DOCUMENTS AND SPECIFICATIONS

FOR CONSTRUCTION OF

2010 ROAD PROGRAM-PARADISE DRIVE

FOR THE

TOWN OF MOULTONBOROUGH, NEW HAMPSHIRE

JULY 2010

KV Partners

CONSULTING ENGINEERS

Gilford, New Hampshire
Manchester, New Hampshire
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STATE OF NEW HAMPSHIRE
RAYMOND H. KORBER
No. 7839
LICENSED
PROFESSIONAL ENGINEER

KV Partners
CONSULTING ENGINEERS

Gilford, New Hampshire
Manchester, New Hampshire
www.kvpllc.com

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DIVISION 0

SECTION 00010

INVITATION TO BID

Sealed bids for the 2010 Road Program-Paradise Drive, will be received until 2:00 p.m. on Thursday, August 12, 2010 in the Offices of the SelectBoard, 6 Holland Street, PO Box 139, Moultonborough, NH 03254 at which time they will be opened and publicly read aloud. Your bid envelope must be marked with the project, item or service being sought, and the date the bids are due. If you send your bid by mail you should put it into a separate sealed envelope, marked as required, inside the mailing envelop to safeguard against it being opened in error.

The work includes the reconstruction of approximately 2,100 feet of roadway, drainage system improvements and appurtenant work. All work will be completed within the designated easements and the streets and rights-of-way of the designated roadways in the Town of Moultonborough, New Hampshire. The estimated contract value is $450,000 +/-. Each bid shall be accompanied by a bid security in the form of a certified, treasurer's or cashier's check or bid bond in the sum of five (5) percent of the Bid Price. No bidder may withdraw his/her Bid for a period of 60 days (excluding Saturdays, Sundays, and legal holidays) after the actual date of the opening of the Bids. The successful bidder must furnish 100% Performance and Payment Bonds and will be required to execute the Contract Agreement within 10 days following notification of the acceptance of his bid.

A detailed package with information on the program and all specifications, the conditions thereof, and bid forms, is available at www.moultonboroughnh.gov (click on Paid, Volunteer and Contract Openings) or said offices during normal business hours. **Complete sets of Bid Documents may be obtained at Signature Press and Blue Printing (www.signaturenh.com), 45 Londonderry Turnpike, Hooksett, NH 03106 (603.624.4025) for the cost of reproduction. To ensure you are on the bidders list to receive notifications of Addenda, you must obtain Bid Documents from Signature Press.** Bid Documents may also be examined at Moultonborough Town Hall and at the following locations:

Signature Press and Blue Printing, 45 Londonderry Turnpike, Hooksett, NH 03106

Associated General Contractors, 48 Grandview Road, Bow, NH 03304

Construction Summary Services of NH, 734 Chestnut Street, Manchester, NH 03104

Dodge Reports, 880 Second Street, Manchester, NH 03102

A pre-bid conference will be will be held at 10:00 a.m. on Tuesday, August 3, 2010 at Moultonborough Town Hall. Any questions with respect to this invitation must be received, in writing by mail (above address), fax (603.476.5835) or email (cterenzini@moultonboroughnh.gov), by Carter Terenzini, Town Administrator, no later than 4:00 p.m. on Thursday, August 5, 2010.

The town reserves the right to reject any and all bids, and waive any minor or non-material informalities, if deemed to be in its best interests.

END OF SECTION

SECTION 00100

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 BID DOCUMENTS

A. Complete sets of Bid Documents in the number and for the deposit sum, if any, may be examined and obtained as stated in the Invitation to Bid.

B. Complete sets of Bid Documents must be used in preparing Bids. Neither the Owner nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.

1.2 SUBMISSION OF BID

A. Bids for the work of this Contract will be received at the time and place indicated in the Invitation to Bid. Bids submitted after this time will not be accepted. Each Bid must be submitted in a sealed envelope.

B. All Bids must be made on the required Bid Form. All blank spaces for Bid prices must be filled in, in ink or typewritten, and the Bid Form must be fully completed and executed when submitted. Only one copy of the Bid Form is required.

C. Bidders are cautioned that it is the responsibility of each individual Bidder to assure that his Bid is in the possession of a responsible representative prior to the stated time and at the place of the Bid Opening. Owner is not responsible for Bids delayed by mail and/or delivery services.

D. Once the Bid is submitted and received by the Owner, the Bidder agrees that he may not and will not withdraw his Bid within 60 business (excluding Saturdays, Sundays, and legal holidays) days after the actual date of the opening of Bids.

