insurance Proceeds</i>	17
5.09 <i>Acceptance of Bonds and Insurance; Option to Replace</i>	17
5.10 <i>Partial Utilization, Acknowledgment of Property Insurer</i>	18
ARTICLE 6 - CONTRACTOR’S RESPONSIBILITIES.....	18
6.01 <i>Supervision and Superintendence</i>	18
6.02 <i>Labor; Working Hours</i>	18
6.03 <i>Services, Materials, and Equipment</i>	18
6.04 <i>Progress Schedule</i>	18
6.05 <i>Substitutes and “Or-Equals”</i>	19
6.06 <i>Concerning Subcontractors, Suppliers, and Others</i>	20
6.07 <i>Patent Fees and Royalties</i>	21
6.08 <i>Permits</i>	21
6.09 <i>Laws and Regulations</i>	21
6.10 <i>Taxes</i>	22
6.11 <i>Use of Site and Other Areas</i>	22
6.12 <i>Record Documents</i>	22
6.13 <i>Safety and Protection</i>	22
6.14 <i>Safety Representative</i>	23
6.15 <i>Hazard Communication Programs</i>	23

6.16	<i>Emergencies</i>	23
6.17	<i>Shop Drawings and Samples</i>	23
6.18	<i>Continuing the Work</i>	24
6.19	<i>Contractor's General Warranty and Guarantee</i>	24
6.20	<i>Indemnification</i>	24
6.21	<i>Delegation of Professional Design Services</i>	25
ARTICLE 7 - OTHER WORK AT THE SITE		25
7.01	<i>Related Work at Site</i>	25
7.02	<i>Coordination</i>	26
7.03	<i>Legal Relationships</i>	26
ARTICLE 8 - OWNER'S RESPONSIBILITIES		26
8.01	<i>Communications to Contractor</i>	26
8.02	<i>Replacement of Engineer</i>	26
8.03	<i>Furnish Data</i>	26
8.04	<i>Pay When Due</i>	26
8.05	<i>Lands and Easements; Reports and Tests</i>	26
8.06	<i>Insurance</i>	26
8.07	<i>Change Orders</i>	26
8.08	<i>Inspections, Tests, and Approvals</i>	26
8.09	<i>Limitations on Owner's Responsibilities</i>	27
8.10	<i>Undisclosed Hazardous Environmental Condition</i>	27
8.11	<i>Evidence of Financial Arrangements</i>	27
ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION.....		27
9.01	<i>Owner's Representative</i>	27
9.02	<i>Visits to Site</i>	27
9.03	<i>Project Representative</i>	27
9.04	<i>Authorized Variations in Work</i>	27
9.05	<i>Rejecting Defective Work</i>	27
9.06	<i>Shop Drawings, Change Orders and Payments</i>	28
9.07	<i>Determinations for Unit Price Work</i>	28
9.08	<i>Decisions on Requirements of Contract Documents and Acceptability of Work</i>	28
9.09	<i>Limitations on Engineer's Authority and Responsibilities</i>	28
ARTICLE 10 - CHANGES IN THE WORK; CLAIMS		28
10.01	<i>Authorized Changes in the Work</i>	28
10.02	<i>Unauthorized Changes in the Work</i>	29
10.03	<i>Execution of Change Orders</i>	29
10.04	<i>Notification to Surety</i>	29
10.05	<i>Claims</i>	29
ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK.....		30
11.01	<i>Cost of the Work</i>	30
11.02	<i>Allowances</i>	31
11.03	<i>Unit Price Work</i>	31
ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES		32
12.01	<i>Change of Contract Price</i>	32
12.02	<i>Change of Contract Times</i>	33
12.03	<i>Delays</i>	33
ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK.....		33
13.01	<i>Notice of Defects</i>	33
13.02	<i>Access to Work</i>	33
13.03	<i>Tests and Inspections</i>	33
13.04	<i>Uncovering Work</i>	34
13.05	<i>Owner May Stop the Work</i>	34
13.06	<i>Correction or Removal of Defective Work</i>	34
13.07	<i>Correction Period</i>	34
13.08	<i>Acceptance of Defective Work</i>	35
13.09	<i>Owner May Correct Defective Work</i>	35
ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION		36
14.01	<i>Schedule of Values</i>	36
14.02	<i>Progress Payments</i>	36
14.03	<i>Contractor's Warranty of Title</i>	37
14.04	<i>Substantial Completion</i>	37

14.05	<i>Partial Utilization</i>	38
14.06	<i>Final Inspection</i>	38
14.07	<i>Final Payment</i>	38
14.08	<i>Final Completion Delayed</i>	39
14.09	<i>Waiver of Claims</i>	39
ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION		39
15.01	<i>Owner May Suspend Work</i>	39
15.02	<i>Owner May Terminate for Cause</i>	39
15.03	<i>Owner May Terminate For Convenience</i>	40
15.04	<i>Contractor May Stop Work or Terminate</i>	40
ARTICLE 16 - DISPUTE RESOLUTION		41
16.01	<i>Methods and Procedures</i>	41
ARTICLE 17 - MISCELLANEOUS		41
17.01	<i>Giving Notice</i>	41
17.02	<i>Computation of Times</i>	41
17.03	<i>Cumulative Remedies</i>	41
17.04	<i>Survival of Obligations</i>	41
17.05	<i>Controlling Law</i>	41
17.06	<i>Headings</i>	41

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *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 two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times

but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations 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 in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. 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 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's 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 property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified

in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties 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 Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared 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.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and 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 it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' 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 reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, 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 ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order .

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably 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.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual

or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

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

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading Structures: Contractor shall not load nor 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.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely 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 persons on the Site or who may be affected by the Work;

2. all the Work and materials and 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property 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 of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, 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 Draw-

ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.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 such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal

shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and
2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and

properly 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
2. the specific matters to be covered by such authority and responsibility will be itemized; and
3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site 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 generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, 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 in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall

promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK;
ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. 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 11.01.B.

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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, 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 Suppliers' 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 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 Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

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

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, 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.

c. 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, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the 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.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, 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. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted

by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

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, Contractor, at Engineer's request, shall 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.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to 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, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed 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, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or 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, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out 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. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent

inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off against the amount recommended; or
- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

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 no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , 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 the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly 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 complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment 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 for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. 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 (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, 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 Agreement, and if bonds have been furnished as required in Paragraph 5.01, 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. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance

with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. 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

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies 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.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be

governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. 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

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will 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 will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will 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.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

TABLE OF CONTENTS

SUPPLEMENTARY CONDITIONS

ARTICLE 2 – PRELIMINARY MATTERS

ARTICLE 4 – AVAILABILITY OF LANDS, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS, REFERENCE POINTS

ARTICLE 5 - BONDS AND INSURANCE

ARTICLE 6 – PAYMENT PROCEDURES

ARTICLE 7 – OTHER WORK AT SITE

ARTICLE 8 – OWNER'S RESPONSIBILITIES

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

ARTICLE 11 – COST OF THE WORK

ARTICLE 16– DISPUTE RESOLUTION

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8, 2002 Edition) 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.

The terms used in these Supplementary Conditions will have the meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings indicated below, which are applicable to both the singular and plural thereof.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.03 Commencement of Contract Times; Notice to Proceed

Delete Paragraph 2.03 in its entirety and replace with the following:

“The Contract Time will commence to run on the day indicated in the Notice to Proceed.

SC-2.05.A.3

Delete paragraph 2.05.A.3 in its entirety.

ARTICLE 4 – AVAILABILITY OF LANDS, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS, REFERENCE POINTS

SC-4.02 Add the following new paragraph(s) immediately after paragraph 4.02.B:

C. In the preparation of Drawings and Specifications, ENGINEER relied upon the following report of explorations and tests of subsurface conditions at the Site:

- 1. Report titled *“Geotechnical Study (Draft), Lightweight Tire Derived Aggregate Application, Marina Drive, CR 226, M.P. 0.63, Ukiah, Mendocino, California”*

ARTICLE 5 - BONDS AND INSURANCE

SC-5.04 Add the following new paragraph immediately after paragraph 5.04.B:

C. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

- 1. Workers’ Compensation, and related coverages under paragraphs 5.04.A.1 and A.2 of the General Conditions:

- a. State: Statutory
- b. Applicable Federal (e.g., Longshoreman’s): Statutory
- c. Employer’s Liability: \$2,000,000

2. Contractor’s General Liability under paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

- a. General Aggregate: \$2,000,000
- b. Products – Completed Operations Aggregate: \$2,000,000
- c. Personal and Advertising Injury: \$2,000,000
- d. Each Occurrence (Bodily Injury and Property Damage) \$_____

e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.

- f. Excess or Umbrella Liability
 - 1) General Aggregate \$2,000,000
 - 2) Each Occurrence \$2,000,000
- 3. Automobile Liability under paragraph 5.04.A.6 of the General Conditions:
 - a. Bodily Injury:
 - Each person \$2,000,000
 - Each Accident \$2,000,000
 - b. Property Damage:
 - Each Accident \$2,000,000
 - c. Combined Single Limit of: \$2,000,000
- 4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:
 - a. Bodily Injury:
 - Each Accident \$2,000,000
 - Annual Aggregate \$2,000,000
 - b. Property Damage:
 - Each Accident \$2,000,000
 - Annual Aggregate \$2,000,000

ARTICLE 6 – INFORMATION ABOUT AMOUNTS

SC-6.06.C Add the following sentence at the end of paragraph 6.06.C:

OWNER or ENGINEER may furnish to any such Subcontractor, Supplier, or other individual or entity, to the extent practicable, information about amounts paid to CONTRACTOR on account of Work performed for CONTRACTOR by a particular Subcontractor, Supplier, or other individual or entity.

ARTICLE 7 – OTHER WORK AT SITE

SC-7.03 Add the following new paragraph immediately after paragraph GC-7.02:

SC-7.03 Claims Between Contractors

A. Should CONTRACTOR cause damage to the work or property of any separate contractor at the Site, or should any claim arising out of CONTRACTOR's performance of the Work at the Site be made by any separate contractor against CONTRACTOR, OWNER, ENGINEER, ENGINEER's Consultants, or the construction coordinator, CONTRACTOR shall promptly attempt to settle with such separate contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

B. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, the construction coordinator and the officers, directors, partners, employees, agents and other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against OWNER, ENGINEER, ENGINEER'S Consultants, or the construction coordinator to the extent said claim is based on or arises out of CONTRACTOR'S performance of the Work. Should a separate contractor cause damage to the Work or property of CONTRACTOR or should the performance of work by any separate contractor at the Site give rise to any other Claim, CONTRACTOR shall not institute any action,

legal or equitable, against OWNER, ENGINEER, ENGINEER's Consultants, or the construction coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover ages from OWNER, ENGINEER, ENGINEER's Consultants or the construction coordinator on account of any such damage or Claim.

C. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor, and OWNER and CONTRACTOR are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be CONTRACTOR'S exclusive remedy with respect to OWNER, ENGINEER, ENGINEER's Consultants, and construction coordinator for any delay, disruption, interference, or hindrance caused by any separate contractor. This paragraph does not prevent recovery from OWNER, ENGINEER, ENGINEER's Consultant, or construction coordinator for activities that are their respective responsibilities.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

SC-8.11 Add the following new paragraph immediately after paragraph 8-11.A:

B. On request of CONTRACTOR prior to the execution of any Change Order involving a significant increase in the Contract Price, OWNER shall furnish to CONTRACTOR reasonable evidence that adequate financial arrangements have been made by OWNER to enable OWNER to fulfill the increased financial obligations to be undertaken by OWNER as a result of such Change Order.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.08.A

Delete paragraph 9.08.A of the General Conditions in its entirety and insert the following in its place:

A. ENGINEER will have authority to determine the actual quantities and classifications of items of Unit Price Work performed by CONTRACTOR, and the written decisions of ENGINEER on such matters will be final, binding on OWNER and CONTRACTOR, and not subject to appeal (except as modified by ENGINEER to reflect changed factual conditions or more accurate data).

ARTICLE 11 – COST OF THE WORK

SC-11.03.C Delete paragraph 11.03.C in its entirety and insert the following in its place:

C. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. **If the total cost of a particular item of Unit Price Work amounts to 20% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25% from the estimated quantity of such item indicated in the Agreement; and**

2. If there is no corresponding adjustment with respect to any other item of Work; and

3. If CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof; or if OWNER believes that the quantity variation entitled OWNER to an adjustment in the unit

price, either OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 16– DISPUTE RESOLUTION

SC-16 Add the following new paragraph immediately after paragraph 16.01:

SC-16.02 Mediation

A. OWNER and CONTRACTOR agree that they shall submit any and all unsettled Claims or counterclaims, disputes, or other matters in question between them arising out of or relating to the Contract Documents or the breach thereof to mediation by the _____ [prior to either of them initiating against the other a demand for arbitration pursuant to paragraph SC-16.03, unless delay in initiating arbitration would irrevocably prejudice one of the parties. The 30 day time limit within which to file a demand for arbitration as provided in paragraphs SC-16.03.B and 16.03.C shall be suspended with respect to a dispute submitted to mediation within that time limit and shall remain suspended until 10 days after the termination of the mediation.] The mediator of any dispute submitted to mediation under this agreement shall not serve as arbitrator of such dispute unless otherwise agreed. [The language would be deleted if SC-16.03 is not included.]

SC-16 Add the following new paragraph immediately after paragraph SC-16.02.

SC-16.03 Arbitration

A. All Claims or counterclaims, disputes, or other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract Documents or the breach thereof (except for Claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.09) not resolved under the provisions of paragraph SC-16.02 will be decided by binding arbitration in accordance with the _____ then obtaining, subject to the limitations of this paragraph SC-16.03. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. No demand for arbitration of any Claim or counterclaim, dispute, or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.09 will be made until the earlier of: (i) the date on which ENGINEER has rendered a written decision, or (ii) the 31st day after the parties have presented their final evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such Claim or counterclaim, dispute, or other matter will be made later than 30- days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 10.05; and the failure to demand arbitration within said 30 day period will result in ENGINEER'S decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned.

C. Notice of the demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the 30 day period specified in paragraph SC-16.03.B, and in all other cases within a reasonable time after the Claim or counterclaim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim or other dispute or matter in question would be barred by the applicable statute of limitations.

D. Except as provided in paragraph SC-16.03.E, no arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder, or in any other manner any other individual or entity (including ENGINEER, and ENGINEER'S Consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings; and

3. the written consent of the other individual or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

E. Notwithstanding paragraph SC-16.03.D, if a Claim or counterclaim, dispute, or other matter in question between OWNER and CONTRACTOR involves the Work of a Subcontractor, either OWNER or CONTRACTOR may join such Subcontractor as a party to the arbitration between OWNER and CONTRACTOR hereunder. CONTRACTOR shall include in all subcontracts required by paragraph 6.06.6 a specific provision whereby the Subcontractor consents to being joined in an arbitration between OWNER and CONTRACTOR involving the Work of such Subcontractor. Nothing in this paragraph SC-16.03.E nor in the provisions of such subcontract consenting to joinder shall create any claim, right, or cause of action in favor of Subcontractor and against OWNER, ENGINEER, or ENGINEER'S Consultants that does not otherwise exist.

F. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal.

PART 4

TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

DIVISION 2 – SITEWORK

DIVISION 3 -- CONCRETE

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of work.
- B. Description of work performed by others.
- C. Codes and regulation.
- D. Inspection and testing.
- E. Site conditions.
- F. Construction water.
- G. Terms and definitions.

1.02 DESCRIPTION OF WORK

- A. Construct a repair of Marina Drive at Mile Marker 0.63 in Mendocino County, California with elements of the project consisting of the following:
 - 1. Clearing and grubbing.
 - 2. Excavation of existing soils.
 - 3. Placement of reinforced soil backfill.
 - 4. Furnishing and installation of subdrains.
 - 5. Furnishing and installing drainage structures for surface water runoff.
 - 6. Installing State of California furnished tire derived aggregate as a light weight fill material to replace the removed material (soil).
 - 7. Installing low permeability soil cover material.
 - 8. Furnishing and installing geotextile separator.
- B. The CONTRACTOR will be required to complete the work as indicated on the Drawings, defined in the technical specifications and within the time frame given in the Agreement.

1.03 WORK PERFORMED BY OTHERS

- A. Work performed by Mendocino County
 - 1. Furnishing and installing aggregate base materials for asphalt paving.
 - 2. Furnishing and installing asphalt paving.
- B. Work performed by the State of California.
 - 1. Furnishing tire derived aggregate and delivering it to the job site for installation by the CONTRACTOR.

1.04 CODES AND REGULATIONS

- A. Comply with applicable codes and regulations of authorities having jurisdiction, and with requirements of the most recent edition of the "County of Mendocino State of California, Road and Development Standards, Draft #3, 4-2-07", where applicable.
- B. Comply with provisions of federal, state, and local statutes, ordinances, and regulations dealing with the prevention of environmental pollution of natural resources that affect the project.
- C. If the CONTRACTOR must undertake additional work due to the enactment of new or the amendment of existing statutes, ordinances, and regulations dealing with the project, the OWNER will issue a change order setting forth the additional work that must be undertaken. The change order will not invalidate the Contract and there will be, in addition to a reasonable extension of contract time, if necessary, a reasonable adjustment in the contract price to compensate the CONTRACTOR for all costs and expenses incurred, including overhead, and profit, as a result of the additional work.

1.05 INSPECTION AND TESTING

- A. The OWNER as part of a Construction Quality Assurance (CQA) program will perform tests identified in the technical specifications designated as the responsibility of the OWNER or Construction Quality Assurance Consultant (CQAC) or deemed necessary by the ENGINEER.
- B. Testing described in these specifications as construction quality control (CQC) or manufacturer's quality control (MQC) testing is the responsibility of the CONTRACTOR.
- C. Testing described in these specifications as construction quality assurance or conformance (CQA) testing is the responsibility of the CQAC.

1.06 SITE CONDITIONS

- A. CONTRACTOR'S Staging Area: An area will be set aside on the project property for the CONTRACTOR's use as a staging area for workers, equipment, and materials. CONTRACTOR must restore the staging area to its original condition at the conclusion of work.
- B. Disposal of Waste Material: Burning will not be permitted on the site. Remove material from the site that cannot be placed in waste areas as determined by the CQAC. Dispose waste in accordance with all Federal, State, and local laws relating to fire prevention, air pollution control, and other restrictions.
- C. Fire Prevention and Protection: Perform all work in a fire-safe manner. Comply with applicable local and state fire prevention regulations.

1.07 CONSTRUCTION WATER

- A. CONTRACTOR is responsible for securing water supply for construction water and dust control.

1.08 TERMS AND DEFINITIONS

- A. Whenever the terms listed below are used, the intent and meaning will be interpreted as indicated.
- B. AASHTO. American Association of State Highway and Transportation Officials.

- C. ASTM. ASTM International, Inc.
- D. Construction Quality Assurance (CQA). A planned and systematic pattern of procedures and documentation designed to provide confidence that items of work or services meet the requirements of the contract documents (construction drawings and technical specifications). Construction quality assurance includes verifying that the contractor is performing quality control requirements defined in the technical specifications.
- E. Construction Quality Assurance Consultant (CQAC): The party, independent from owner or contractor that is responsible for observing and documenting activities related to the quality of material manufacturing, material installation, and other construction activities related to the project.
- F. Construction Quality Assurance (CQA) Laboratory. A laboratory capable of conducting the materials testing required by the CQA manual.
- G. CQA Manager. Authorized representative of the CQAC responsible for managing the CQA program.
- H. CQA Monitors. Authorized representatives of the CQAC who represent the owner, are responsible for on site implementation of CQA procedures, and are responsible for observing and documenting CQA activities during construction.
- I. CQA Officer. Authorized representative of the CQAC that is responsible for certifying that construction was performed in accordance with the intent of the construction drawings and technical specifications. The CQA Officer is also referred to as the Design Engineer of Record.
- J. Construction Quality Control (CQC). Those actions that provide a means to measure and regulate the characteristics of an item or service to comply with the requirements of the contract documents. Quality control will be performed by the contractor.
- K. Construction Drawings. The official plans, profiles, typical cross-sections, elevations, and details, as well as their amendments and supplemental drawings, which show the locations, character, dimensions, and details of the work to be performed. Construction drawings may also be referred to as the "plans."
- L. Contract Documents. The official set of documents issued by the owner, which include bidding requirements, contract forms, contract conditions, technical specifications, construction drawings, addenda, and contract modifications.
- M. Contractor. The person or persons, firm, partnership, corporation, or any combination, who as an independent contractor, and has entered into a contract with the owner to perform construction defined in the contract documents.
- N. Design Engineer of Record. The individual or firm responsible for the design and preparation of the project construction drawings and technical specifications. Also referred to as "designer" or "ENGINEER."
- O. Geosynthetics Contractor. Also referred to as the "contractor" or "installer." The person or firm responsible for geosynthetic construction. This definition applies to any party installing geomembrane, geotextile, geogrid or other geosynthetic material.
- P. GRI. Geosynthetic Research Institute.
- Q. Manufacture Quality Control (MQC). Those actions that provide a means to measure and regulate the manufactured characteristics of a material or product to comply with

the requirements of the technical specifications. MQC will be performed by the material manufacturers.

- R. Owner. Mendocino County and their designated representative Kennech Inc.
- S. Panel. A unit area of geosynthetic that will be seamed in the field or in the manufacturer's plant.
- T. Project Surveyor. The independent surveying firm the owner appoints or the Contractors retain to provide layout work, to perform surveys to measure installed quantities, and to perform surveys to document as-built conditions.
- U. Record Drawings. Drawings recording the constructed dimensions, details, and coordinates of the project. Also referred to as "as-builts."
- V. Technical Specifications. The qualitative requirements for products, materials, and workmanship upon which the contract is based.

1.09 COORDINATION WITH PUBLIC AND PRIVATE AGENCIES

- A. If utility companies elect to repair or replace their lines in the project area, their crews will be permitted access to the area to accomplish their work.
- B. Contractor is responsible for locating and protecting existing underground improvements. Contact all utility companies for location of their facilities.
- C. Contractor shall have personnel available to maintain his work as required 24 hours per day every day. Contractor is responsible for housekeeping, dust and erosion control, and shall provide all equipment and personnel necessary to meet the requirements of this responsibility. Contractor shall provide Engineer with the name(s) and telephone number(s) of the person(s) designated to be available for after-hours contact. If this person cannot be contacted, Owner may use its equipment to correct problems. In this case, Contractor shall pay all costs incurred by Owner.
- D. Do not utilize private property for any purpose without written permission from the property owner.

1.10 TRAFFIC CONTROL

- A. Contractor is responsible for obtaining required traffic control permits, if required.
- B. Coordinate all traffic control with Engineer, and if directed by Engineer, with the Owner.
- C. Contractor to provide necessary signage to adequately protect public from the construction and direct them around the facility during normal hours of operation.
- D. Prior to implementing any phase of the project that will require traffic control, Contractor will submit the plan to the Engineer for approval.

1.11 SAFETY

- A. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for safety conditions at and adjacent to the job site, including the safety of all persons and property during the performance of the work. The Contractor shall comply with all federal, state, and local safety laws and regulations. This requirement shall apply continuously, and shall not be limited to normal working operations. The ENGINEER'S construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site. This paragraph shall be applicable to the Contractor and all of the Contractor's subcontractors.
- B. Provide barriers, fences, signs, lights, etc. as necessary to control access to the site.

1.12 ACCESS TO PROPERTY

- A. It is vital to the success of this project for the Contractor to adequately maintain streets and driveways to reasonably minimize inconvenience to users. Contractor shall maintain streets and driveways to the satisfaction of the Owner.

1.13 OTHER GENERAL REQUIREMENTS

- A. Apply for, obtain, and pay for permits required to perform the work.
- B. Review all materials proposed for use in the project for asbestos content and potential hazards.
- C. Field-verify dimensions indicated on drawings before fabricating or ordering materials.
- D. Notify Owner of existing conditions differing from those indicated on the drawings. Verify the existence and location of underground utilities along the route of proposed work. Omission from, or inclusion of, locations on the drawings, is not to be considered as the nonexistence of, or the definite location of, existing underground utilities. Do not remove or alter existing utilities without prior written approval.
- E. The Contract Documents are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the project shall be included.
- F. The technical specifications are written in the imperative mode. Except where specifically intended otherwise, the subject of all imperative statements is the Contractor. For example, "furnish..." means "Contractor shall furnish..."; "provide" means "Contractor shall furnish and install...;" etc.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01025

MEASUREMENT & PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Methods for measuring and calculating quantities.
- B. Basis of payment for all contract bid items.
- C. Values of unit prices.
- D. Description for payment of extra work or changes.
- E. Discussion of payment for rejected materials.
- F. Description of payment for force account work.
- G. Description of the method of measurement and basis for payment for each contract bid item.

1.02 RELATED SECTIONS

- A. Section 01027 – Applications for Payment.
- B. Section 01035 – Modification Procedures.

1.03 MEASUREMENT

- A. Performed according to United States Standard measure.
- B. Based on actual units installed or neat line dimensions of work completed.

1.04 CALCULATION OF QUANTITIES

- A. Progress Payment Quantities:
 - 1. CONTRACTOR will compute all quantities of Work performed, or of materials and equipment delivered to the site for progress payment purposes.
 - 2. The ENGINEER will also compute quantities of Work performed, or of materials and equipment delivered to the site to verify quantities calculated by CONTRACTOR.
- B. Final Payment Quantities: The ENGINEER will compute all quantities of Work performed, or of materials and equipment delivered to the site for final payment purposes. Calculation of final quantities will be as described in paragraph 1.10.

1.05 PAYMENT

- A. In accordance with lump sum, unit price, or force account rates provided on the Bid Form.
- B. Includes all costs for overhead and profit and for supplying materials, labor, equipment, and tools, necessary to complete the Work in accordance with the Specifications, Drawings, and Contract Conditions.

1.06 QUANTITIES

- A. The number of units and quantities indicated in the Bid Schedule are approximate, and final payment will be made for the actual number of units and quantities incorporated in the work, or made necessary to complete the project.
- B. In the event that work and materials or equipment are required to be furnished to a greater or lesser extent than is indicated by the Contract Documents, such work and materials or equipment will be furnished in greater or lesser quantities.

1.07 CHANGES AND EXTRA WORK

- A. Changes and extra work will be measured and paid for in accordance with the conditions of written change orders to the contract.

1.08 REJECTED MATERIALS

- A. Quantities of material wasted or disposed in a manner not called for in the Specifications; rejected loads of material, including material rejected after it has been placed by reasons of the failure of CONTRACTOR to conform to the provisions of the Technical Specifications; material not unloaded from the transporting vehicle; material placed outside the limits indicated on the Drawings; or material remaining on hand after completion of the Work, will not be paid for, and such quantities will not be included in the final total quantities. No compensation will be provided for loading, hauling, and disposing of rejected material.

1.09 FORCE ACCOUNT WORK

- A. Payment for Force Account work will be determined as follows:
 - 1. Labor:
 - a. Payment for labor will be based on fully burdened wage rates plus 10 percent.
 - b. Payment constitutes full compensation for labor including wages, benefits, overhead, and profit for each individual.
 - 2. Equipment:
 - a. Payment for equipment will be based on the Force Account Equipment Rate Schedule submitted following award of the contract.
 - b. Payment constitutes full compensation for supplying equipment and includes all costs for maintenance, fuel, insurance, overhead, profit, and any other costs necessary to provide and operate the equipment. Payment does not include operator labor cost.
 - 3. Materials:
 - a. Payment for materials will be paid for at cost plus 10 percent.
 - b. Payment will be based on invoices from suppliers indicating full cost to CONTRACTOR.
 - c. Where invoices are not available, a unit cost must be approved by the CQAC prior to use of the material.

1.10 MEASUREMENT AND PAYMENT CONTRACT BID ITEMS

GENERAL ITEMS

- 1. Mobilization
 - a. Basis of Measurement: Payment as follows: 50 percent of lump sum amount upon completion of 10 percent of the work. 100 percent payment upon completion of 50 percent of the work.
 - b. Basis of Payment: Includes all costs for mobilizing and demobilizing equipment, traffic control, living expenses, bonds, insurance, office and field overhead, and any other administrative cost necessary to complete

the work including work described in Division 1 of the technical specifications.

2. Surveying
 - a. Basis of Measurement: By the Lump Sum (LS).
 - b. Basis for Payment: Includes all costs to perform surveys to layout work, to measure installed quantities, and to document as-built conditions as described in Section 01052.

DEMOLITION AND EXCAVATION

3. Clear and Grubb
 - a. Basis of Measurement: By the lump sum (LS).
 - b. Basis for Payment: Includes all cost to remove vegetation and shrubs as described in Section 02221.
4. Remove and Salvage Existing Roadway Pavement
 - a. Basis of Measurement: By the lump sum (LS).
 - b. Basis for Payment: Includes all costs to demolish existing asphalt pavement, load, haul and dispose as described in Section 02060.
5. Remove and Salvage Existing Corrugated Metal Pipe
 - a. Basis of Measurement: By the Lump Sum (LS).
 - b. Basis for Payment: Includes all cost to demolish existing culverts and to load, haul and stockpile at the County Maintenance Yard.
6. Excavation
 - a. Basis of Measurement: By the cubic yard (CY), measured in the excavation areas. Measurement will be based on a topographic survey of the excavation areas performed following clearing and grubbing operations and following final grading of the excavation areas. The topographic map must indicate 2-foot contour intervals with a vertical accuracy of 0.2 feet.
 - b. Basis for Payment: Payment includes all costs to excavate existing slide materials and existing soil in the sliver fill areas, and to load, haul, and stockpile these soils on site as described in Section 02221.
7. Excavation to Off Site Disposal
 - a. Basis of Measurement: By the cubic yard (CY) measured in equipment used to haul soil off site. The volume in each vehicle will be agreed upon based on measuring the loose loaded volume of soil in each vehicle.
 - b. Basis for Payment: Includes all cost to load, haul and dispose of soil not re-used on site as engineered fill. Off site disposal must be at a regulated solid waste facility, or ENGINEER approved alternative.

SUBDRAIN SYSTEM

8. Furnish and Install 4-inch Perforated HDPE Subdrain
 - a. Basis of Measurement: By the linear foot (LF), based on field measurement along the installed perforated pipe.
 - b. Basis for Payment: Includes all costs to furnish and install HDPE pipe, and fittings as indicated on the Drawings and as described in Section 02711.
9. Furnish and Install 4-inch Solid HDPE Subdrain
 - a. Basis of Measurement: By the linear foot (LF), based on field measurement along the installed solid-wall pipe.
 - b. Basis for Payment: Includes all costs to furnish and install HDPE pipe, and fittings as indicated on the Drawings and as described in Section 02711.
10. Install Type B Tire Derived Aggregate Fill
 - a. Basis of Measurement: By the cubic yard (CY), measured in the fill areas. Measurement will be based on a topographic survey of the base and surface of each TDA layer performed before and following placement of each layer. The topographic map must indicate 2-foot contour intervals with a vertical accuracy of 0.2 feet.
 - b. Basis for Payment: Payment includes all costs to install, grade and compact Type B TDA material provided by the CIWMB as described in Section 02224.

11. Excavation to Low Permeability Cover Soil
 - a. Basis of Measurement: By the cubic yard (CY), measured in the fill areas. Measurement will be based on a topographic survey of the base and surface of each low perm soil layer performed before and following placement of each layer. The topographic map must indicate 2-foot contour intervals with a vertical accuracy of 0.2 feet.
 - b. Basis for Payment: Payment includes all costs to excavate soil from on site stockpiles, grade and compact as described in Section 02228.
12. Furnish and Install Geotextile Separator
 - a. By the square foot (SF), based on actual horizontal area installed as determined by field measurements. No allowance will be made for slopes, material in seam overlap or wastage.
 - b. Basis for Payment: Includes all costs to furnish and install geotextile separator as indicated on the Drawings and as described in Section 02771.
13. Excavation to Reinforced Soil Backfill
 - a. Basis of Measurement: By the cubic yard (CY), measured in the fill areas. Measurement will be based on a topographic survey of the base and surface of each soil backfill area performed before and following placement of each layer. The topographic map must indicate 2-foot contour intervals with a vertical accuracy of 0.2 feet.
 - b. Basis for Payment: Payment includes all costs to excavate soil from on site stockpiles, grade, moisture condition, and compact as described in Section 02222.
14. Furnish and Install Geogrid Soil Reinforcement
 - a. By the square foot (SF), based on actual horizontal area installed as determined by field measurements. No allowance will be made for slopes, material in seam overlap or wastage.
 - b. Basis for Payment: Includes all costs to furnish and install geogrid as indicated on the Drawings and as described in Section 02777.

DRAINAGE STRUCTURES

15. Furnish And Install Type A V-Ditch
 - a. Basis of Measurement: By the linear foot (LF), based on field measurements made along the completed ditch.
 - b. Basis for Payment: Includes all costs to excavate and grade ditch subgrade, and to furnish and install geomembrane liner, concrete reinforcement, concrete, and riprap as described in Sections 02221, 02778, and 03300.
16. Furnish And Install Type B -Ditch
 - a. Basis of Measurement: By the linear foot (LF), based on field measurements made along the completed ditch.
 - b. Basis for Payment: Includes all costs to excavate and grade ditch subgrade, and to furnish and install geomembrane liner, concrete reinforcement, and concrete as described in Sections 02221, 02778, and 03300.
17. Furnish And Install 30 inch Riser Inlet and Basin
 - a. Basis of Measurement: By the lump sum (LS).
 - b. Basis for Payment: Includes all costs to furnish and install the 30-inch diameter vertical riser, furnish and install the geomembrane liner, the concrete base, and install the geomembrane boot.
18. Furnish And Install 24-inch CMP Culvert
 - a. Basis of Measurement: By the linear foot (LF) based on as-built surveys indicating the top of the installed pipe.
 - b. Basis for Payment: Includes all costs to furnish and install new CMP culvert pipe, and accessories including end sections, and to perform trenching and backfilling as described in Sections 02225 and 02609.
19. Furnish And Install 24-inch CMP Downrain
 - a. Basis of Measurement: By the linear foot (LF) based on as-built surveys indicating the top of the installed pipe.