E. Bids may only be withdrawn prior to the scheduled time for the opening of the Bids or authorized postponement thereof. Bids may be withdrawn upon written or telegraphic request of the Bidder provided confirmation of any telegraphic withdrawal over the signature of the Bidder is placed in the mail and postmarked prior to the time set for Bid Opening. Bid documents and security of any Bidder withdrawing his bid in accordance with the foregoing conditions will be returned.

F. Unless a Bid is withdrawn as provided above, the Bidder agrees that his Bid shall be deemed open for acceptance until the Agreement has been executed by both parties or until the Owner notifies a Bidder in writing that his Bid is rejected, or that the Owner does not intend to accept it, or returns his Bid deposit. Notice of acceptance of a Bid shall not constitute rejection of any other Bid. Should there be reasons why the contract cannot be awarded

within the specified time period; the time may be extended by mutual agreement between the Owner and the Bidder.

G. The Owner may reject Bids which in its sole judgment are incomplete, conditional, obscure, not responsive, which contain additions not called for, erasures not properly initialed, alterations, or other similar irregularities; or the Owner may waive such omissions, conditions or irregularities. The Owner reserves the right to reject any or all Bids and waive any minor or non-material informalities, should the Owner deem it to be in the public interest to do so.

H. Contingencies for Award of Contract: If, at the time this contract is to be awarded, all Bids submitted by responsible Bidders exceed the amount of the funds available to finance the contract, the Owner may reject all bids or take any other action deemed to be in the best interest of the Owner.

1.3 BID SECURITY

A. Each Bid must be accompanied by a Bid Bond payable to the Owner for five (5) percent of the total amount of the Bid. A certified check issued by a responsible bank or trust company and payable to the order of the Owner may be used in lieu of a Bid Bond. Each such check or Bid Bond may be held by the Owner as security for the fulfillment of the Bidder's agreements as herein set forth and as set forth in the Bid. Should the Bidder fail to fulfill such agreements his Bid check shall become the property of the Owner or if a Bid Bond was furnished the Bid Bond shall become payable to the Owner, as liquidated damages

B. As soon as the Bid prices have been compared, the Owner will return the Bid Bond or certified check of all except the three lowest responsible Bidders. When the Agreement is executed, the bonds or checks of the two remaining unsuccessful Bidders will be returned. The Bid Bond or certified check of the successful Bidder will be retained until the Payment Bond and Performance Bond have been executed and approved, after which it will be returned. None of the three lowest Bids shall be deemed rejected, notwithstanding acceptance of any Bid, until the Agreement has been executed by both the Owner and the accepted Bidder.

1.4 QUALIFICATIONS OF BIDDER

A. No award will be made to any Bidder who cannot satisfy the Owner that he has sufficient ability and experience in the class of Work to be completed and sufficient capital and plant to enable him to prosecute and complete the Work successfully within the time period specified. The Owner's decision or judgment on these matters shall be final, conclusive, and binding.

B. The Owner may make such investigations as it deems necessary, and the Bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

C. Bidders must submit a completed Statement of Bidders Qualifications with the Bid. Failure to submit a completed Statement of Bidders Qualifications may be deemed by the Owner as a non-responsive Bid.

1.5 INVESTIGATIONS AND INFORMATION

A. Each Bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. Bidders must satisfy themselves by personal examination of the site of the Work and by such other means as they may wish, as to the actual conditions existing at the site, the character and requirements of the Work, the difficulties attendant upon the execution of the Work, and the accuracy of all estimated quantities stated in the Bid. The failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder from any obligations with respect to his Bid.

B. All information given on the Drawings or in the other Contract Documents relating to subsurface and other conditions, natural phenomena, existing utilities, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of Bidders and is not guaranteed.

C. It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing utilities or other structures encountered during construction will be the same as those indicated on the Drawings or in the other Contract Documents.

D. It is agreed and understood that no Bidder or contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner, as a basis of or ground for any claim or demand against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing utilities or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

1.6 ADDENDA AND INTERPRETATIONS

A. No interpretation of the meaning of the Contract Documents will be given to prospective Bidders in reply to an oral question. Any information given to Bidders other than by means of the Contract Documents, including Addenda, is given informally for the convenience of the Bidder only and is not guaranteed. The Bidder agrees that such information shall not be used as the basis of any claim or demand against the Owner or the Engineer.

B. To receive consideration, every request for interpretation of the meaning of the Contract Documents shall be submitted in writing to the Engineer at KVPartners LLC, PO Box 7721, Gilford, NH 03247 at least 7 calendar days prior to the date established for the opening of the Bids.