- b. Basis for Payment: Includes all costs to furnish and install new CMP culvert pipe, and accessories including, couplings and flared end sections, and to perform trenching and backfilling as described in Sections 02225 and 02609.
- 20. Furnish And Install 18-inch CMP Extension
 - a. Basis of Measurement: By the linear foot (LF) based on as-built surveys indicating the top of the installed pipe.
 - b. Basis for Payment: Includes all costs to furnish and install new CMP culvert pipe, and accessories including couplings and flared end sections, and to perform trenching and backfilling as described in Sections 02225 and 02609.
- 21. Furnish And Install Rip Rap for 18-inch 24-inch CMP Outlet
 - a. By the square foot (SF), based on actual horizontal area installed as determined by field measurements.
 - b. Basis for Payment: Includes all costs to furnish and install geotextile separator, and to furnish and install rip rap at CMP outlets as indicated on the Drawings and as described in Sections 02611, and 02771.
- 22. Furnish And Install Rip Rap Slope Protection
 - a. By the square foot (SF), based on actual horizontal area installed as determined by field measurements.
 - b. Basis for Payment: Includes all costs to furnish and install geotextile separator, and to furnish and install rip rap at locations indicated on the drawings as described in Sections 02611, and 02771.
- 23. Furnish And Install Surface Placed Rip Rap
 - a. By the square foot (SF), based on actual horizontal area installed as determined by field measurements.
 - b. Basis for Payment: Includes all costs to furnish and install geotextile separator, and to furnish and install surface placed rip rap as indicated on the Drawings and as described in Sections 02611, and 02771.
- 24. Furnish And Install Concrete Cut-Off Wall
 - a. Basis of Measurement: By the linear foot (LF) based on field measurement made along the completed wall.
 - b. Basis for Payment: Includes all costs for excavation and for furnishing and installing concrete as indicated on the drawings and as described in sections 02221 and 03330.

SLIVER FILL

- 25. Excavation to Engineered Sliver Fill
 - a. Basis of Measurement: By the cubic yard (CY), measured in the fill areas. Measurement will be based on a topographic survey of the base and surface of the sliver fill performed before and following placement of the fill material. The topographic map must indicate 2-foot contour intervals with a vertical accuracy of 0.2 feet.
 - b. Basis for Payment: Payment includes all costs to excavate soil from on site stockpiles, grade and compact as described in Section 02222.
- 26. Furnish and Install Geogrid Soil Reinforcement
 - a. By the square foot (SF), based on actual horizontal area installed as determined by field measurements. No allowance will be made for slopes, material in seam overlap or wastage.
 - b. Basis for Payment: Includes all costs to furnish and install geogrid as indicated on the Drawings and as described in Section 02777.

EROSION CONTROL

- 27. Provide Stormwater Pollution Prevention Plan
 - a. Basis of Measurement: By the lump sum (LS).
 - b. Basis for Payment: Includes all cost to prepare a stormwater pollution control plan in compliance with State of California requirements.
- 28. Furnish and Install Hydroseeding and Fiber Roll

- a. By the square foot (SF), based on actual horizontal area of hydroseeding installed as determined by field measurements.
- b. Basis for Payment: Includes all costs to furnish and install hydroseeding and fiber rolls as indicated on the Drawings and as described in Section 02930.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Procedures for preparation and submittal of applications for payment.

1.02 RELATED SECTIONS

- A. Section 01035 - Modification Procedures.
- B. Section 01300 - Submittals.
- C. Section 01700 - Contract Closeout.

1.03 FORMAT

- A. Provide a computer generated spreadsheet that for each bid item and change order item, provides a column listing each of the following:
 - 1. Item number;
 - 2. Description of work;
 - 3. Contract Unit of measurement;
 - 4. Contract quantity;
 - 5. Contract unit price;
 - 6. Contract amount;
 - 7. Previous quantity completed;
 - 8. Previous amount paid;
 - 9. Quantity completed for current period;
 - 10. Amount payable for current period;
 - 11. Quantity completed to date;
 - 12. Amount payable to date;
 - 13. Percentage complete for each bid item; and
 - 14. Summary of quantities and values of materials on site, but not installed.
- B. Provide a summary on the spreadsheet that includes the following:
 - 1. Total amount earned in current month.
 - 2. Total amount previously earned.
 - 3. Total amount earned to date.
 - 4. Total value of materials on hand.
 - 5. Subtotal for items 3 and 4.
 - 6. Amount retained.
 - 7. Total of previous amount paid.
 - 8. Amount due for current period.

1.04 PREPARATION OF APPLICATIONS

- A. Present required information on electronic media printout.
- B. Execute certification by signature of authorized officer.
- C. Prepare Application for Final Payment as specified in Section 01700.

1.05 SUBMITTAL PROCEDURES

- A. Submit three copies of each Application for Payment.
- B. Payment Period: Submit at intervals stipulated in the Agreement.

1.06 SUBSTANTIATING DATA

- A. When the ENGINEER requires substantiating information, submit data justifying quantities or dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01030

ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Submission procedures.
- B. Documentation of changes to Contract Sum/Price and Contract Time.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals:
- B. Section 01310 – Construction Schedule.
- C. Section 01600 - Material and Equipment
- D. Section 01630 - Product Options and Substitutions.

1.03 SUBMISSION REQUIREMENTS

- A. Submit alternates identifying the effect on adjacent or related components.
- B. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the ENGINEER's option.
- C. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- D. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.04 SELECTION AND AWARD OF ALTERNATES

- A. Indicate variation of Bid Price for Alternates in the form described below and list on a supplemental bid form.
- B. Bids will be evaluated on the base bid price.
- C. After determination of a successful bidder, consideration will be given to Alternates and Bid Price adjustments.

1.05 FORM FOR SUBMITTING

- A. Alternate No. 1 - Title:
Base Bid Item: Section [] and Drawing number [] including [].
Alternate Item: Section [] and Drawing number [] including [].

- B. Alternate No. 2 - Title:
Base Bid Item: Section [_____] and Drawing number [_____] including
[_____].
Alternate Item: Section [_____] and Drawing number [_____] including
[_____].

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01035

MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Field Orders.
- B. Proposal Requests.
- C. Work Change Directives.
- D. Change Orders.

1.02 CHANGE PROCEDURES

- A. The ENGINEER will issue Field Orders for minor changes in the Work not involving an adjustment to Contract Price or Contract Time.
- B. The ENGINEER may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required, and the period of time during which the requested price will be considered valid. CONTRACTOR must prepare and submit a Proposal with estimate within five calendar days.
- C. CONTRACTOR may request a change by submitting a Proposal to the ENGINEER, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, the effect on the Contract Price and Contract Time, and a statement describing the effect on Work by separate or other contractors.
- D. The ENGINEER may issue a Work Change Directive for any change that, if not processed expeditiously, might delay the Project. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.
- E. Changes affecting Contract Price or Contract Time, resulting under paragraphs 1.02 B, C, and D of this Section, will be processed as a Change Order.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01052

LAYOUT OF WORK AND SURVEYS

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Section includes general requirements for survey work to be provided by CONTRACTOR including the following:
 - 1. Setting offset stakes, slope stakes, and grade stakes for field layout of features for performance of the Work.
 - 2. Surveys for measurement of quantities for payment.
 - 3. Record (as-built) surveys.

1.02 RELATED SECTIONS

- A. Section 01025 – Measurement and Payment.

1.03 DESCRIPTION

- A. Reference Points. Reference points provided by the OWNER will include monuments and elevation benchmarks in the vicinity of the Project. If displaced, replacement of these reference points will be at the expense of the CONTRACTOR.
- B. Equipment and Personnel. Provide instruments and other survey equipment that are accurate, suitable for the surveys required in accordance with recognized professional standards and in proper condition and adjustment at all times. Surveys must be performed under the direct supervision of a licensed surveyor.
- C. Field Notes and Records. Record surveys in field notebooks and retain copies. Electronic notes may be used if printouts are retained.
- D. Use by the OWNER and ENGINEER. The OWNER and ENGINEER may at any time use line and grade points and markers that have been established by the CONTRACTOR. The CONTRACTOR's surveys are a part of the Work and may be checked by the OWNER or representatives of the OWNER at any time. The CONTRACTOR is responsible for (1) any lines, grades, or measurements that do not comply with specified or proper tolerances, or which are otherwise defective, and (2) for any resultant defects in the Work. The CONTRACTOR will be required to conduct re-surveys or check surveys to correct errors indicated by review of the field notebooks or otherwise detected.

1.04 SURVEYS FOR LAYOUT AND PERFORMANCE OF WORK

- A. Perform surveys for layout and performance of the Work, reduce the field notes, make necessary calculations, and prepare drawings necessary to carry out such work.

1.05 SURVEYS FOR RECORD DRAWINGS AND MEASUREMENT FOR PAYMENT

- A. When the Specifications require items of work to be measured by surveying methods, perform the surveys. The OWNER may perform independent checks.
- B. Provide record (as-built) surveys indicating the horizontal and vertical location for the following items:
 - 1. Surface topography of completed excavations.

2. Surface topography of installed fill materials including intermediate surfaces where reinforcing geosynthetics are installed.
3. Installed location of subdrains.
4. Any discovered utilities.
5. Any installed utilities.

1.06 SURVEYING ACCURACY AND TOLERANCES IN SETTING OF SURVEY STAKES

- A. Perform control traverse field surveys and computations to an accuracy of at least 1:10,000.
- B. The tolerances applicable in setting survey stakes are set forth below. Such tolerances do not supersede stricter tolerances required by the Drawings or Specifications, and do not otherwise relieve the CONTRACTOR of responsibility for measurements in compliance therewith.

<u>Type of Mark</u>	<u>Horizontal Position</u>	<u>Elevation</u>
Permanent reference points	1 in 10,000	±0.01 ft.
General excavation and earthwork	1 in 2,000	±0.10 ft.

- C. Tolerances for design thickness indicated on Drawings and for elevations indicated on the Drawings is ±0.10 foot unless otherwise specified.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01090

REFERENCES

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. References and abbreviations of various industry associations, trade associations, societies, organizations, and regulatory agencies, as referenced in the Contract Documents.

1.02 DESCRIPTIONS

- A. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, workmanship, installation inspections, and tests, which references are published and issued by the organizations, societies, and associations listed below by abbreviation and name. Such references are hereby made a part of the Contract Documents to the extent cited.
- B. Any material, method, or procedure specified by reference to the number, symbol, or title of a specific specification or standard, such as a Commercial Standard, American National Standard, Federal or State Specification, Industry or Government Code, a trade association code or standard, or other similar standard, must comply with the requirements of the edition in effect on the date of Bid Opening.
- C. The code, specification, or standard referred to, except as modified in these Specifications, will have full force and effect as though printed in these specifications. These specifications and standards are not furnished to BIDDERS since manufacturers and trades involved are assumed to be familiar with their requirements. The ENGINEER will furnish, upon request; information as to how copies of the specifications and standards referred to may be obtained.

1.03 ABBREVIATIONS

- A. Whenever in the Contract the following abbreviations are used, their meanings shall be as follows:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CALTRANS	California Department of Transportation
CIWMB	California Integrated Waste Management Board
COE	Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
FS	Federal Specifications
GRI	Geosynthetics Research Institute
MENDOT	Mendocino Department of Transportation
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Administration
PPI	Plastic Pipe Institute
SSPC	Steel Structures Painting Council
UL	Underwriters Laboratories

1.04 REFERENCED DOCUMENTS

- A. CalTrans Standard Specifications.
- B. County of Mendocino State of California, Road and Development Standards, Draft #3, 4-2-07.
- C. Report titled *"Geotechnical Study (DRAFT), Lightweight Tire Derived Aggregate Application, Marina Drive, CR 226, M.P. 0.63, Ukiah, Mendocino, California."*

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01200

PROJECT COORDINATION MEETINGS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDE:

- A. Representatives of CONTRACTOR, subcontractors, ENGINEER, CQAC, OWNER, and suppliers attending meetings must be authorized to act on behalf of the entity each represents.

1.02 PRE-CONSTRUCTION MEETING

- A. A pre-construction meeting will be held at a location selected by ENGINEER.
- B. Attendance:
 - 1. CONTRACTOR's Office Representative.
 - 2. CONTRACTOR's On-Site Field Superintendent.
 - 3. Any Subcontractors or Supplier's representatives whom CONTRACTOR may desire to invite or the ENGINEER may request.
 - 4. Design Engineer of Record (ENGINEER).
 - 5. OWNER's Representatives.
 - 6. CQA Monitors.
- C. A suggested format would include, but not be limited to, the following subjects:
 - 1. Presentation of a proposed construction progress schedule and submittals as required by the Contract Documents.
 - 2. Discussing conditions for assessing liquidated damages (if any).
 - 3. Procedures for handling submittals.
 - 4. Direction of correspondence, and coordinating responsibility between CONTRACTOR, OWNER, ENGINEER, and CQAC.
 - 5. Requesting weekly progress meetings.
 - 6. Discussing responsibilities for laboratory materials testing.
 - 7. Procedures for submitting applications for payment, and progress payments.
 - 8. Procedures for requesting and issuing Field Orders, Work Change Directives and Change Orders.
 - 9. MENDOT site regulations.
 - 10. Reviewing construction drawings, technical specifications, and the CQA Manual.
 - 11. Reviewing work area security, safety procedures, and related issues.
 - 12. Providing all parties with relevant project documents.
 - 13. Discussing responsibilities for each party.
 - 14. Defining lines of communication and authority for each party.
 - 15. Establishing reporting and documenting procedures.
 - 16. Reviewing testing equipment and test procedures.
 - 17. Establishing CQC, MQC, CQA, and conformance testing protocols.
 - 18. Discussing procedures for correcting and documenting correction of nonconforming work.
 - 19. Conducting a site inspection to discuss work areas, stockpile areas, laydown areas, access roads, haul roads, and related items.
- D. The meeting will be documented by the ENGINEER. Copies of the minutes and relevant documents will be provided to all parties present at the meeting.

1.03 WEEKLY PROGRESS MEETINGS

- A. The ENGINEER will schedule and administer progress meetings at a minimum frequency of once per week.

- B. Attendance:
 - 1. OWNER's representative.
 - 2. ENGINEER.
 - 3. CQA Monitors.
 - 4. CONTRACTOR's superintendent.
 - 5. Subcontractors as appropriate to agenda.
 - 6. Suppliers as appropriate to agenda.

- C. Meeting administration:
 - 1. The ENGINEER will administer the meeting and perform the following work:
 - a. Prepare an agenda for each meeting.
 - b. Make physical arrangements for the meeting location.
 - c. Request attendance at the meetings.
 - d. Preside at meetings.
 - e. Record significant proceedings and decisions of meeting.
 - f. Reproduce and distribute copies of meeting record within three calendar days after each meeting to participants in meeting and to parties affected by decisions made at meeting.

- D. Suggested agenda:
 - 1. Review and approval of record of previous meeting.
 - 2. Review of work progress since previous meeting.
 - 3. Field observations, problems, and conflicts.
 - 4. Problems that impede work schedule.
 - 5. Review of off-site delivery schedules.
 - 6. Corrective measures and procedures to regain projected schedule.
 - 7. Revisions to construction progress schedule.
 - 8. Planned progress during the next seven calendar days.
 - 9. Coordination of schedules.
 - 10. Review submittal schedules; expedite as required.
 - 11. Maintenance of quality and safety standards.
 - 12. Pending changes and substitutions.
 - 13. Review proposed changes for effect on construction schedule and completion date, and on other contracts of projects.
 - 14. Review and up date of as-built drawings.
 - 15. Identify bid items that require measurement for payment.
 - 16. Review applications for payment.
 - 17. Other business.

1.04 DAILY PROGRESS MEETINGS

- A. An informal daily progress meeting is suggested before the start of work. At a minimum, the CQA Monitor and CONTRACTOR would attend this meeting. The purpose of this meeting is to:
 - 1. Discuss the previous day's activities and accomplishments.
 - 2. Discuss problems that may have occurred on the previous day, their resolutions, and a means to avoid these same problems.
 - 3. Discuss scheduled work activities.
 - 4. Review CQC, MQC, CQA, and conformance test data.
 - 5. Discuss the CONTRACTOR's personnel and equipment assignments for the day.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Submittal procedures.
- B. Proposed Products list.
- C. Shop Drawings.
- D. Product Data.
- E. Soil Samples.
- F. Manufacturer's installation instructions.
- G. Manufacturers' certificates.
- H. Warranties
- I. Submittal Register.

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Control.
- B. Section 01700 - Contract Closeout.

1.03 DEFINITIONS

- A. Submittals for Review: Submittals requiring review and approval by ENGINEER.
- B. Submittals for Information: Submittals provided for information only, no approval required.

1.04 SUBMITTAL PROCEDURES

- A. Transmit each submittal attached to a transmittal form.
- B. Sequentially number the transmittals. For revised submittals add an alphabetic suffix to the original number.
- C. Identify Project, CONTRACTOR, Subcontractor or supplier; pertinent drawing and detail number, and technical specification section number, article and paragraph, as appropriate to the submittal.
- D. Apply CONTRACTOR's stamp, signed or initialed certifying that the CONTRACTOR's review has verified required products, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work, and Contract Documents.
- E. Schedule submittals to expedite review by the ENGINEER or others and deliver in the time frame specified. Coordinate submission of related items.

- F. Allow 7 calendar days review time for each submittal excluding delivery time.
- G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- H. Provide space for CONTRACTOR and ENGINEER review stamps.
- I. When revising and resubmitting, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions of approved submittals.
- K. Submittals not requested will not be recognized or processed.

1.05 SHOP DRAWINGS

- A. Submit the number of copies that CONTRACTOR requires, plus 2 copies that will be retained by the OWNER and the ENGINEER.
- B. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.

1.06 PRODUCT DATA

- A. Submit the number of copies that the CONTRACTOR requires, plus 2 copies that will be retained by the OWNER and the ENGINEER.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. After review distribute in accordance with the SUBMITTAL PROCEDURES article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSEOUT.

1.07 SOIL SAMPLE SUBMITTALS FOR REVIEW

- A. Submit soil samples that represent proposed products. Submit each sample in a bucket and provide at least 40 pounds of soil.
- B. Include identification on each sample, with full project information.
- C. Submit the number of samples specified in individual specification sections. The ENGINEER will retain one.

1.08 MANUFACTURER INSTALLATION INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to the ENGINEER in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.09 MANUFACTURER CERTIFICATE

- A. When specified in individual specification sections, submit certification by manufacturer to the ENGINEER, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, certifications, and quality control testing.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the ENGINEER.

1.10 WARRANTIES

- A. Provide warranties as specified. Warranties shall not limit length of time for remedy of damages Owner may have by legal statute. Warranties shall be signed by Contractor as well as Supplier or Installer responsible for performance of warranty. Include a Warranty Section in the Operation and Maintenance Manuals.

1.11 SUBMITTAL REGISTER

- A. Provide a submittal register with the initial project schedule.
- B. Indicate all submittals requested for review and for information.
- C. Update the register on a weekly basis and provide for review and discussion at each weekly meeting.
- D. Indicate status of each required submittal including day submitted for review, ENGINEER's response, re-submittal information.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Submit initial schedule in duplicate within 5 days after date of Agreement.
- B. Revise and resubmit as required but no less than every 30 days.
- C. Submit revised schedules during weekly progress meetings.
- D. Submit a computer-generated schedule with separate line for each item of Work or operation identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.
- F. Indicate submittal dates and review periods required for shop drawings, product data, samples, and product delivery dates.

1.02 SCHEDULE REVISIONS

- A. Revise schedule as necessary to reflect changes in scope of work, but no less than once per month.
- B. Show changes occurring since previous submittal.
 - 1. Major changes in scope.
 - 2. Activities modified since previous submittal.
 - 3. Other identifiable changes.
- C. Submit to the ENGINEER at weekly progress meetings.

1.03 DELAYS AND RECOVERY

- A. If, at any time during Project, CONTRACTOR fails to complete an activity by its latest scheduled completion date, CONTRACTOR must submit within two working days a written statement as to how and when CONTRACTOR will reorganize work force to return to current construction schedule.
- B. Whenever it becomes apparent from progress evaluation and updated schedule data that milestone completion dates and/or contract completion dates will not be met, some or all of the following actions must be taken:
 - 1. Increase construction staffing in such quantities and crafts to substantially eliminate backlog of work.
 - 2. Increase number of working hours per shift, shifts per workday, work days per week, or construction equipment, or combination of foregoing to substantially eliminate backlog of work.
 - 3. Reschedule work items to achieve concurrence of accomplishment.
- C. Under no circumstances will addition of equipment or construction forces, increasing working hours or any other method, manner or procedure to return progress to the current Construction Progress Schedule be considered justification for contract modification or treated as an acceleration.

1.04 SUBMITTAL REQUIREMENTS

- A. For initial submittal of final construction schedule and subsequent revisions thereof, furnish 3 copies of schedule to the ENGINEER. Failure to submit schedule and revisions on a timely basis as previously noted may be considered cause for withholding any progress payments otherwise due under this Contract.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Quality control - control of installation.
- B. Tolerances.
- C. References.
- D. Mockup.
- E. Inspecting and testing laboratory services.
- F. Manufacturers' field services and reports.

1.02 RELATED SECTIONS

- A. Section 01090 - References.
- B. Section 01300 - Submittals.
- C. Section 01410 - Quality Assurance Testing and Certificates.
- D. Section 01600 - Material and Equipment.

1.03 DEFINITIONS

- A. Construction Quality Assurance Consultant (CQAC): The third party, independent from Owner or Contractor that is responsible for observing and documenting activities related to the quality of construction.
- B. Construction Quality Assurance Monitor (CQA Monitor): The CQAC site representative, who also represents the OWNER and is responsible for on site implementation of CQA procedures defined by the CQAC's CQA Manual.

1.04 QUALITY CONTROL - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from ENGINEER before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work using personnel qualified to produce workmanship of specified quality.

1.05 TOLERANCES

- A. Monitor tolerance control of installed Products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from ENGINEER before proceeding.
- C. Adjust Products to appropriate dimensions; and position before securing Products in place.

1.06 REFERENCES

- A. For Products or workmanship specified by association, trades, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for submitting bids, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.

1.07 CQA INSPECTING AND TESTING SERVICES

- A. OWNER will retain a CQA Consultant (CQAC) to perform inspecting and testing defined in a CQA Manual prepared by the CQAC.
- B. The CQAC will perform inspections, tests, and other services specified in individual specification sections that are identified as construction quality assurance (CQA) testing.
- C. Inspecting, testing, and source quality assurance may occur on or off the project site.
- D. Reports will be submitted by the CQAC indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. Cooperate with CQAC; furnish samples of materials, design mixes, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
- F. Notify CQA Organization 24 hours prior to expected time for operations requiring services.
- G. Make arrangements with the CQAC and pay for additional samples and tests required for CONTRACTOR's use.
- H. CQA testing or inspecting does not relieve CONTRACTOR to perform construction quality control (CQC) work indicated in specifications, or manufactures quality control (MQC) work indicated in the specifications.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01410

QUALITY TESTING AND CERTIFICATES

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Quality assurance testing performed by the CQAC.
- B. Quality control testing by CONTRACTOR.
- C. Certificates of compliance.

1.02 RELATED SECTIONS

- A. Section 01300 — Submittals.

1.03 DEFINITIONS

- A. Construction Quality Assurance Consultant (CQAC): The party, independent from Owner or Contractor that is responsible for observing and documenting activities related to the quality of construction.
- B. Construction Quality Assurance Monitor (CQA Monitor): The CQAC site representative, who also represents the OWNER and is responsible for on site implementation of CQA procedures defined by the CQAC's CQA Manual.

1.04 SOURCE OF MATERIALS

- A. CONTRACTOR must notify the ENGINEER in writing of the sources from which it proposes to obtain material requiring CQA testing. Such notification must be made as soon as possible after award of Contract but no later than 5 days after receipt of the Notice to Proceed.

1.05 QUALITY ASSURANCE TESTING

- A. Quality assurance testing is the testing of materials prior to their use in the Work and also any testing deemed necessary by ENGINEER for acceptance of the installed Work.
- B. CQA Organization will perform quality assurance testing of materials and workmanship in accordance with a Construction Quality Assurance Manual prepared by the CQAC, and reserves the right to perform additional testing at any time to determine conformance with the requirements of the Contract Documents.
- C. Do not consider quality assurance testing by the CQAC as a replacement for quality control testing conducted by CONTRACTOR, or a manufacturer quality control (MQC) testing performed by manufacturers producing materials for CONTRACTOR.
- D. Quality assurance testing will be performed at the expense of OWNER.

1.06 QUALITY CONTROL TESTING

- A. Quality control testing is the testing of materials prior to their delivery from a manufacturer, or during construction, to ensure compliance with the Contract Documents.

- B. CONTRACTOR must assume full responsibility for quality control testing and give sufficient notice to the CQAC to permit them to witness the tests.
- C. Where specifically indicated in the technical specifications, quality control testing must be performed by an independent testing firm
- D. Submit the name, address, and qualifications, together with the scope of proposed services, of the proposed testing firm(s). Submit to the ENGINEER for approval at least 30 days prior to the scheduled commencement of any work involving such testing.
- E. Within five days after completion of testing performed by or for CONTRACTOR, submit test results to the ENGINEER. In test reports indicate information specified for samples in Section 01300 and additionally, the name and address of the organization performing the test, and the date of the tests.
- F. Quality control testing is at the expense of CONTRACTOR.

1.07 CERTIFICATES OF COMPLIANCE

- A. Where specifically indicated in the technical specifications, CONTRACTOR may use certificates of compliance for certain materials and products in lieu of the specified sampling and testing procedures.
- B. Submit certificates required for demonstrating proof of compliance of materials with specification requirements in duplicate with each lot of material delivered to the Work or prior to delivery as required by the Contract.
- C. The lots so certified must be clearly identified by the certificate.
- D. Certificates must be signed by an authorized representative of the producer or manufacturer and state that the material complies in all respects with the requirements of the Contract Documents.
- E. In the case of multiple shipments, each shipment must be accompanied or preceded by a Certificate of Compliance.
- F. The Certificate of Compliance must be accompanied by a certified copy of tests results or state that such test results are on file with the producer or manufacturer and must be furnished to the ENGINEER on request.
- G. The certificate must give the information specified for samples in Section 01300, the name and address of the organization performing the tests, the date of the tests, and the quantity of material shipped.
- H. Materials used on the basis of a Certificate of Compliance may be sampled and tested at any time by the CQAC.
- I. The fact that material is used on the basis of a Certificate of Compliance does not relieve CONTRACTOR of responsibility for incorporating material in the Work which conform to the requirements of the Contract and any such material not conforming to such requirements will be subject to rejection, whether in place or not.
- J. The ENGINEER reserves the right to refuse to permit the use of certain materials on the basis of a Certificate of Compliance.

1.08 REPAIR COSTS

- A. All costs to repair or replace non-conforming materials or installation are the responsibility of the CONTRACTOR.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Construction facilities required for the construction of the permanent facilities specified under the Scope of Work of this Contract.
- B. Construction facilities include furnishing of all equipment, materials, tools, accessories, incidentals, labor, and performing all work for the installation of equipment and for construction of facilities, including their maintenance, operation, and removal, if required, at the completion of the Work under the Contract.

1.02 RELATED SECTIONS

- A. Section 01560 — Temporary Controls.

1.03 TEMPORARY FACILITY TYPES

- A. Construction facilities include, but are not be limited to, the following temporary offices, utilities, equipment, materials, facilities, areas, and services:
 - 1. Field Office (if used)
 - 2. Parking Areas
 - 3. Temporary Roads
 - 4. Storage of Materials and Equipment
 - 5. Construction Equipment
 - 6. Temporary Sanitary Facilities
 - 7. Temporary Electric Power
 - 8. Temporary Water
 - 9. First Aid Facilities
 - 10. Security

1.04 REFERENCES

- A. Construct/install, maintain and operate construction facilities in accordance with the applicable federal, state, and local laws, rules, and regulations.

1.05 GENERAL REQUIREMENTS

- A. CONTRACTOR is responsible for furnishing, installing, constructing, operating, maintaining, removing and disposing of the construction related facilities, as specified in this Section, and as required by ENGINEER for completion of the Work under the Contract.
- B. Locate and maintain construction facilities in a clean, safe and sanitary condition at all times until completion of the Contract.
- C. The requirements specified herein are in addition to any requirements specified elsewhere in the Contract Documents.
- D. Minimize land disturbances related to the construction facilities to the greatest extent possible and restore land to the extent reasonable and practical, to its original contours by grading to provide positive drainage and by seeding the area to match with existing vegetation or as specified elsewhere.

- E. Design and construct utilities to provide uninterrupted service.

1.06 FIELD OFFICE

- A. CONTRACTOR may provide an office for his own staff, however it is not required.
- B. The location of the office must be as approved by the ENGINEER.

1.07 TEMPORARY ROADS

- A. General.
 1. Temporary roads are existing roads that are improved or new roads constructed by CONTRACTOR for convenience of CONTRACTOR in the performance of the Work under the Contract.
 2. Coordinate construction with ENGINEER.
 3. If applicable, coordinate all road construction activities with local utilities, fire and police departments.
 4. Keep erosion to a minimum and maintain suitable grade and radii of curves to facilitate ease of movement of vehicles and equipment.
 5. Furnish and install longitudinal and cross drainage facilities including, but not limited to, the ditches, structures, pipes and the like.
 6. Clean equipment so that mud or dirt is not carried onto public roads. Clean up any mud or dirt transported by its equipment on paved roads both on-site and off-site.

1.08 STORAGE OF MATERIALS AND EQUIPMENT

- A. Make arrangements for material and equipment storage areas. Locations and configurations of such facilities are subject to the acceptance of the ENGINEER.
- B. Confine all operations, including storage of materials, to approved areas.
- C. CONTRACTOR is liable for any and all damage caused during such use of property of the OWNER or others.
- D. Store materials in accordance with manufacturer's instructions when applicable.
- E. Store construction materials and equipment within boundaries of designated areas.
- F. Storage of gasoline or similar fuels must conform to state and local regulations and be limited to the areas approved for this purpose by the OWNER.

1.09 CONSTRUCTION EQUIPMENT

- A. Erect, equip, and maintain all construction equipment in accordance with all applicable statutes, laws, ordinances, rules, and regulations of OWNER or other authority having jurisdiction.
- B. Provide and maintain scaffolding, staging, runways, hoists, barricades, and similar equipment required for performance of the Contract. Provide hoists or similar equipment with operators and signals, as required.
- C. Provide, maintain, and remove upon completion of the Work, all temporary rigging, scaffolding, hoisting equipment, debris boxes, barricades around openings and excavations, fences, ladders, and all other temporary work, as required for all work hereunder unless otherwise directed by the ENGINEER.

- D. Construction equipment and temporary work must conform to all the requirements of state, county, and local authorities, OSHA, and underwriters that pertain to operation, safety, and fire hazard. Furnish and install all items necessary for conformity with such requirements, whether or not called for under separate sections of these Specifications.

1.10 TEMPORARY SANITARY FACILITIES

- A. Provide temporary sanitary facilities for use by all employees and persons engaged in the work, including subcontractors, their employees and authorized visitors.
- B. Sanitary facilities include enclosed chemical toilets and washing facilities. These facilities must meet the requirements of local public health standards. Open pit or trench latrines are not permitted.
- C. Locate sanitary facilities as approved by the ENGINEER, and maintain in a sanitary condition during the entire course of the work.

1.11 TEMPORARY ELECTRIC POWER (IF REQUIRED)

- A. Provide and maintain during the course and progress of the Work all electrical power and wiring requirements to facilitate the work of all trades and services associated with the work. Make arrangements with the applicable serving utility company or provide generators and pay all charges for providing and maintaining electrical service including usage costs at the site unless otherwise approved by the ENGINEER. Furnish all temporary wiring, feeders, and connections.
- B. Routing of temporary conductors, including welding leads must not create a safety hazard nor interfere with operation and maintenance of existing facilities.
- C. Install all temporary wiring in accordance with the applicable requirements of the local electrical code.
- D. Provide temporary power and lighting to field office, ENGINEER's field office, and for Work as required, at no extra cost to OWNER.

1.12 TEMPORARY WATER

- A. Make arrangements for water needs from an off-site supplier if needed to complete Work.

1.13 FIRST AID FACILITIES

- A. Provide first aid equipment and supplies to serve all CONTRACTOR personnel at the site.

1.14 SECURITY

- A. Make all necessary provisions and be responsible for the security of the Work and the site until final inspection and acceptance of the Work unless otherwise approved by the OWNER.

1.15 MAINTENANCE

- A. Maintain all construction facilities, utilities, temporary roads, services to office, and the like in good working condition as required by OWNER during the term of the Contract.

1.16 STATUS AT COMPLETION

- A. Upon completion of the Work, or prior thereto, when so required by the ENGINEER:
1. Repair damage to roads caused by or resulting from the CONTRACTOR's work.
 2. Remove and dispose of all construction facilities including office trailers, and other facilities and utilities including all concrete foundations. Similarly, all areas utilized for temporary facilities must be returned to near original, natural state, or as otherwise indicated or directed.
 3. Obliterate temporary roads built for CONTRACTOR's convenience and restore the area to near original conditions to the extent practicable unless otherwise approved by the ENGINEER.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01505

MOBILIZATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Mobilization consists of work described in Division 1 of the technical specifications not specifically paid for under other bid items, and preparatory work and operations, including but not limited to those necessary for the movement of equipment and personnel, project safety, including adequate personnel, equipment, supplies, and incidentals to the project site; for the establishment of temporary field offices, buildings and other temporary facilities necessary for work on the project; for premiums on bond and insurance for the project and for other work and operations the CONTRACTOR must perform or costs the CONTRACTOR must incur before beginning work on the project, and for maintaining temporary facilities throughout the project, which are not covered in other bid items. Demobilization consists of work and operations included but not limited to those necessary for movement of personnel, equipment, supplies, incidentals, and offices off-site, and for cleaning the site.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary controls required during the term of the Contract for the protection of the environment and the health and safety of workers and general public.
- B. Furnishing all equipment, materials, tools, accessories, incidentals, and labor, and performing all work for the installation of equipment and construction of facilities, including their maintenance and operation during the term of the Contract.
- C. Dust Control
- D. Pollution Control
- E. Traffic and Safety Controls
- F. Temporary Erosion and Sediment Control
- G. Perform work as specified in this Specification and as required by the ENGINEER. Maintain equipment and accessories in clean, safe and sanitary condition at all times until completion of the Contract.

1.02 RELATED SECTIONS

- A. Section 01500 — Construction Facilities.

1.03 DUST CONTROL

- A. Provide dust control measures at the request of the ENGINEER and to meet requirements of various specifications.
- B. Dust control consists of transporting water, furnishing required equipment, additives, accessories and incidentals, and carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance, and to prevent dust originating from construction operations throughout the duration of the Contract.
- C. Apply water by means of pressure-type distributors or pipelines equipped with a spray system or hoses with nozzles that will insure a uniform application of water.
- D. Equip all equipment used for the application of water with a positive means of shut-off.
- E. Unless otherwise permitted by the ENGINEER or unless all the water is applied by means of pipelines, provide at least one mobile unit with a minimum capacity of 3,500 gallons at the site in operating condition for applying water at the site during construction.