C. Any and all such interpretations and any supplemental instructions and information will be in the form of written Addenda to the Contract Documents which, if issued, will be emailed, faxed or mailed to all prospective Bidders at the respective addresses furnished for such purposes. The Engineer will send a copy of Addenda to those prospective Bidders and parties known to have taken out Contract Documents at the time the Addenda is issued. Failure of any Bidder to receive any such Addendum or interpretation shall not relieve any Bidder from any

obligation under Bidder's Bid as submitted. All Addenda so issued shall become part of the Contract Documents.

D. The Engineer will neither approve nor disapprove particular products prior to the opening of Bids. Such products will be considered when offered by the Contractor for incorporation into the Work in accordance with the requirements of Section 01300.

E. The Contractor agrees to use and base his Bid on the products and methods designated or described in the Contract Documents as amended by the Addenda.

1.7 ALTERNATES

A. Refer to Section 01010 for description of bid alternates.

1.8 REDUCTION IN SCOPE OF WORK

A. The Owner reserves the right to decrease the scope of the work to be done under this contract and to omit any work in order to bring the cost within available funds. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any items as set forth in the Bid, either prior to executing the contract or at any time during the progress of the work. The Owner further reserves the right, at any time during the progress of the work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

1.9 OTHER CONTRACTS

A. It is essential that all parties interested in the project coordinate their activities to the end that the entire project will be brought to a successful conclusion within the specified time periods. The Owner cannot guarantee that no interference or delay will occur as a result of the actions of other contract(s). Interference and delay resulting from such coordination and cooperation shall not be the basis of claims against the Owner.

1.10 AVAILABILITY OF LANDS FOR WORK

A. The lands upon which the Work is to be performed including rights-of-way and easements for access thereto and other lands designated for use by the Contractor in performing the Work are identified in the Contract Documents.

B. Lands required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated into the Work not identified in the Contract Documents as specified above are to be obtained and paid for by the Contractor.

C. The Contractor has no rights of access to lands unless he obtains them from the proper parties.

D. The Contractor shall not work on property requiring obtaining of an easement until the Owner has obtained the necessary easement.

1.11 CONTRACT BONDS

A. The Bidder whose Bid is accepted agrees to furnish a Performance Bond and a Payment Bond each in the amount of one hundred (100) percent of the contract price. Bonds shall be duly executed by the Bidder as Principal and by a surety company approved by the Owner. Surety company shall be qualified to do business under the laws of the State of New Hampshire. The premiums for such Bonds shall be paid by the Contractor.

1.12 EXECUTION OF AGREEMENT

A. The Bidder whose Bid is accepted will be required and agrees to duly execute the Agreement and furnish the required Bonds within the time limit stated in the Contract Documents.

1.13 INSURANCE CERTIFICATES

A. The Contractor will not be permitted to start any construction work until he has submitted certificates covering all insurances called for in the Contract Documents.

1.14 SALES AND USE TAX

Not Used

1.15 PRE-BID CONFERENCE

A. A Pre-Bid Conference will be held at the time and location indicated in the Invitation to Bid. Representatives of the Owner and Engineer will be present to discuss the Project. 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 made at the Pre-Bid Conference may not be relied upon and will not be binding or legally effective.

1.16 BASIS OF AWARD

A. The Owner reserves the right to award the contract to a Bidder that is not the lowest responsible and responsive Bidder. Although the Bid price will be a substantial factor in the Owner's award, the final award will be based on the Owner's determination, in its sole discretion, of which Bid will be in the best interest of the Owner.

B. The Owner will evaluate the Bid price submitted by Bidders based on unit prices, base bid, bid alternates and total bid in such a manner as is deemed to be in the best interests of the Owner.

END OF SECTION 00100

SECTION 00300

BID FORM

PART 1 - GENERAL

1.1 BID INFORMATION

A. Project Identification: 2010 Road Program-Paradise Drive

B. Proposal Of:_____ (hereinafter referred to as Bidder) organized and existing under the laws of the State of _____ doing business as a ___ _____ (specify corporation; partnership; or individual).

C. This Bid is Submitted To: Town of Moultonborough, New Hampshire

D. Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with the Owner in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the bid price and within the contract times stated and in accordance with all other terms and conditions of the Contract Documents.

E. Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders.

F. Bidder hereby agrees that this Bid will remain subject to acceptance for 60 business (excluding Saturday, Sunday and legal holidays) days, after the actual date of the opening of the Bid.

G. Bidder hereby agrees to sign and deliver the required number of counterparts of the Agreement with the required Bonds, Certificates of Insurance and other documents within 10 calendar days after the date of Owner's Notice of Award.

H. Bidder, by submittal of this Bid, agrees with the Owner that the amount of the bid security deposited with this Bid fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the Bidder to fulfill his agreements as herein provided. Should the Bidder fail to fulfill any of his agreements as herein set forth, it is agreed that the amount stated in the Bid Bond shall be paid as damages to the Owner by the Surety. If a certified check was issued in lieu of a Bid Bond, the Owner shall have the right to retain, as damages, the certified check which shall become the Owner's property.

I. In submitting this Bid, Bidder further represents and declares the following:

1. Bidder has examined and carefully studied the Bid Documents.

2. Bidder acknowledges receipt of the following Addenda (List Addenda by Addendum Number and Date):

Number	Date

3. Bidder has visited and carefully examined the site of the proposed Work and has become thoroughly familiar with and is fully satisfied as to the conditions that exist at the site, the character, requirements and extent of the proposed Work, and the difficulties in executing the work that may affect cost, progress, performance and furnishing of the Work.

4. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

5. Bidder has carefully studied 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 utilities or structures at or contiguous to the site. Bidder accepts the determination of the technical data contained in such reports and drawings upon which Bidder is entitled to rely. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes.

6. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and underground facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

7. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bid Documents with respect to subsurface conditions or underground facilities at or contiguous to the site.

8. Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.

9. Bidder certifies under the penalties of perjury that this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person, firm, joint venture, partnership, corporation or other business or legal entity.

10. Bidder acknowledges that no officer, agent, or employee of the Owner is directly or indirectly interested in this Bid.

11. Bidder understands that the quantities of work tabulated in this Bid or indicated in the Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Owner or Engineer.

1.2 BID

A. Bidder must bid on each item. All prices, except item totals, shall be stated in words and figures. In case of discrepancy between price in words and price in figures; the words shall govern. In case of discrepancy between the product obtained by multiplying the estimated quantity by the unit price, and the extended amount, the product obtained shall govern. In case of discrepancy between total of extended amounts and total amount of bid stated, total of items shall govern.

B. Prices shall be typewritten or written by hand in ink.

C. The subdivision of the proposed contract price is indicated on the following Bid Schedule. Bidder shall use the Bid Schedule when submitting Bid.

D. This Bid must bear the written signature of the Bidder or an authorized agent of the Bidder. If the Bidder is a corporation or a partnership, the Bid must be signed by a duly authorized officer of such corporation or by a partner and the title of such office must be stated.

E. Bidder shall carry the same unit price for the same item on the Base Bid and Bid Alternate portions of the Bid.

1.3 SUBMITTALS

A. Bidder shall submit all information as specified in the Invitation to Bid, Bid Form and Instructions to Bidders.

1. Bid Form
2. Bid Security
3. Statement of Bidders Qualifications

I certify under the penalties of perjury, that (1) I have had the opportunity to view the full bid package and am aware it is my responsibility to perform my own due diligence appropriate to submitting this proposal, (2) I am fully authorized to submit this bid, (3) I have not engaged in discussions, negotiations or collusion with any person to determine what my bid will be and (4) that I, to the best of my knowledge and belief, have paid all taxes, fees, assessments, betterments or other municipal charges that I owe to the Town of Moultonborough or have a payment agreement in place or have filed an appeal over the same.

Respectfully submitted: Date _____

By_____
(Signature and Title of Person Authorized to Sign Bid)

_____
(Name of Bidder)

_____
(Business Street Address)

_____ (___)_____
(City and State) (Business Telephone Number)

(SEAL – if Bid is by a corporation)

BID SCHEDULE

2010 ROAD PROGRAM-PARADISE DRIVE

BASE BID:

ITEM				UNIT PRICE		EXTENDED TOTAL
No.	**Description**	**Quantity**	**Unit**	**Words**	**Figures**	**(in figures)**
1	Mobilization	1	LS			
2	Exploratory Excavation	50	CY			
3	Common Excavation	4330	CY			
4	Excavation of Unsuitable Material	830	CY			
5a	15" HDPE Drain Pipe	1250	LF			
5b	15" End Section	3	EA			
6	Catch Basin Type B	17	EA			
7	Remove Catch Basins	4	EA			
8a	Gravel	2340	CY			
8b	Crushed Gravel	1250	CY			
8c	3/4" Crushed Stone	200	CY			
8d	Class C Stone	40	CY			
9	Soil Reinforcement Fabic	1250	SY			
10a	2" HBP Binder Course	760	TN			
10b	1" HBP Wearing Course	340	TN			
10b	HPB Hand Method	40	TN			

Notes:

1. Key To Units: LF = Linear Feet; SY = Square Yards; CY = Cubic Yards; LS = Lump Sum; EA = Each; LB = Pound; TN = Ton; BG = Bags; AL = Allowance
2. Base Bid includes: Paradise Drive (Sta 12+00 to Sta 31+00)
3. Unit prices must be the same on both the Base Bid and Bid Alternate portions of the Bid for the same Item.