1.04 POLLUTION CONTROL OF WATERWAYS

- A. Perform work using methods that prevent entrance or accidental spillage of solid or liquid matter, contaminants, debris and other objectionable pollutants and wastes into streams, watercourses, flowing or dry, and underground water sources.

- B. Such pollutants and wastes will include, but will not be restricted to refuse, earth and earth products, garbage, cement, concrete, sewage effluent, industrial waste, radioactive substances, hazardous chemicals, oil and other petroleum products, aggregate processing tailings, and mineral salts.
- C. Dispose of pollutants and wastes in accordance with applicable permit provisions or in a manner acceptable to and approved by the ENGINEER.

1.05 STORAGE AND DISPOSAL OF PETROLEUM PRODUCTS:

- A. Petroleum products covered by this section include gasoline, diesel fuel, lubricants, heating oils, and refined and used oil.
- B. During project construction, store all petroleum products in such a way as to prevent contamination of all ground and surface waters.
- C. Lubricating oil may be brought into the project area in steel drums or other means, as CONTRACTOR elects.
- D. Store used lubricating oil in steel drums, or other approved means, and return them to the supplier for disposal.
- E. Do not burn or otherwise disposed of at the project area.
- F. If the total volume of stored petroleum products is greater than 1,320 gallons and these products are stored above ground, prepare a spill prevention control and countermeasure (SPCC) plan in accordance with applicable EPA and other state regulations.
- G. Submit SPCC plan to the ENGINEER for review.

1.06 TRAFFIC AND SAFETY CONTROLS

- A. Post construction areas and roads with traffic control signs or devices used for protection of workmen, the public and equipment. The signs or devices must conform to the American National Standards Institute, Manual on Uniform Traffic Control Devices for Streets and Highways.
- B. Remove signs or traffic control devices as soon as they have served their purpose. It is particularly important to remove any markings on road surfaces that under conditions of poor visibility could cause a driver to turn off the road or into traffic moving in the opposite direction.
- C. Barricades for protection of employees must conform to the portions of the American National Standards Institute, Manual on Uniform Traffic Control Devices for Streets and Highways, relating to barricades.
- D. Material Haul on Public Roads: Follow all requirements stated in the permits for using public roads for hauling materials to the site.
- E. Provide flag persons, properly equipped with International Orange protective clothing and flags, as necessary, to direct or divert pedestrian or vehicular traffic.
- F. Construct and maintain fences, planking, barricades, lights, shoring, and warning signs as required by local authorities and federal and state safety ordinances, and as required, to protect OWNER's property from injury or loss and as necessary for the protection of the public, and provide walks around any obstructions made in a public place for carrying on the Work covered in this Contract. Leave all such protection in place and maintained until removal is authorized.

- G. Guard and protect all workers, pedestrians, and the public from excavations, blasting operations, construction equipment, all obstructions, and other dangerous items or areas by means of adequate railings, guard rails, temporary walks, barricades, warning signs, sirens, directional signs, overhead protection, planking, decking, danger lights, etc.

1.07 MAINTENANCE

- A. Maintain all temporary controls in good working conditions during the term of the Contract for the safe and efficient transport of equipment and supplies, and for construction of permanent works, as required by the ENGINEER.

1.08 STATUS AT COMPLETION

- A. Upon completion of the Work, or prior thereto, when so required by the ENGINEER, remove all temporary controls and restore disturbed areas as required by the ENGINEER.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. General requirements for material and equipment including handling, transportation, and storage thereof.

1.02 RELATED SECTIONS:

- A. 01300 - Submittals.

1.03 QUALITY OF MATERIALS

- A. Provide materials and equipment that is new, except as may be indicated in the Specifications or on the Drawings.
- B. Materials and equipment must be manufactured, handled, transported, stored, and used in accordance with the requirements of the manufacturer and to ensure completed work meets the requirements of the Contract Documents.

1.04 HANDLING

- A. Avoid bending, scraping, or overstressing materials and equipment. Protect projecting parts by blocking with wood, by providing bracing, or by other approved methods.
- B. Protect materials and equipment from soiling and moisture by wrapping or by other approved means.
- C. Protect small parts of equipment and accessories in containers such as boxes, crates, or barrels to avoid dispersal and loss. Firmly secure an itemized list and description of contents to each such container.

1.05 TRANSPORTATION:

- A. Load, transport, unload, and store all materials and equipment such that they are kept clean and free from damage.

1.06 STORAGE AND PROTECTION

- A. Provide sheltered, weather-tight, or heated weather-tight storage as required for materials and equipment subject to weather damage.
- B. Provide blocking, platforms, or skids for materials and equipment subject to damage by contact with ground.
- C. Store packaged materials in their original unbroken package or container.
- D. Protect materials and equipment from damage during warehousing operations.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01630

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section describes product options available to BIDDERS and the CONTRACTOR, plus procedures for securing approval of proposed substitutions.
- B. Related work:
 - 1. Make submittals in accordance with pertinent provisions of Section 01300.

1.02 PRODUCT OPTIONS

- A. The Contract is based on standards of quality established in the Contract Documents.
 - 1. In agreeing to the terms and conditions of the Contract, the CONTRACTOR has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule.
 - 2. Neither the OWNER nor the ENGINEER has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.
- B. Materials and/or methods specified by name:
 - 1. Where materials and/or methods are specified by naming one single manufacturer and/or model number, without stating that equal products will be considered, only the material and/or method named is approved for incorporation into the Work.
 - 2. Should the CONTRACTOR demonstrate to the approval of the ENGINEER that a specified material or method was ordered in a timely manner and will not be available in time for incorporation into this Work, the CONTRACTOR must submit to the ENGINEER such data on proposed substitute materials and/or methods as are needed to help the ENGINEER determine suitability of the proposed substitution.
- C. Where materials and/or methods are specified by name and/or model number, followed by the words "or an equal approved in advance by the ENGINEER" or similar wording:
 - 1. The material and/or method specified by name establishes the required standard of quality;
 - 2. Materials and/or methods proposed by the CONTRACTOR to be used in lieu of materials and/or methods so specified by name must in all ways equal or exceed the qualities of the named materials and/or methods;
 - 3. Proposed substitutions must be described in the CONTRACTOR's General Contract bid.
- D. The following products do not require further approval except for interface within the Work:
 - 1. Products specified by reference to standard specifications such as ASTM and similar standards;
 - 2. Products specified by manufacturer's name and catalog model number.
- E. Where the phrase "or equal," or "or equal as approved by the ENGINEER," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be accepted as equal unless the item has been specifically so approved for this Work by the ENGINEER.

F. The decision of the ENGINEER is final.

1.03 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material and/or method will not be considered by the OWNER as justifying an extension of the agreed Time of Completion.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

4.01 SECTION INCLUDES:

- A. Closeout procedures.
- B. Final cleaning.
- C. Project record documents.

4.02 RELATED SECTIONS

- A. Section 01300 - Submittals.
- B. Section 01500 - Construction Facilities.

4.03 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and is ready for ENGINEER's, and OWNER's inspection and preparation of a final punch list.
- B. Provide submittals to the ENGINEER that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. Use format described in Section 01027.
- D. OWNER will occupy all portions of the facility.

4.04 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Remove waste and surplus materials, rubbish, and construction facilities from the construction site. Dispose of materials in active landfill area.

4.05 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the work.
 - 1. Construction Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.

- D. Specifications: Legibly mark and record at each product section description of actual products installed, included the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.

- E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical location of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 3. Field changes of dimension and detail.
 - 4. Details not indicated on original Drawings.
 - 5. Limits of primary geomembrane.
 - 6. Items listed in Section 01052.

- F. Submit documents to ENGINEER with claim for final Application for Payment.

- G. FINAL PAYMENT WILL NOT BE MADE BY OWNER UNTIL RECORD DOCUMENTS ARE SUBMITTED.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

DIVISION 2

SITE WORK

SECTION 02060

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Demolition of designated structures and removal for salvage.
- B. Demolition and removal of existing asphalt paving.

1.02 RELATED SECTIONS

- A. Section 02221 – Excavating.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable County code for demolition of structures, safety of adjacent structures, dust control, runoff control, and disposal.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.

PART 2 PRODUCTS

2.01 ITEMS BEING DEMOLISHED

- A. Asphalt paving where excavation is required to repair the slide and place the sliver fill.
- B. Existing culverts that are designated to be removed and salvaged.

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices as required by the County.
- B. Protect existing structures and pavement designated to remain.
- C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
- D. Mark location of utilities.

3.02 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures.
- B. Cease operations immediately if adjacent structures appear to be in danger. Notify ENGINEER. Do not resume operations until directed.
- C. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon or limit access to their property.
- E. Sprinkle Work with water to minimize dust. Provide hoses and water connections for this purpose.

3.03 DEMOLITION

- A. Disconnect and cap designated utilities within demolition areas.
- B. Remove asphalt concrete slabs on grade.
- C. Remove asphalt from site for disposal.
- D. Remove culverts from site for salvage at the County Maintenance yard.

END OF SECTION

SECTION 02221

EXCAVATING

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Clearing and Grubbing.
- B. Preparation for excavation.
- C. Performing excavations to remove slide materials.
- D. Performing excavation to prepare areas for sliver fills.
- E. Excavations to construct storm water improvements such as ditches.

1.02 RELATED SECTIONS

- A. Section 01025 – Measurement and payment
- B. Section 01052 – Layout of Work and Surveys.
- C. Section 02222 – Engineered Fill.
- D. Section 02224 – Tire Derived Aggregate Fill.
- E. Section 02778 – Geomembrane.

1.03 REFERENCES

- A. Report titled *“Geotechnical Study (DRAFT), Lightweight Tire Derived Aggregate Application, Marina Drive, CR 226, M.P. 0.63, Ukiah, Mendocino, California.*

1.04 SUBMITTALS FOR REVIEW

- A. Topographic survey of areas requiring excavation.

1.05 DEFINITIONS

- A. Unsuited Material: Soil existing within the limits of the Work that is unsuitable for supporting placement of TDA as determined by the ENGINEER. Examples of unsuitable materials include soil contaminated by organic materials, or soil that has become saturated due to rainfall.

PART 2 PRODUCTS

2.01 EXPECTED SUBSURFACE CONDITIONS

- A. ENTER.**

PART 3 EXECUTION

3.01 PREPARATION

- A. Notify utility company to locate utilities, where applicable.
- B. Locate, identify, and protect existing utilities from damage.
- C. Protect survey benchmarks, and existing structures that remain from excavation equipment and vehicular traffic.
- D. Perform construction staking to identify required excavation lines, grades and slopes, and to provide construction staking control points.
- E. Perform topographic surveys in areas requiring excavation to document ground elevations at the start of construction.
- F. Provide for dust control.

3.02 CLEARING AND GRUBBING

- A. Remove all vegetation and root balls.
- B. Strip vegetation and topsoil to a minimum depth one foot.
- C. Remove vegetation and topsoil from the site.

3.03 SLIDE EXCAVATION

- A. Excavate to the lines, grades, and dimensions indicated on the Drawings.
- B. If bedrock is encountered above elevations indicated on the drawings terminate excavation as directed by the ENGINEER.
- C. Stockpile soil along existing road alignment for later use as engineered fill, or remove from site for disposal.
- D. Tolerances:
 - 1. Line: plus or minus 1.0 feet.
 - 2. Grade: plus 0.1 feet, minus 0.1 feet.
 - 3. Maximum variation from true slope of 1:1000.

3.04 SLIVER FILL AREA EXCAVATION

- A. Excavate to the lines, grades, and dimensions indicated on the Drawings to construct horizontal benches as indicated on the drawings.
- B. Stockpile soil along existing road alignment for later use as engineered fill, or remove from site for disposal.
- C. Tolerances:
 - 1. Line: plus or minus 1.0 feet.
 - 2. Grade: plus 0.1 feet, minus 0.1 feet.
 - 3. Maximum variation from true slope of 1:1000.

3.05 EXCAVATION FOR STORM WATER IMPROVEMENTS

- A. Excavate to lines, grades, and cross sectional requirements indicated on Drawings to form ditches.

- B. Provide uniform slope along ditch alignments that prevents ponding.
- C. Stockpile soil along existing road alignment for later use as engineered fill, or remove from site for disposal.
- D. Tolerances:
 - 1. Line: plus or minus 1.0 feet.
 - 2. Grade: plus or minus 0.1 feet.
 - 3. Maximum variation from true slope of 1:500.

3.06 GRADING QUALITY CONTROL

- A. During all cut and fill operations provide a full time grade checker to verify finished subgrade meets grading requirements indicated on the Drawings.

3.07 FIELD QUALITY CONTROL

- A. Comply with Sections 01400 and 01410.
- B. Provide for visual inspection of bearing surfaces.

END OF SECTION

SECTION 02222

ENGINEERED FILL

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Placement of engineered fill to construct reinforced soil backfill.
- B. Placement of engineered fill to construct the sliver fill.
- C. Field quality assurance.
- D. Field quality control.

1.02 RELATED SECTIONS

- A. Section 01025 – Measurement and payment
- B. Section 01052 – Layout of Work and Surveys.
- C. Section 02221 – Excavating.
- D. Section 02224 – Tire Derived Aggregate Fill.
- E. Section 02771 - Geotextile
- F. Section 02777 – Geogrid

1.03 REFERENCES

- A. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates;
- B. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils;
- C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lbf/ft³ (2,700 kN-m/m³)].
- D. ASTM D2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
- E. ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- F. ASTM D2937 - Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
- G. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- H. Unified Soil Classification System.

1.04 SUBMITTALS FOR REVIEW

- A. Topographic survey of areas requiring placement of reinforced fill of sliver fill.

PART 2 PRODUCTS

2.01 ENGINEERED FILL

- A. Soil obtained from excavating the slide materials described as colluvium and consisting predominantly of soil classified as CL or SC.
- B. Free of organic material.
- C. Free of frozen material, ice, snow, or excessive moisture.

PART 3 EXECUTION

3.01 PREPARATION FOR PLACING ENGINEERED FILLS

- A. Notify utility company to locate utilities, if applicable.
- B. Locate, identify, and protect utilities from damage.
- C. Protect survey benchmarks, and existing structures from equipment and vehicular traffic.
- D. Perform construction staking to identify required lines, grades and slopes and to provide construction control points.
- E. Perform topographic surveys in areas requiring placement of engineered fills to document ground elevations at the start of fill placement.
- F. Provide for dust control.
- G. Verify benches in sliver fill area are constructed as indicated.

3.02 PLACEMENT OF ENGINEERED FILL FOR REINFORCED SOIL BACKFILL

- A. Prepare existing surface by removing or compacting any loose soils.
- B. Place engineered fill to the lines, grades and dimensions indicated on the Drawings in preparation for geogrid installation.
- C. Place in horizontal lifts.
- D. Where engineered fill is placed on existing slopes that are steeper than 10 percent, cut horizontal benches into the existing slope to allow placement of fill in horizontal lifts over the benches.
- E. Place in loose lift thickness not exceeding 9 inches.
- F. Compact each lift to a minimum of 92 percent relative compaction as determined by ASTM D1557.
- G. Compact using equipment designed for and suitable for compaction of the anticipated soil types.

3.03 PLACEMENT OF ENGINEERED FILL FOR REINFORCED SOIL BACKFILL

- A. Prepare the surface of benches by scarifying existing soil to a depth of 6 inches, and then moisture conditioning and compacting scarified soil to a minimum of 92 percent relative compaction as determined by ASTM D1557.
- B. Place engineered fill to the lines, grades and dimensions indicated on the Drawings in preparation for geotextile placement.
- C. Place in horizontal lifts.
- D. Place in loose lift thickness not exceeding 9 inches.
- E. Compact each lift to a minimum of 92 percent relative compaction as determined by ASTM D1557.
- F. Compact using equipment designed for and suitable for compaction of the anticipated soil types.

3.04 GRADING QUALITY CONTROL

- A. During all fill operations provide a full time grade checker to verify finished grading meets design grades.

3.05 FIELD QUALITY ASSURANCE

- A. The CQA Monitor will determine optimum moisture content and maximum density for engineered fill materials in accordance with ASTM D1557.
- B. In-place density and moisture content of engineered fills will be determined by one or more of the following methods: ASTM D2216, ASTM D2922, ASTM D2937, or ASTM D3017.
- C. Cooperate fully with the CQA Monitor in their performance of in-place density and moisture testing.

END OF SECTION

SECTION 02224

TIRE DERIVED AGGREGATE FILL

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Installing tire derived aggregate (TDA) provided by the California Integrated Waste Management Board (CIWMB).

1.02 RELATED SECTIONS

- A. Section 01025 – Measurement and payment
- B. Section 01052 – Layout of Work and Surveys.
- C. Section 02221 – Excavating.
- D. Section 02222 – Engineered Fill.
- E. Section 02228 – Low Perm Cover Soil.
- F. Section 02771 – Geotextile.

1.03 REFERENCES

- A. AASHTO-27 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates;

1.04 SUBMITTALS FOR INFORMATION

- A. Gradation test results for material manufactured for this project performed by the CIWMB or the OWNER.