BID SCHEDULE

2010 ROAD PROGRAM-PARADISE DRIVE

BASE BID:

ITEM				UNIT PRICE		EXTENDED TOTAL
No.	**Description**	**Quantity**	**Unit**	**Words**	**Figures**	**(in figures)**
11	Bituminous Curb	3950	LF			
12	Reset Frames (Catch Basins, Manholes)	17	EA			
13a	Reflective Paint Pavement Marking - 4" Yellow Center Line	3800	LF			
13b	Reflective Paint Pavement Marking - 4" White Edge Line	3800	LF			
14	100 lbs of Calcium Chloride	30	BG			
15a	Hay Bales	200	EA			
15b	Silt Fence	800	LF			
16	Loam and Seed	3700	SY			
17	Maintainence of Traffic	1	LS			
	TOTAL BASE BID (A)					

Notes:

1. Key To Units: LF = Linear Feet; SY = Square Yards; CY = Cubic Yards; LS = Lump Sum; EA = Each; LB = Pound; TN = Ton; BG = Bags; AL = Allowance
2. Base Bid includes: Paradise Drive (Sta 12+00 to Sta 31+00)
3. Unit prices must be the same on both the Base Bid and Bid Alternate portions of the Bid for the same Item.

BID SCHEDULE

2010 ROAD PROGRAM-PARADISE DRIVE

BID ALTERNATE No.1:

ITEM				UNIT PRICE		EXTENDED TOTAL
No.	**Description**	**Quantity**	**Unit**	**Words**	**Figures**	**(in figures)**
2	Exploratory Excavation	30	CY			
3	Common Excavation	700	CY			
4	Excavation of Unsuitable Material	50	CY			
8a	Gravel	390	CY			
8b	Crushed Gravel	195	CY			
10a	2" HBP Binder Course	110	TN			
10b	1" HBP Wearing Course	70	TN			
10c	HPB Hand Method	5	TN			
13a	Reflective Paint Pavement Marking - 4" Yellow Center Line	400	LF			
13b	Reflective Paint Pavement Marking - 4" White Edge Line	420	LF			
14	100 lbs of Calcium Chloride	25	BG			
15a	Hay Bales	50	EA			
16	Loam and Seed	660	SY			
17	Maintenance of Traffic	1	LS			
18a	Remove and Reset Granite Curb	190	LF			
18b	Remove and Stockpile Granite Curb	340	LF			
19	Uniformed Police for Traffic Control	1	AL	Five Thousand Dollars and No Cents	$5,000.00	5,000.00
	BID ALTERNATE No. 1 (B)-ADD					
	TOTAL BID AMOUNT (A + B)					

Notes:

1. Key To Units: LF = Linear Feet; SY = Square Yards; CY = Cubic Yards; LS = Lump Sum; EA = Each; LB = Pound; TN = Ton; BG = Bags; AL = Allowance
2. Bid Alternate No. 1 includes: Paradise Drive (Balmoral Entrance)
3. Unit prices must be the same on both the Base Bid and Bid Alternate portions of the Bid for the same Item.

SECTION 00420

STATEMENT OF BIDDERS QUALIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes information related to the Contractor's qualifications to complete the work in accordance with the Contract Documents.

1.2 GENERAL INFORMATION

A. Name: _____

Principal Office Address: _____

_____

Telephone: _____

B. If a Corporation, answer the following:

When incorporated: _____

In what State: _____

Director's names (s) _____

_____

_____

President's Name: _____

Vice President's Name: _____

Secretary's Name: _____

Treasurer's Name: _____

_____

C. If a partnership, answer the following:

Date of Organization: _____

State whether partnership is general or limited: _____

Name and Address of Partners: _____

_____

_____

1.3 EXPERIENCE

A. How many years has your organization been in business as contractor under your present business name? _____

B. What are the prior names of your organization?_____

_____

_____

C. How many years of experience does your organization have as a prime contractor in the type of work specified in the Contract Documents? _____ As a sub-contractor? _____

D. List below the largest projects your organization has completed.

	Contract Amount	Project Title	Owner	When Completed
1.				
2.				
3.				
4.				
5.				

Name and address of references for respective projects listed above:

1. _____

2. _____

3. _____

4. _____

5. _____

E. List other references: _____

_____

_____

F. List below two (2) completed projects which agree most similar to the proposed work.

	Contract Amount	Project Title	Owner	When Completed
1.				
2.				

G. Have you ever failed to complete any work awarded to you? _____ If yes, give name of Owner, name of Bonding Company and circumstances: _____

_____

H. State the largest dollar volume of work your organization has completed in any one year and the year that it was completed in: _____

_____

1.4 FINANCIAL REFERENCES

A. Name one (1) banking institution reference:

Name: _____

Address: _____

_____

B. Name two (2) credit references other than the bank listed above.

Name: _____

Address: _____

_____

Name: _____

Address: _____

_____

1.5 CERTIFICATION

I hereby certify that the information submitted herewith, including any attachment, is true to the best of my knowledge and belief.

_____
Firm Name

By:_____
Signature

Title:_____

Date:_____

END OF SECTION

SECTION 00430

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:

BID
Bid Due Date:
Description *(Project Name and Include Location)*:

BOND
Bond Number:
Date *(Not earlier than Bid due date)*:
Penal Sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00500

AGREEMENT

This Agreement is dated as of the _____ day of _____, 2010 by and between the Town of Moultonborough, New Hampshire, (hereinafter called Owner) and _____ (hereinafter called Contractor). Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

1.1 WORK

A. Contractor shall complete the construction of the 2010 Road Program. In general the Work shall include the reconstruction of approximately 2,100 feet of roadway, drainage system improvements and appurtenant work. All work will be completed within designated easements and the streets and rights-of-way of the designated roadways in the Town of Moultonborough, New Hampshire.

B. Contractor shall furnish all labor, equipment, materials, supplies, plant and other services necessary for the construction of the Work complete in place and fully operational as specified in the Contract Documents.

1.2 CONTRACT TIMES

A. Contractor shall substantially complete the Work within 56 calendar days after the date when Contract Times commence to run as provided in Article 2.03 of the General Conditions. Contractor shall complete the Work and be ready for final payment as provided in Article 14.07 of the General Conditions within 70 calendar days after the date when the Contract Times commence to run as provided in Article 2.03 of the General Conditions.

B. Liquidated Damages. Owner and Contractor recognize that time is of the essence in completing the Work and that the Owner will suffer financial loss if the Work is not completed within the Contract Times specified in Paragraph 1.2.A above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner Five Hundred Dollars ($500.00) for each day that expires after the time specified in Paragraph 1.2.A for Substantial Completion until the Work is substantially complete. After Substantial Completion, if the Contractor shall neglect, refuse, or fail to complete the remaining Work for final payment within the time specified in Paragraph 1.2.A, or any proper extension thereof granted by Owner, Contractor shall pay Owner Three Hundred Dollars ($300.00) for each day that expires after the time specified in Paragraph 1.2.A for completion and readiness for final payment.

1.3 CONTRACT PRICE

A. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents.

1.4 PAYMENT PROCEDURES

A. Contractor shall submit Applications for Payment in accordance with the General Conditions and Division 1 Specifications. Applications for Payment will be processed by Engineer as provided in the General Conditions and Division 1 Specifications.

B. Owner shall make progress payments in current funds based on the Contractor's Applications for Payment as recommended by Engineer. All such payments will be made in accordance with the Contract Documents.

C. Progress payments shall be made in an amount equal to 90 percent of the Work completed (with the balance being retainage) but, in each case, less the aggregate of payments previously made and less such amounts as Engineer shall determine, or Owner may withhold, in accordance with the General Conditions and Division 1 Specifications.

D. Upon final completion and acceptance of the Work in accordance with the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in the General Conditions.

1.5 CONTRACTOR’S REPRESENTATIONS

A. Contractor has examined and carefully studied the Contract Documents (including the Addenda), other related data identified in the Bidding Documents and all technical data and information as is available.

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, performance, and furnishing 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, performance, and furnishing of the Work.

D. Contractor is aware of the general nature of work to be performed by Owner and others at the site that relates to the Work as indicated in the Contract Documents.

E. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the site, reports, and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

F. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Contractor, and the Contract Documents are

generally sufficient to indicate and convey the understanding of all terms and conditions for performance and furnishing of the Work.

1.6 CONTRACT DOCUMENTS

A. The Contract Documents which comprise the entire agreement between Owner and Contractor concerning the Work consists of the following:

1. Invitation to Bid.
2. Instructions to Bidders.
3. Bid Form.
4. Bid Bond.
5. Statement of Bidders Qualifications.
6. Notice of Award.
7. Notice to Proceed.
8. Agreement.
9. Performance Bond and Payment Bond.
10. Insurance Certificates.
11. General Conditions.
12. Supplemental Conditions.
13. Specifications and Drawings prepared and issued by KVPartners LLC, Gilford, NH entitled 2010 Road Program-Paradise and dated July 2010.
14. Addenda numbers _____ to _____, inclusive.
15. The following which may be delivered or issued after the effective date of the Agreement and are not attached hereto: All written amendments, Change Orders and other documents amending, modifying or supplementing the Contract Documents.