PART 2 PRODUCTS

2.01 TYPE B TIRE DERIVED AGGREGATE (PROVIDED BY THE CIWMB)

- A. Derived from shedding scrap tires.
- B. Free of oil, grease, gasoline, or diesel fuel that could leach into groundwater or create a fire hazard.
- C. Free of wood fragments, wood chips and any fibrous organic matter.
- D. Free of tires that have been subjected to fire because the heat of a fire may liberate liquid petroleum from the tire that could create a fire hazard when the tire sheds are placed as fill.
- E. Having less than 1 percent by weight of metal fragments that are not at least partially encased in rubber.
- F. Fragments that are partially in rubber must not protrude more than 25 mm (1 inch) from the cut edge of the shredded tire on 75 percent of the pieces (by weight) and no more than 50 mm (2 inches) on 90 percent of the shredded tires (by weight).

- G. Having at least one sidewall severed from the tread of each tire.
- H. Meeting the following gradation as determined by AASHTO T-27, except that the minimum sample size must be 12 kilograms (30 pounds):

U.S. Sieve Size	Sieve Size in Millimeters	U. S. Standard Sieve Size	Percent Passing by Weight
18-inch	450	18 inches	100
12-inch	300	12 inches	90 - 100
8-inch	200	8 inches	75 - 100
3-inch	76	3 inches	0 - 50
1.5-inch	38.1	1 ½ inches	0 - 25
#4	4.75	#4	0 - 1

2.02 MANUFACTURING SOURCE QUALITY CONTROL

- A. Manufactured by a company with at least three years documented experience producing TDA materials meeting the quality standards of this section.
- B. Perform gradation tests (AASHTO-27) at a frequency of one test per 500 cubic yards of material manufactured for this project.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify that surveying has been completed to define the as-built subgrade configuration upon which the TDA will be placed.
- B. Verify that the subdrain system has been installed and a survey has been performed to document its as-built location.
- C. Verify that all MQC and CQA documentation for geotextile separator has been received and approved by the ENGINEER.
- D. Verify that the geotextile separator has been installed over the reinforced soil backfill, or the low perm soil in a manner that will allow the geotextile to completely wrap the TDA material, and where overlap of the geotextile is required, the minimum overlap is 3 feet.
- E. Provide for dust control as required.

3.02 TDA INSTALLATION

- A. Place TDA to the lines, grades and dimensions indicated on the Drawings.
- B. Place and spread in a loose lift thickness not exceeding 12 inches.
- C. Compact each lift using seven passes of a 10,000 pound vibratory steel-drum compactor.
- D. Overbuild TDA placement by 1 foot for each 5-foot or 10-foot layer.

3.03 AS-BUILT SURVEY

- A. Perform an as-built survey of the completed TDA fill surface configuration prior to placing low perm soil cover.
- B. Document as-built elevations at a minimum 50-foot grid and at grade breaks.
- C. Review survey data to confirm grading criteria and tolerances have been met prior to covering with low perm soil cover.
- D. Submit final survey data to the ENGINEER within 3 days of confirming grading criteria is met.

END OF SECTION

SECTION 02225

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Trenching and backfilling trenches for installation of stormwater culverts or other designated utilities.

1.02 RELATED SECTIONS

- A. Section 02221 – Excavating.
- B. Section 02222 – Engineered Fill.
- C. Section 02609 – Pipe Culverts.
- D. Section 02711 – Polyethylene Pipe.

1.03 REFERENCES

- A. County of Mendocino State of California, Road and Development Standards, Draft #3, 4-2-07.
- B. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils;
- D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lbf/ft³(2,700 kN-m/m³)].
- E. ASTM D2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
- F. ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- G. ASTM D2937 - Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
- H. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- I. Unified Soil Classification System.

1.04 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.

PART 2 PRODUCTS

2.01 GENERAL TRENCH BACKFILL

- A. Use soil excavated from the trench that is free of roots, brush, sticks, debris, frozen material, or any other deleterious matter.
- B. Trench backfill is subject to the approval of the ENGINEER and must meet the following requirements.

U.S. Sieve Size	Percent Passing
3-inch	100
#4	35-100
#30	20- 100

2.02 PIPE BEDDING AND TRENCH BASE

- A. Material obtained from off site or on-site sources.
- B. Free of organic or other deleterious material.
- C. Meeting the following gradation:

U.S. Sieve Size	Percent Passing
3/4-inch	100
3/8-inch	80-100
#4	10-50
#16	5 - 30
#200	0 - 4

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Protect other utilities, and other features remaining.
- C. Protect bench marks, existing structures, fences, paving, and curbs from excavating equipment and vehicular traffic.

3.02 PRECAUTIONS

- A. Barricade open holes or trenches and other depressions occurring as part of the Work and post warning signs or lights on property adjacent to or with public access.
- B. Operate warning lights during hours from dusk to dawn each day that trenches are left open.
- C. Use means to control dust.
- D. Maintain access to other portions of the Work at all times.

3.03 SHORING OR BRACING

- A. Provide sheeting and shoring necessary for protection of the Work and for the safety of personnel in accordance with OSHA rules and regulations.

- B. Provide shoring in accordance with state and federal requirements.

3.04 TRENCH EXCAVATION

- A. Saw cut existing asphalt pavement where required to begin trenching.
- B. Trench and excavate to the minimum width necessary for proper installation and inspection of the utility, with sides as nearly vertical as possible.
- C. Where rock is encountered, excavate rock to a minimum overdepth of 4 inches below the trench excavation indicated on the drawings.
- D. Remove water or materials that interfere with Work.
- E. Cut out soft areas of trench bottom in areas where it is not practical to compact in place. Backfill with trench base material and compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- F. Hand trim excavation for bell and spigot pipe joints.
- G. Remove loose soil, lumped subsoil, boulders, and rock.
- H. Correct areas over excavated by replacing with bedding material and compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- I. Stockpile excavated material in area designated on site, or adjacent to trench.

3.05 TRENCH BACKFILLING

- A. Do not compact or consolidate trench backfill by jetting soil backfill with water.
- B. Backfill trenches with materials as indicated on the drawings.
- C. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- D. Place and compact trench base material in a single 6-inch lift to the flow line elevation of the culvert. Compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- E. Place and compact bedding materials in equal continuous layers not exceeding 12 inches compacted depth. Hand compact around haunches of pipes. Place to the thickness and dimensions indicated on the Drawings. Compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- F. Employ a placement method that does not disturb or damage utilities in trench.
- G. Place and compact trench backfill in continuous layers not exceeding 12 inches compacted depth. Compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- H. Maintain optimum moisture content of fill materials to attain required compaction density.
- I. Stockpile surplus materials excavated from trench.

3.06 FIELD QUALITY ASSURANCE

- A. The CQA Monitor may perform soil sampling, and compaction testing during placement of backfill materials.
- B. Cooperate fully with the CQA Monitor in performance of their sampling and testing.

3.07 TOLERANCES

- A. Top Surface of Backfilling under Paved Areas and Access Roads: Plus or minus 0.1 feet from designed elevations.
- B. Top Surface of Backfilling not under Paved Areas and Access Roads: Plus or minus 0.2 feet from designed elevations.

END OF SECTION

SECTION 02228

LOW PERM COVER SOIL

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Excavation, load, haul and placement of soil to cover constructed TDA fill materials.

1.02 RELATED SECTIONS

- A. Section 02221 – Excavating.
- B. Section 02222 – Engineered Fill.
- C. Section 02224 – Tire Derived Aggregate Fill.
- D. Section 02271 – Geotextile.

1.03 REFERENCES

- A. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.
- B. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- C. Unified Soil Classification System.

PART 2 PRODUCTS

2.01 COVER SOIL

- A. Obtained from excavating the slide materials and consisting of soil classified as CL.
- B. Free of organic material, debris or other deleterious materials.
- C. Containing no particles greater than 6 inches in largest dimension.
- D. Having at least 25 percent passing the #200 sieve.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify the geotextile separator installation is complete and that all CQC and CQA documentation verifies installation in accordance with Section 02771.
- B. Verify borrow source meets specified requirements of this section, and has been approved for use by the ENGINEER.

3.02 PLACEMENT

- A. Construct haul routes over geotextile using cover soil material to a minimum material thickness of 12 inches. The 12-inch minimum coverage includes the initial material dumping and spreading areas, haul roads and stockpile areas that cover the geotextile.
- B. On slopes steeper than 10 percent, push soil materials up slope beginning at the toe of slope not down slope.
- C. Place in loose lift thickness not exceeding 12 inches.
- D. Compact each lift to a minimum of 92 percent relative compaction after initial 12-inch lift over TDA has been placed as determined by ASTM D1557.
- E. Compact using equipment designed for and suitable for compaction of the anticipated soil types.

3.03 FIELD QUALITY ASSURANCE

- A. The CQA Monitor will determine optimum moisture content and maximum density for engineered fill materials in accordance with ASTM D1557.
- B. In-place density and moisture content of engineered fills will be determined by one or more of the following methods: ASTM D2216, ASTM D2922, ASTM D2937, or ASTM D3017.
- C. Cooperate fully with the CQA Monitor in their performance of in-place density and moisture testing.

3.04 FIELD QUALITY CONTROL

- A. Grading tolerance:
 - 1. Line: plus or minus 1.0 feet.
 - 2. Grade: plus 0.2 feet to minus 0.2 feet.
- END OF SECTION

SECTION 02609

PIPE CULVERTS

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Furnishing and installation of corrugated steel pipe, joints and accessories.
- B. Furnishing and installation of corrugated steel pipe as a vertically placed stormwater collection riser.

1.02 REFERENCES

- A. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- B. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- C. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
- D. ASTM A444/A444M - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process for Storm Sewer and Drainage Pipe

1.03 SUBMITTALS FOR REVIEW

- A. Product Data: Submit a catalog cut sheet for proposed culvert pipe, fittings, and flared inlet sections within two weeks of receiving notice to proceed

PART 2 PRODUCTS

2.01 CORRUGATED METAL PIPE AND ACCESORIES

- A. Corrugated Steel Pipe: ASTM A444/A444M, galvanized:
- B. Helical lock seam.
- C. Shape: Circular with a nominal diameter as indicated on the Drawings.
- D. Flared End Section: Same material as pipe, machine cut, for joining to pipe end.
- E. Coupling Bands: Galvanized steel connected with two neoprene "O" ring gaskets and two galvanized steel bolts.
- F. Riser: Same material as pipe, machine cut squarely at each end, circular in shape and of the diameter and length indicated on the Drawings.
- G. Hardware: galvanized after fabrication.
- H. Pipe stakes: Galvanized after fabrication, or fabricated from pre-galvanized pipe.

2.02 BEDDING AND COVER MATERIALS

- A. Culvert bedding and backfill materials: As indicated in Section 02225, Trenching and Backfilling.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify that trench is ready to receive pipe and backfill and that the trench excavation dimensions and elevations are as indicated on Drawings.
- B. Remove large stones or other hard matter, which could damage piping or impede consistent backfilling or compaction.

3.02 BEDDING

- A. Excavate culvert trench to 6 inches below pipe invert. Hand trim excavation for accurate placement of pipe to design elevations.
- B. Place trench base material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches compacted depth.

3.03 PIPE INSTALLATION

- A. Install pipe and accessories in accordance with manufacturer's instructions.
- B. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.
- C. Shore pipe to required position; retain in place until after compaction of adjacent bedding materials.
- D. Ensure pipe remains in correct lateral position and at the designed slope.
- E. Install backfill materials at sides and over top of pipe.
- F. Provide top cover to minimum compacted thickness of 12 inches.

3.04 TRENCH BACKFILLING

- A. Do not compact or consolidate trench backfill by jetting soil backfill with water.
- B. Backfill trenches with materials as indicated on the drawings.
- C. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- D. Place and compact trench base material in a single 6-inch lift to the flow line elevation of the culvert. Compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- E. Place and compact bedding materials in equal continuous layers not exceeding 12 inches compacted depth. Hand compact around haunches of pipes. Place to the thickness and dimensions indicated on the Drawings. Compact to a minimum relative compaction of 95 percent as determined by ASTM D698.
- F. Place backfill materials to the dimensions, thickness and elevations indicated on the drawings.
- G. Employ a placement method that does not disturb or damage utilities in trench.

- H. Minimum relative backfill compaction requirements in paved areas as determined by ASTM 698:
 - 1. Bedding: 90 percent.
 - 2. Encasement: 95 percent.
 - 3. General Backfill: 97 percent.
- I. Minimum relative backfill compaction requirements in un-paved areas as determined by ASTM 698:
 - 1. Bedding: 90 percent.
 - 2. Encasement: 90 percent.
 - 3. General Backfill: 90 percent.
- J. Maintain optimum moisture content of fill materials to attain required compaction density.
- K. Employ a placement method that does not disturb or damage culvert pipe in trench.
- L. Stockpile surplus materials excavated from trench.

3.05 FLARED END SECTION

- A. Install flared end sections as indicated on the drawings, overlapping and flush with rock rip rap surface as indicated.
- B. Connect to culvert pipe using approved couplings.
- C. Secure with bolts and stakes as indicated.

3.06 FIELD QUALITY ASSURANCE

- A. The CQA Monitor may perform soil sampling, and compaction testing during placement of backfill materials.
- B. Cooperate fully with the CQA Monitor in performance of their sampling and testing.

3.07 BACK FILL TOLERANCES

- A. Top Surface of Backfilling under Paved Areas and Access Roads: Plus or minus 0.1 feet from designed elevations.
- B. Top Surface of Backfilling not under Paved Areas and Access Roads: Plus or minus 0.2 feet from designed elevations.

3.08 PIPE TOLERANCES

- A. Lay pipe to alignment and slope gradients noted on Drawings; with maximum variation from true slope of 1 inch in 10 feet.
- B. Maximum Variation From Intended Elevation of Culvert Invert: 0.1 feet.
- C. Maximum Offset of Pipe From True Alignment: 0.5 feet.

END OF SECTION

SECTION 02611

RIP RAP SLOPE PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Installation of Rock Riprap to protect critical streambanks or other slopes from erosive forces.

1.02 SUBMITTALS FOR REVIEW

- A. Product Data: Submit product data and supplier information.

PART 2 PRODUCTS

2.01 RIP RAP

- A. Comprised of rock that has sufficient hardness to resist weathering, and is free of cracks and other blemishes.
- B. Porous rock, such as some limestone, and soft rock, such shale, are not allowed for use as riprap.
- C. Size: $D_{50} = 8.0$ inches.

2.02 ACCESORIES

- A. Geotextile: Per Section 02771.

PART 3 EXECUTION

3.01 PREPARATION

- A. Prior to the placement of rock riprap, or geotextiles, cut or fill and compact the subgrade surface to the lines and grades indicated on the drawings.
- B. Prepare all subgrade surfaces to be reasonably smooth surface that is free of mounds, dips, or windrows.
- C. Placement of fill material to meet design grades and elevations, must be approved by the ENGINEER, and be adequately compacted to support the rock rip rap.
- D. Do not place riprap or geotextile until the subgrade is inspected and approved by the Engineer.

3.02 INSTALLATION

- A. Install geotextile separator as indicated on the Drawings, and as described in Section 02771. Overlap seams a minimum of 3 feet.
- B. Ballast geotextile in place until covered by rip rap.
- C. Place rock riprap using suitable equipment that is capable of lifting, placing and adjusting the rock rip rap to its final location.

- D. Place rock riprap starting at the lowest elevation of the area being protected.
- E. Place to the depths indicated and to the full course thickness in one operation and in such a manner as to avoid displacement of the underlying subgrade, and geotextile.
- F. Place in a manner that will insure that the riprap in-place, will be reasonably homogeneous with the larger rocks uniformly distributed, and firmly in contact with the smaller rocks, with voids between larger rock filled with smaller rock.
- G. At both the upper and lower limits of the riprap section, key the rock riprap into the stable bank as indicated on the drawings.

END OF SECTION

SECTION 02711

POLYETHYLENE PIPE

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Furnishing and installing perforated and solid wall polyethylene pipe in locations indicated on the Drawings to construct subdrains.

1.02 RELATED SECTIONS

- A. Section 02771 — Geotextile.

1.03 REFERENCES

- A. ASTM D638 – Standard Test Method for Tensile Properties of Plastics.
- B. ASTM D696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between –30 degrees C and 30 Degrees C With a Vitreous Silica Dilatometer.
- C. ASTM - D748 - Standard Specification for Natural Block Mica and Mica Films Suitable for Use in Fixed Mica-Dielectric Capacitors.
- D. ASTM D790 - Standard Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM D1238 - Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
- F. ASTM D1248 - Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
- G. ASTM D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique.
- H. ASTM D1525 - Standard Test Method for Vicat Softening Temperature of Plastics.
- I. ASTM D1603 - Standard Test Method for Carbon Black In Olefin Plastics.
- J. ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
- K. ASTM D2240 - Standard Test Method for Rubber Property—Durometer Hardness.
- L. ASTM D2657 - Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings.
- M. ASTM D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.
- N. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
- O. ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

P. ASTM D3350 — Specification for Polyethylene Plastics Pipe and Fitting Materials.

1.04 DEFINITIONS

A. Standard Dimensional Ratio (SDR) is defined as the actual outside pipe diameter divided by the wall thickness.

1.05 SUBMITTALS FOR INFORMATION

A. Prior to fusion welding any polyethylene pipe, submit a list of those individuals certified for polyethylene pipe fusion welding. Provide copies of their current certificates.

1.06 SUBMITTALS FOR REVIEW 10 DAYS PRIOR TO SHIPMENT

A. Submit pipe and fittings product data and manufacturer's quality control data-demonstrating material complies with Part 2 of this Section.

B. Submit welding system proposed for this project.

C. Submit proposed slip connection detail, product data and installation details if proposed for use on perforated LCRS and SLCRS pipe.

1.07 DELIVERY, STORAGE AND HANDLING

A. Exercise care during loading, transit, and unloading to prevent damage by abrasion or puncturing, or both.

B. Store HDPE pipe with support to prevent developing a permanent set.

C. Place the heaviest series of HDPE pipe on the bottom of any storage stack.

D. Stack HDPE pipe no more than eight layers high or consistent with the manufacturer's recommendations.

E. Repair or replace HDPE pipe damaged during delivery, storage or handling.

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

A. All pipe sizes indicated on the Drawings and specified in this Section reference nominal diameter, unless otherwise indicated on the Drawings or in this Section provide the following:

B. Provide 4-inch diameter pipe with an SDR of 9.

C. Provide pipe conforming to the requirements of ASTM D3261 and ASTM D3035 and the following:

Property	Test Procedures	Unit	Required Values
1. Material Designation	Plastic Pipe Inst/ASTM	—	PE 3408
2. Material Classification	ASTM D1248		III C 5 P34
3. Cell Classification	ASTM D3350	—	345434C
4. Density	ASTM D1505	gm/cm ³	>0.955
5. Melt Index	ASTM D1238	gm/10 min.	≤0.41
6. Flexural Modules	ASTM D790	Psi	min. 133,000
7. Tensile Strength	ASTM D638	Psi	min. 3,200
8. Environmental Stress Crack	ASTM D1693		Fo >5,000 hrs
9. Hydrostatic Design Basis	ASTM D2837	Psi	min. 1,600
10. UV Stabilizer (carbon black content)	ASTM D1603	%	2 - 3
11. Elastic Modulus	ASTM D638	Psi	>105,000
12. Brittleness Temperature	ASTM D746	Fahrenheit	<-180
13. Vicat Softening Temperature	ASTM D1525	Fahrenheit	>254
14. Thermal Expansion	ASTM D696	Fahrenheit	< or + 1.2 x 10 ⁻⁴ in/in/degree F.
15. Shore Hardness	ASTM D2240		≥64

- D. Provide pipe and fittings containing no recycled compound except that generated in the manufacturer's own plant and from resin of the same specification as the raw material supplier.
- E. Use resin to manufacture pipe and fittings listed by both N.S.F. and P.P.I. and manufactured in accordance with ASTM D-3035/F. 714-81.
- F. Provide pipe and fittings that is homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other injurious defects.
- G. Provide pipe that is uniform in color, capacity, density, and other physical properties.
- H. Provide the following information continuously marked on the pipe or spaced at intervals not exceeding 5 feet.
 - 1. Name and/or trademark of the pipe manufacturer.
 - 2. Nominal pipe size.
 - 3. Standard Dimensional Ratio (SDR).
 - 4. PE 3408.
 - 5. Manufacturers Standard Reference.
 - 6. A production code from which the date and place of manufacturer can be determined.

2.02 PIPE COUPLINGS

- A. Provide HDPE blind flange adapters, molded stub ends, and molded end caps and other fittings in accordance with the Drawings and manufactured from the same resin as the pipe.

2.03 FABRICATED FITTINGS

- A. Provide fabricated or molded fittings as indicated on the Drawings.

2.04 PIPE PERFORATIONS

- A. Perforation diameter: ½ inch.
- B. Number of perforations: 4 rows, 90 degrees apart on pipe circumference, with holes spaced 12 inches center to center.
- C. Offset perforations by 6 inches such that only two perforations align around the circumference of the pipe.

PART 3 EXECUTION

3.01 QUALITY CONTROL

- A. Use adequate numbers of skilled workman who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

3.02 PIPE INSTALLATION

- A. Follow the manufacturer's recommendations when hauling, unloading, and stringing the pipe.
- B. Do not push or pull pipe and fittings over sharp projections, or drop, or have objects dropped on the pipe.
- C. Inspect pipe for defects before installation.
- D. Remove any pipe showing kinks, buckles, cuts, gouges, or any other damage that in the opinion of the CQA Monitor will compromise performance of the pipe.
- E. Replace pipe found to be defective before or after the pipe has been placed.
- F. Carefully lower pipe and accessories into place by means of derrick, ropes, belt slings, or other equipment that will not cause any damage to the pipe.
- G. Weld joints prior to placing the polyethylene pipe, except as noted.
- H. Remove and replace pipe if grade of pipe or pipe bedding is disturbed during installation.

3.03 FUSION PIPE WELDING TRAINING

- A. Polyethylene Fusion Qualification: All pipe fusion must be performed by a supplier, or a factory supplied and/or certified fusion operator.
- B. Provide for the instruction, testing, and installation training sessions as required to obtain training for welding personnel. Only personnel certified to weld HDPE pipe will be allowed to perform the installation, supervision, or quality control inspection of polyethylene-fusion joints.
- C. Training: Provide training performed by the pipe manufacturer/supplier.

3.04 FUSION PIPE WELDING

- A. Join polyethylene pipe by the method of thermal butt or side wall fusion, outlined in ASTM D2657.

- B. Perform fusion joining of pipe and fittings in accordance with the procedures established by the pipe manufacturer. Of particular importance is the use of proper interface pressures and heater plate temperatures.
- C. Use fusion pressures, temperatures, and cycle times according to pipe manufacturer's recommendations.
- D. Do not perform pipe fusion in water or when trench conditions are unsuitable for the work.
- E. Keep water away from pipe until joining is completed.
- F. Secure open ends of pipe and close valves when work is not in progress, so that no trench water, earth, or other substance will enter the pipe or fittings.
- G. Plug or cap or valve pipe ends left for future connections.
- H. Clear welding and grade sites, if necessary, to provide enough space for pipe storage and fusion.
- I. Keep welding site free of rocks, stumps, and debris that could cut, scar, or gouge the pipe.
- J. In order to allow the joining operation to continue in adverse weather conditions, a shelter may be required for the joining machine. Particular caution should be exercised to prevent water from entering the I.D. or O.D. of the pipe and from coming in contact with the heater plate.
- K. Clean pipe of all shavings and other debris before installing in its final location.

END OF SECTION

SECTION 02771

GEOTEXTILE

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Furnishing and installing geotextile separator as a component of the TDA Fill.
- B. Furnishing and installing geotextile separator as a component of the sliver fill.
- C. Furnishing and installing geotextile separator as a component of rock rip rap placement.

1.02 RELATED SECTIONS

- A. Section 02222 – Engineered Fill.
- B. Section 02228 – Tire Derived Aggregate Cover Soil.

1.03 REFERENCES

- A. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- B. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
- C. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- D. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- E. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
- F. ASTM D4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
- G. ASTM D4884 - Standard Test Method for Strength of Sewn or Thermally Bonded Seams of Geotextiles.
- H. ASTM D5261- Standard Test Methods for Measuring Mass Per Unit Area of Geotextiles.
- I. ASTM D5321 - Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.

1.04 DEFINITIONS

- A. Manufacturer: Responsible for the production of geotextile rolls.
- B. Installer: The party responsible for field handling, storing, deploying, repairing, anchoring, and any other aspect of installing the geotextile. The installer is also responsible for transportation of the material to the site.

1.05 MANUFACTURERS SUBMITTALS FOR REVIEW

- A. Submit the following prior to scheduled installation.
 - 1. Manufacturer's description of proposed geotextile documenting it will meet or exceed specified product requirements.

2. Written instructions for storage, handling, installation, seaming and repair of proposed geotextiles.
3. Manufactures quality control tests for geotextile rolls shipped to this project.

1.06 CONFORMANCE TESTING (PERFORMED BY THE CQAC)

- A. The CQAC may perform conformance testing on geotextiles manufactured for this project.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Comply with ASTM D4873.
- B. Comply with manufacturer's instructions.
- C. During shipment and storage, elevate geotextile rolls off the ground and adequately cover to protect them from the following:
 1. Ultraviolet light exposure, precipitation, inundation, mud, dirt, dust, puncture, cutting, site construction activities, chemicals that are strong acids or strong bases, flames including welding sparks, temperatures in excess of 160°F (71°C) any other environmental condition that may damage the property values of the geotextile.
- D. Ship geotextile in closed trailer.
- E. Provide straps for unloading geotextile.
- F. Immediately restore damaged protective covering as material is placed in storage.

1.08 QUALITY CONTROL

- A. Use adequate numbers of skilled workman who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 PRODUCTS

2.01 LABELING

- A. Mark or tag geotextile rolls with the following information:
 1. Manufacturer's name
 2. Product identification
 3. Lot number
 4. Roll number
 5. Roll dimensions
 6. Mark special handling requirements on rolls.

2.02 GEOTEXTILE SEPARATOR

- A. Products comprised of non-woven, continuous-filament needle punched polypropylene or polyester fabric; staple-filament needle punched yarn oriented into a staple network that maintains its structure during handling, placement, and long-term service.
- B. The product cannot be heat burnished.
- C. Resistant to soil chemicals.
- D. New product made from virgin materials.

E. Geotextile used for separation conforming to the following minimum property values:

Test	ASTM Test Designation	Minimum MQC Test Frequency	Unit	Minimum Requirement
Mass/Area	D5261	1/100,000 sf	oz/yd ²	8.0
Grab Tensile Strength	D4632	1/100,000 sf	Pounds	210
Puncture Strength	D4833	1/100,000 sf	Pounds	110
Trapezoidal Tear Strength	D4533	1/100,000 sf	Pounds	90
Permittivity	D4491	1/100,000 sf	Sec ⁻¹	0.1
Apparent Opening Size	D4751	1/100,000 sf	Mm	<0.18
UV Resistance (500 hours)	D4355	Historical data on similar product		70% of strength

2.03 MANUFACTURER SOURCE QUALITY CONTROL

- A. Perform manufacture's quality control (MQC) tests for geotextile manufactured for this project.
- B. Perform tests necessary to verify geotextile cushion and separator meet specified product requirements.
- C. Perform each MQC test at a minimum frequencies listed in this Section.
- D. Provide the following information with MQC test data:
 1. Roll numbers and identification.
 2. Results of quality control tests, including a description of test methods used.
- E. The ENGINEER will reject rolls for which quality control requirements are not met.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to installation of geotextile, examine underlying construction for conformance with specifications.

3.02 GEOTEXTILE DEPLOYMENT

- A. Follow manufacturer's recommendations, standards, and guidelines.
- B. Cut geotextile using approved cutter only.
- C. Do not entrap in geotextile excessive dust, stones, or moisture that could damage or clog drains or filters or hamper subsequent seaming.
- D. Inspect geotextile over its entire deployed surface and remove any foreign objects that are potentially harmful, such as needles.
- E. Installer maintains responsible for geotextile condition until it is covered.
- F. Cover geotextile within a time frame acceptable to the Manufacturer.

3.03 SEAMS AND OVERLAPS

- A. Overlap geotextile at all seams a minimum of 3 feet.

3.04 PROTECTION

- A. When placing soil materials over geotextile ensure the following:
 - 1. No damage to geotextile.
 - 2. No excessive tensile stresses are applied to geotextile.

3.05 REPAIRS

- A. Repair holes or tears in geotextiles with a patch from the same geotextile material made large enough to overlap the repair area by 3 feet in all directions.

3.06 FIELD QUALITY ASSURANCE (PERFORMED BY THE CQAC)

- A. The CQAC may collect samples of geotextile delivered to the site, for conformance testing at a minimum frequency of one (1) per hundred thousand (100,000) square feet of delivered geotextile, and perform tests as required in the CQA Manual to determine product compliance with specified values.

END OF SECTION

SECTION 02777

GEOGRID REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Furnishing and installing geogrid reinforcement as a component of the reinforced soil backfill.

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. M288-96 - Standard Specification for Geotextiles
 - 2. Standard Specification for Highway Bridges (2002 Interim)
- B. American Society for Testing and Materials (ASTM)
 - 1. A186-85 - Standard Specification for Steel Welded Wire Fabric for Concrete Reinforcement
 - 2. D698-98 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort
 - 3. D1388-96 - Standard Test Method for Stiffness of Fabrics, Option A
 - 4. D4355-92 - Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
 - 5. D4595-94 - Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
 - 6. D4716-95 - Test Method for Constant Head Hydraulic Transmissivity (In-Plane Flow) of Geotextiles and Geotextile Related Products
 - 7. D4759-92 - Practice for Determining the Specification Conformance of Geosynthetics
 - 8. D5262-97 - Standard Test Method for Evaluating Unconfined Tensile Creep Behavior of Geosynthetics
 - 9. D5818-95 - Practice for Obtaining Samples of Geosynthetics from a Test Section for Assessment of Installation Damage
 - 10. D6637-01 - Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method
 - 11. F904-91 - Standard Test Method for Comparison of Bond Strength or Ply Adhesion of Similar Laminates Made from Flexible Materials
- C. Geosynthetic Research Institute (GRI)
 - 1. GG2-87 - Standard Test Method for Geogrid Junction Strength
 - 2. GG4-91 - Determination of the Long-Term Design Strength of Geogrids
 - 3. GG5-91 - Standard Test Method for "Geogrid Pullout"
- D. Tensar Earth Technologies, Inc. (TET)
 - 1. "Design Guidelines for Tensar Geogrid Reinforced Soil Walls with SierraScape Facing Units," TTN:SierraScape-DG.

1.03 DEFINITIONS

- A. Ultimate Tensile Strength - Breaking tensile strength when tested in accordance ASTM D6637-01
- B. Junction Strength - Breaking tensile strength of junctions when tested in accordance with GRI-GG2 as modified by AASHTO Standard Specification for Highway Bridges, 2002 Interim, using a single rib having the greater of 3 junctions or 8 inches and tested at a strain rate of 10 percent per minute based on this gauge length. Values shown are minimum average roll values.

- C. Structural Geogrids - A polymeric grid formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock or earth and function primarily as reinforcement.
- D. Reinforced Backfill - Compacted structural fill placed within the geogrid reinforced volume.
- E. Long-Term Design Strength (LTDS or T_{al}) - The maximum allowable stress level of the polymeric grid used in the internal stability design calculations of the retaining wall. Ultimate Tensile Strength reduced by the effects of installation damage and durability.
- F. Long-Term Allowable Design Strength (T_a) - The Long-Term Design Strength (LTDS or T_{al}) reduced by the Factor of Safety for design uncertainties ($T_a = T_{al}/FS_{UNC}$).

1.04 SUBMITTALS FOR REVIEW

- A. Submit the following prior to scheduled installation.
 - 1. Manufacturer's description (cut sheet) of proposed geogrid documenting it will meet or exceed specified requirements.
 - 2. Manufacturer's quality control (MQC) test results documenting that geogrid manufactured for this project meets product specifications based on MQC tests performed by the manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection: Prevent excessive mud, wet concrete, epoxy, or other deleterious materials from coming in contact with and affixing to retaining wall materials.

PART 2 PRODUCTS

2.01 STRUCTURAL GEOGRID

- A. Provide geogrid
 - 1. Long-Term Design Strength (Sand, Silt and Clay): 860 plf
 - 2. Junction Strength: 3,180 plf
 - 3. Ultimate Connection Strength: 730 plf

2.02 MANUFACTURER SOURCE QUALITY CONTROL (MQC) TESTING

- A. Perform the manufacturer quality control tests listed above (paragraph 2.01).
- B. Submit as indicated in Part 1 of this Section.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install geogrid over the completed engineered fill at the elevations indicated on the Drawings.
- B. Unroll the geogrid and cut it to the length necessary to extend across the entire fill area, and to extend 2 feet up the excavation side walls.

- C. Overlap panels and connect with connection rods.
- D. Maintain geogrid in its installed location until covered with soil backfill.

END OF SECTION

SECTION 02778

GEOMEMBRANE

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Furnishing and installing linear low density polyethylene (LLDPE) smooth surfaced geomembrane as a component of concrete lined Type A and Type B ditches.

1.02 REFERENCES

- A. ASTM Standards
 1. ASTM D638 – Standard Test Method for Tensile Properties of Plastics.
 2. ASTM D792 – Specific Gravity (Relative Density) and Density of Plastics by Displacement.
 3. ASTM D1004 – Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
 4. ASTM D1238 – Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
 5. ASTM D1505 – Standard Test Method for Density of Plastics by the Density-Gradient Technique.
 6. ASTM D1603 – Standard Test Method for Carbon Black in Olefin Plastics.
 7. ASTM D3895 – Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry.
 8. ASTM D4218 – Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.
 9. ASTM D4437 - Standard Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes.
 10. ASTM D4833 - Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.
 11. ASTM D5199 - Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
 12. ASTM D5321 – Standard Test Method for determining the coefficient of soil and geosynthetic or geosynthetic and geosynthetic friction by the direct shear method.
 13. ASTM D5397 – Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.
 14. ASTM D5596 -Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.
 15. ASTM D5641 - Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
 16. ASTM D5885 - Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry.
 17. ASTM D5994 - Standard Test Method for Measuring Core Thickness of Textured Geomembrane.
 18. ASTM D6365 - Standard Practice for the Nondestructive Testing of Geomembrane Seams using the Spark Test.
 19. ASTM D6392 - Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.
 20. ASTM D6693 - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.
- B. Geosynthetics Research Institute (GRI) Standards.
 1. Test Method GM6 – Pressurized Air Channel Test for Dual Seamed Geomembranes.