1.7 MISCELLANEOUS

A. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

B. No assignment by the Contractor of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically, but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

C. 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.

D. 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.

1.8 ACCEPTENCE

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in triplicate. One counterpart each has been delivered to Owner, Contractor and Engineer. All portions of the Contract Documents have been signed, initialed or identified by Owner and Contractor or identified by Engineer on their behalf.

This Agreement will be effective on _____, 2010 (which is the Effective Date of the Agreement).

Owner: Moultonborough, New Hampshire

By: _____
(Signature)

Attest _____

Address for giving notices:

Town Hall, 6 Holland Street, PO Box 139

Moultonborough, NH 03254

Contractor _____

By: _____
(Signature)

[CORPORATE SEAL]

Attest _____

Address for giving notices:

_____

_____

License No. _____

Agent for service of process:

_____

(If Contractor is a corporation, attach evidence of authority to sign.)

SECTION 00510

NOTICE OF AWARD

Date: _____

Project:	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:
Bidder:	
Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*	

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for _____

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is _____ Dollars ($_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

_____ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [_____] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

   _____

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

_____
Owner

By:_____
Authorized Signature

_____
Title

Copy to Engineer

SECTION 00550

NOTICE TO PROCEED

Date: _____

Project:	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:
Contractor:	
Contractor's Address: *[send Certified Mail, Return Receipt Requested]*	

You are notified that the Contract Times under the above Contract will commence to run on_____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement, the date of Substantial Completion is_____, and the date of readiness for final payment is _____ [(or) the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements]*.

_____ _____
Owner

Given by:

_____ _____
Authorized Signature

_____ _____
Title

_____ _____
Date

Copy to Engineer

SECTION 00610

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.

2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and

2.3 Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract; or
2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.

3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:

3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment

tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;

5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and

5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

8. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located, and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*) Surety Agency or Broker: Owner's Representative: KVPartners LLC, PO Box 7721, Gilford, NH 03247; (603) 513-1909

SECTION 00615

PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT
Effective Date of Agreement:
Amount:
Description *(Name and Location)*:

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

Promptly makes payment, directly or indirectly, for all sums due Claimants, and

Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of

Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address, and Telephone*) Surety Agency or Broker: Owner's Representative: KVPartners LLC, PO Box 7721, Gilford, NH 03247; (603) 513-1909

SECTION 00625

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents: ☐ The following specified portions of the Work:

_____

_____

_____

_____

_____
Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐ Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

_____

_____

_____

Contractor's Amended Responsibilities:

_____

_____

_____

The following documents are attached to and made part of this Certificate:

_____

_____

_____

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer	Date
Accepted by Contractor	Date
Accepted by Owner	Date

SECTION 700

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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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 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 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.

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.

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

37. *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.

38. *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.

39. *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.

40. *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.

41. *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.

42. *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.

43. *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.

44. *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.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

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

47. *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 Subcontractor.

48. *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.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *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.

51. *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 words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated 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 information in the Contract Documents and with the design concept of the 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 that 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; Designation of Authorized Representatives*

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.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

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 reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated 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, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 discovers, or has actual knowledge of, 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 (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then 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 had actual knowledge 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, or code, or the instruction of any Supplier (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 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 its consultants, including electronic media editions; or

2. reuse any 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 adaptation by Engineer.

B. The prohibitions 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. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by 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 known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the 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 officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 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, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall 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 provided by others; 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:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the 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 officers, directors, members, partners, employees, agents, consultants, or subcontractors 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. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

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 written notice to Contractor: (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, members, 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, members, 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 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 or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

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 and loss payee 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 and loss payee 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.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such 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, be written on an occurrence basis, include as additional insureds (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, members, 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 contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. 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);

5. 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

6. include completed operations coverage:

a. Such insurance shall remain in effect for two years after final payment.

b. 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, members, 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 a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, 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 that 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 loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown 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, members, 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 a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this 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 loss payee 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 this 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 as loss payees (and the officers, directors, members, 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 loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, 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 as loss payees (and the officers, directors, members, 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, members, 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, members, 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 loss payees, 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.

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; and

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

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 if 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 by 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 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 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; and

4) 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 a Change Order in the case of a substitute and 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 so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable 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 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 a loss payee 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, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, 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, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, 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 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, members, 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. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. 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. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. 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 Drawings or Specifications or to the acts or omissions of Owner or Engineer 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).

F. 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 accepted 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:*

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:

a. 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;

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

c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

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

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 Drawings 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 officers, directors, members, partners, employees, agents, consultants, and subcontractors 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, members, 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 officers, directors, members, partners, employees, agents, consultants, or subcontractors 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, members, 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 through 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, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and 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 such work; provided, however, that Contractor may cut or alter others' 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 wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful 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 with respect to 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 relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with 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 with 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. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

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.