2. Test Method GM11 – Accelerated Weathering of Geomembranes Using a Fluorescent UVA-Condensation Exposure Device.
3. Test Method GM13 - Test Properties, Testing Frequency and Recommended Warrant for High Density Polyethylene (HDPE) Geomembranes.
4. Test Method GM19 - Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes.

1.03 DEFINITIONS

- A. Geomembrane Manufacturer: The party responsible for the production of the geomembrane rolls from resin and for the quality of the resin.
- B. Geomembrane: An essentially impermeable membrane used as a solid or liquid barrier. Synonymous term for flexible membrane liner (FML).
- C. Geomembrane Subsurface: The soil or geosynthetic surface on which the geomembrane lies.
- D. Installer: The party responsible for field handling, transporting, storing, deploying, seaming, temporary restraining (against wind), and installation of the geomembrane.
- E. Manufacturing Quality Control (MQC): A planned system of inspections and tests that is used to directly monitor and control the manufacture of a material, which is factory originated. MQC is normally performed by the manufacturer of geosynthetic materials and is necessary to ensure minimum (or maximum) specified values in the manufactured product. MQC refers to measures taken by the manufacturer to determine compliance with the requirements of materials and workmanship as stated in certification documents and contract specifications. ref. EPA/600/R-93/182.
- F. Panel: The unit area of geomembrane that will be seamed in the field. If the geomembrane is not fabricated into panels in a factory, a panel is identified as a roll or portion of a roll without any seams.

1.04 SUBMITTALS FOR REVIEW

- A. Submit the following prior to scheduled installation.
 1. Manufacturer's description (cut sheet) of proposed geomembrane documenting it will meet or exceed specified requirements.
 2. Manufacturer's quality control (MQC) test results documenting that geomembrane manufactured for this project meets product specifications based on MQC tests performed by the manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Conform to the manufacturer's requirements.
- B. Store geomembrane rolls in a location designated by the CQAC.
- C. Store geomembrane rolls to protect them from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat or other damage.
- D. Store geomembrane rolls on prepared surface (not on wooden pallets).
- E. Use appropriate handling equipment to unload and store geomembrane rolls. Appropriate equipment includes cloth chokers and spreader bars. Do not drag panels on ground surface.
- F. Do not fold geomembrane material; folded material will be rejected.

PART 2 PRODUCTS

2.01 PROPERTIES FOR LLDPE GEOMEMBRANE

A. Meeting the following requirements:

Test	Test Designation	MQC Test Frequency	Requirements
Sheet Thickness	ASTM D5994	10 per roll	40 mils minus 10% for any measurement and the average of all measurements for any roll, not less than 58 mils.
Sheet density	ASTM D 1505 or D 792 Method B	1/100,000 sf	Minimum .900 g/cc
Tensile Properties			
Elongation at Break	ASTM D6693	1/100,000 sf	Min. 800 %
Break Strength	ASTM D6693	1/100,000 sf	Min. 150 lb/in / width
Tear Resistance	ASTM D1004, Die C	1/100,000 sf	Min. 20 lbs
Puncture Resistance	ASTM D4833	1/100,000 sf	Min. 55 lbs.
Carbon Black Content	ASTM D1603	1/100,000 sf	2 to 3%
Carbon Black Dispersion	ASTM D5596	1/100,000 sf	Category 1 or 2 for 8 of 10 readings and category 1,2 or 3 for 2 of 10 readings (6)

2.02 MANUFACTURER SOURCE QUALITY CONTROL (MQC) TESTING

- A. Perform the manufacturer quality control tests listed above (paragraph 2.01).
- B. Submit as indicated in Part 1 of this Section.

PART 3 EXECUTION

3.01 EXAMINATION OF GEOMEMBRANE SUBSURFACE

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Notify the CQAC of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected.
- B. Verify in writing to the CQAC that the surface on which the geomembrane will be installed is acceptable. Installation without written acceptance means acceptance.

3.02 DEPLOYMENT

- A. Give careful consideration to the timing and temperature during deployment. Focus on verifying that there is no bridging or stresses in the geomembrane and there are no wrinkles in the geomembrane that will fold over when covered with soil.
- B. Repair damage to subgrade or other underlying materials prior to completing deployment of geomembrane.
- C. Do not deploy more panels in one shift than can be welded or secured during that same shift.

- D. Do not damage geomembrane when handling, with equipment traffic, due to leakage of hydrocarbons or any other means.
- E. Do not wear shoes that can damage geomembrane.
- F. Unroll geomembrane panels using methods that will not damage, stretch or crimp geomembrane. Protect underlying surface from damage.
- G. Place ballast on geomembrane that will prevent wind from uplifting and moving the geomembrane. Use ballast that will not damage geomembrane.
- H. Protect geomembrane in areas of heavy traffic by placing a protective cover over the geomembrane.
- I. Remove wrinkled or folded material.
- J. Install material to account for shrinkage and contraction while avoiding wrinkles. Install material stress-free with no bridging before it is covered.
- K. Visually inspect geomembrane for imperfections. Mark faulty or suspect areas for repair.

3.03 SEAM LAYOUT

- A. Orient panels parallel to line of the ditch slope, i.e., orient down, not across slope.
- B. Minimize number of field overlap and odd-shaped geometric locations.
- C. Shingle panels and provide a 10-foot overlap at the end of panels to promote drainage over the overlap not under it.

3.04 PIPE BOOTS

- A. Field fabricate pipe boot for securing LLDPE around the vertical riser as indicated on the Drawings.
- B. Secure boot to pipe to provide water tight connection using a galvanized coupling band or other similar device as approved by the ENGINEER.
- C. Extrusion weld pipe boot to LLDPE that lines the ditch.

END OF SECTION

SECTION 02930
EROSION CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Provide seeding over areas disturbed by the Work. Work of this section includes:
 - 1. Soil preparation.
 - 2. Seeding.
 - 3. Mulching.

- B. Furnish and Install Fiber Rolls.

1.02 RELATED SECTIONS

- A. Section 02221 – Excavation.

- B. Section 02222 – Engineered Fill.

1.03 SUBMITTALS FOR REVIEW

- A. Submit seed vendor's certification for required grass seed mixtures. Furnish in standard containers with the following information:
 - 1. Seed name
 - 2. Lot number
 - 3. Percentage by weight
 - 4. Percentage of purity
 - 5. Percentage of germination
 - 6. Percentage of weed seed content and inert material clearly marked for each kind of seed, in accordance with applicable State and Federal laws

- B. Furnish to the OWNER duplicate copies of a statement signed by the vendor certifying that each lot of seed has been tested by a recognized seed testing laboratory.

- C. Submit product literature with name of product, manufacturer's name and compliance with specifications for the following:
 - 1. Fertilizer
 - 2. Mulch for hydroseeding.

- D. Submit Product Information for Fiber Roll.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

- B. Seed that has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.

1.05 PROJECT CONDITIONS

- A. CONTRACTOR is responsible for hydroseeding finish grading and general erosion control of disturbed areas and soil stockpiles.
- B. Work notification: Notify ENGINEER at least 3 working days prior to start of seeding operations. Areas prepared or designated for seeding must be approved by OWNER prior to seeding. Following OWNER's approval, begin immediately.
- C. Perform seeding work only after other work affecting ground surface has been completed.
- D. Track-walk hydroseed areas prior to spraying hydroseed. Track walk leaving dozer marks parallel to contours.
- E. Time of Hydroseeding: Unless approved by OWNER, perform hydroseeding, fertilizing, and mulching by September 1. Do not seed during windy weather or when the ground is frozen, excessively wet, or otherwise not able to be tilled.

PART 2 PRODUCTS

2.01 HYDROSEED MATERIALS

- A. Fresh, clean and new crop seed mixture.
 - 1. Mixed by an approved method.
 - 2. Composed of the varieties described below, mixed to the specified proportions by weight and tested to minimums of 98% pure seed, 90% germination and 0.5% of weed seed.
- B. Seed mix:

To be determined per local jurisdiction standards and owner representative.

Common Name	Botanical Name	Application Rate (lbs/acre)

- C. Fertilizer: 16-16-16 Nitrogen, phosphorus, potash apply 200 pounds per acre.
- D. Mulch Tracer: "Silva Fiber Plus" apply at 100 lbs/acre.

- E. Moisture Retention Agent: "Stay Moist"; apply at 60 lbs/acre.
- F. Wood cellulose fiber mulch for hydroseeding: "Silva Fiber" and "Silva Fiber Plus" as manufactured by Weyerhaeuser Co. Dyed green to facilitate inspection of the placement. Wood cellulose fiber mulch to be applied as a second application following seed application.
- G. Hydroseed Rate: 2,000 lbs/acre (100 lbs/acre tracer with seed, 1900 lbs/acre mulch cover).
- H. Method: Two-step application (first application: 100 lbs/acre tracer with seed; second application: mulch cover).

2.02 FIBER ROLL

- A. Consisting of straw, flax, or other similar materials bound into a tight tubular roll that are designed to intercept runoff, reduce flow velocity, and release the runoff as sheet flow.

PART 3 EXECUTION

3.01 FIBER ROLL INSTALLATION

- A. Install fiber rolls prior to hydroseeding.
- B. Locate rolls on level contours spaced at a maximum interval of 15 feet.
- C. Turn ends of rolls up slope to prevent runoff from going around the roll.
- D. Stake fiber rolls into a 2 to 4 inch deep trench with a width equal to the diameter of the fiber roll. Drive stakes at the end of each fiber roll at a maximum spacing of 4 feet.
- E. Use wood stakes with a nominal classification of 0.75 by 0.75 inches, and a maximum length of 24 inches.

3.02 EXAMINATION PRIOR TO SEEDING

- A. Prior to seeding, verify the limits of Work with the OWNER.
- B. The outline of seeded areas must be natural and curvilinear in appearance.
- C. Avoid straight tangent sections longer than 100 feet. Use broad broken back or compound curves in outline form.
- D. Prior to seeding disturbed areas, verify the location of all electrical lines, utilities, and culverts. Take precautions not to disturb or damage sub-surface elements.
- E. Inspect surfaces to receive seeding and conditions under which seeding is to be applied.

- F. Correct unsatisfactory surfaces and conditions such as excess debris or soil conditions detrimental to growth or survival of seeded areas with notification to, and acceptance by the OWNER prior to commencement of application. OWNER will approve surface condition prior to commencement of work.

3.03 SEEDING PREPARATION

- A. Grade: Bring surfaces to finish grades as shown on Drawings. Install final track marks parallel to contours of final grade on slopes greater than 10 percent.
- B. Surfaces: Free of debris such that all soil surfaces are exposed to hydroseed.
- C. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to seeding.

3.04 SEED MIXING

- A. Hydroseed Slurry: Job-mix slurry, in specified proportions using commercial mixing equipment, add cellulose mulch to slurry tank after other dry components.

3.05 SEED INSTALLATION

- A. Hydroseed Application.
 - 1. Hydroseed immediately after preparation and approval of bed but not before September 15.
 - 2. Hydroseed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.
 - 3. Perform hydroseeding operations when the soil is dry and when winds do not exceed 5 miles per hour velocity.
 - 4. Accomplish seeding with a hydroseeding apparatus, which utilizes water as the carrying agent and has paddle blades to maintain continuous agitation. The operating capacity of the hydroseeding apparatus must be sufficient to keep seed, fertilizer and other material mixed in a homogenous slurry until pumped from tank. Provide distribution and discharge lines large enough to prevent stoppage and equipped with a set of hydraulic discharge spray nozzles, which provide a uniform distribution of the slurry.
 - 5. Do not place fertilizer in the hydroseeding tank more than 30 minutes prior to application.
 - 6. Sow hydroseed mixes at specified rates in lbs/acre.
 - 7. Spraying: At all locations, achieve a uniform visible coat, distributed over the entire hydromulch-seeding area in specified proportions.
 - 8. Use a two-step method applying seed, fertilizer, and mulch tracer in the first application and then apply a heavy mulch cover.
 - 9. Do not operate equipment over areas that have been hydroseeded except for purposes of restoration or repair to acceptable surface conditions.
- B. Broadcast Seeding
 - 1. At all locations, achieve a uniform distribution of seed over the entire broadcast seeding area in specified proportions.
 - 2. Do not operate equipment over areas that have been broadcast seeded.

3.06 MAINTENANCE

- A. Maintain seeded areas following installation, including repair of erosion using approved erosion control matting and any required reseeding.
- B. Water areas designated for irrigation immediately following hydroseed application. OWNER will approve the methods and schedule for watering.

3.07 WARRANTY AND ACCEPTANCE

- A. Seeded areas will be inspected at completion of installation and provisionally accepted subject to compliance with specified materials, installation, and maintenance requirements.
- B. Provisional acceptance will be by area.
- C. All seeded areas must be guaranteed for a period of one year from the date of provisional acceptance to be in good, healthy, and flourishing condition.
- D. Two percent of the seeding cost will be withheld for the warranty period, at which time a final inspection will be completed by the OWNER and CONTRACTOR.
- E. Replace defective materials noted and upon completion of replacements, final acceptance will be certified in writing by the ENGINEER.

3.08 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from seeding operations.

END OF SECTION

DIVISION 3

CONCRETE

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Cast-in-place concrete for concrete lined stormwater control ditches and forming flowlines in stormwater riser inlets.

1.02 RELATED SECTIONS

- A. Section 02221 – Excavation.
- B. Section 02222 – Engineered Fill.
- C. Section 02607 - Culverts
- D. Section 02278 – Geomembrane.

1.03 REFERENCES

- A. ACI 211.1 - Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- B. ACI 302 - Guide for Concrete Floor and Slab Construction.
- C. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- D. ACI 308 - Standard Practice for Curing Concrete.
- E. ACI 318 - Building Code Requirements for Reinforced Concrete.
- F. ASTM C33 - Concrete Aggregates.
- G. ASTM C94 - Ready-Mixed Concrete.
- H. ASTM C150 - Portland Cement.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.
- B. Acquire cement and aggregate from same source for all work.
- C. Conform to ACI 305R when concreting during hot weather.
- D. Conform to ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMS

- A. Design, erect support, brace, and maintain formwork so it will safely support vertical and lateral loads that will be applied until such loads can be supported safely by the concrete structure.

2.02 REINFORCEMENT

- A. Provide welded wire fabric meeting ASTM A185.
- B. Welded fabric size. 6" x 6" - #10 x #10.

2.03 CONCRETE

- A. Comply with the following minimums
 1. Portland Cement: ASTM C150, Type I or II, low alkali.
 2. Aggregate General: ASTM C30, uniformly graded and clean
 3. Aggregate Course: Crushed rock or washed gravel with a maximum size of between $\frac{3}{4}$ inch and 1 $\frac{1}{2}$ inch, and with a minimum size of #4.
 4. Fine Aggregate: Natural washed sand of hard and durable particles varying from fine to particles passing a $\frac{3}{8}$ inch screen, of which at least 12 percent passes a 50-mesh screen.
 5. Water: Clean and potable.
- B. Provide concrete with a 28-day compressive strength of 3000 psi.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work.

3.02 PREPARATION

- A. Verify that geomembrane ditch lining is complete and accepted by the ENGINEER as required by Section 02778.
- B. Verify stormwater riser pipe is set vertical and to the location and elevation indicated on the drawings.
- C. Verify cut-off wall trench dimensions and depths comply with those indicated on the drawings and that all loose soil and rock has been removed from the trench.

3.03 REINFORCING

- A. Position and support wire mesh reinforcement in the center of the concrete to assure required coverages are met.
- B. Install wire mesh in long lengths parallel to the flow line of the ditch.

- C. Protect underlying geomembrane from puncture during wire mesh installation.

3.04 MIXING CONCRETE

- A. Transit mix the concrete in accordance with ASTM C94.
- B. Mixing Water.
 - 1. At the batch plant, withhold 2 ½ gallons of water per cubic yard of concrete.
 - 2. Upon arrival at the job site, add all or part of the withheld water as required for proper slump before the concrete is discharged from the mixer.
 - 3. Mix not less than five minutes after the withheld water has been added, and not less than one minute of that time immediately before discharge.
 - 4. Unless otherwise directed, provide 15 minutes total mixing time per batch after first addition of water.
- C. Do not use concrete that has stood for more than 30 minutes after leaving the mixer, or concrete that is not placed within 60 minutes after water is first introduced into the mix.

3.05 PLACING CONCRETE

- A. Conveying.
 - 1. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.
 - 2. Deposit concrete as nearly as practical in its final position so as to avoid separation due to re-handling.
 - 3. Do not use concrete that becomes non-plastic and un-workable, or does not meet required quality control limits, or has been contaminated by foreign materials.
 - 4. Remove rejected concrete from the job site.
- B. Placing in Forms
 - 1. Deposit concrete in horizontal layers not deeper than 24 inches, or the depth of the slab, and avoid inclined construction joints.
 - 2. Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.

3.06 CONSOLIDATION

- A. Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators or hand spading, rodding, or tamping.
- B. Do not vibrate forms or reinforcement.

3.07 FINISHING

- A. Wood float surfaces and finish with a rough broom finish.
- B. Flowline Finish Tolerances:
 - 1. Maximum Variation From Intended Elevation: 0.1 feet.
 - 2. Maximum Offset From True Alignment: 0.2 feet.

3.08 EMBEDDING RIP RAP FOR TYPE A DITCH

- A. Woodfloat surface to finished elevation.
- B. Set Rip Rap in concrete positioned with at least 50 percent of the rock below the finished concrete surface.
- C. Re-float concrete to finished grade and to filling any gaps between the concrete and the rip rap with concrete.

END OF SECTION