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 believes 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.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

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.D.

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 the provisions of any bond require notice to be given to a surety 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), 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 Times 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 not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

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 on the Work. 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, as 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, express and courier services, 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, expediters, 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.

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 to 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 Paragraphs 12.01.C.2.a and 12.01.C.2.b 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 their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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. 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, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's 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 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, Contractor shall, if requested by Engineer, uncover such Work 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 written 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 for 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 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, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and 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. 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 remedies the reasons for such action.

3. Upon a subsequent determination 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 and subject to interest as provided in the Agreement.

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 remove its property and 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, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D 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.6;

   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 might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, 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 repeated 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 the 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.

END OF SECTION

SECTION 00800

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not specifically amended or supplemented hereby remain in full force and effect. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01 *Delivery of Bonds and Evidence of Insurance*

SC-2.01. Delete Paragraph 2.01.B in its entirety and replace with the following:

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor shall deliver to the Owner, with copy to the Engineer, certificates of insurance (and other evidence of insurance requested by the Owner) which Contractor is required to purchase and maintain in accordance with Article 5.

SC-2.02 *Copies of Documents*

SC-2.02. Delete Paragraph 2.02.A in its entirety and replace with the following:

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

SC-2.03 *Commencement of Contract Times; Notice to Proceed*

SC-2.03. Delete Paragraph 2.03.A in its entirety and replace with the following:

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.

ARTICLE 5 - BONDS AND INSURANCE

SC-5.04 *Contractor's Insurance*

SC-5.04: Add the following paragraphs 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. Prior to commencing work, and throughout the term of this Contract, the Contractor shall obtain, and maintain, in the limits and under the conditions set forth below, insurance coverage for the following types and levels of coverage:

Workers Compensation:	Statutory
Automobile and Equipment:	$1 Million/$1 Million
Property Damage:	$1 Million/$2 Million
General Liability:	$1 Million/$2 Million

D. The Owner shall be named as certificate holder.

E. The Owner shall be notified no earlier than thirty (30) days before any such policy is cancelled, altered or materially changed.

F. The following shall be included as additional insureds with respect to the insurances required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive:

Town of Moultonborough, New Hampshire

KVPartners LLC

G. If a Subcontractor is used for any portion of the work, the Contractor will provide to the Owner a similar certificate, in similar amounts and under similar conditions, from the Subcontractor.

H. Should the Contractor fail to maintain such Workers' Compensation insurance, and should the Owner be found liable to principals, officers, employees and agents of the Contractor, the Owner may recover from the Contractor the amount of any medical costs and compensation paid to or on behalf of the principals, officers, employees and agents of the Contractor and any expenses relating to claims filed under the provisions of Workers' Compensation.

5.06 *Property Insurance*

SC-5.06.A. Delete Paragraph 5.06.A in its entirety and replace with the following:

A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any deductible or self-insured retention. This insurance shall:

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

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, 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 that caused by flood), and such other perils or causes of loss as may be specifically required by these 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;

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 loss payee to whom a certificate of insurance has been issued; and

8. comply with the requirements of Paragraph 5.06.C of the General Conditions.

SC-5.06.B. Delete Paragraph 5.06.B in its entirety and replace with the following:

B. Contractor shall purchase and maintain such equipment breakdown 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, members, 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 a loss payee.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.03 S*ervices, Materials, and Equipment*

SC-6.03. Add the following paragraphs immediately after Paragraph 6.03.C:

D. Contractor is responsible for the design, fabrication and construction of all temporary formwork, shoring and bracing required or necessary to complete the Work.

E. Contractor is responsible for the design, fabrication and construction of all dewatering systems required or necessary to complete the Work.

6.06 *Concerning Subcontractors, Suppliers, and Others*

SC-6.06. Add the following paragraph immediately after Paragraph 6.06.G:

H. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid to Contractor in accordance with Contractor's Applications for Payment on account of the particular Subcontractor's, Suppliers, other person's, or other organization's Work.

6.17 S*hop Drawings and Samples*

SC-6.17.C. Add the following paragraph immediately after Paragraph 6.17.C.3:

4. The accuracy of all such information submitted by the Contractor is the responsibility of the Contractor. In reviewing Shop Drawings, Samples and similar submittals, the Engineer shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

SC-10.01. Add the following paragraph immediately after Paragraph 10.01.B:

C. Upon request of the Owner or the Engineer, the Contractor shall, without cost to the Owner, submit to the Engineer, in such form as the Engineer may require, an accurate written estimate of the cost of any such proposed extra Work or change. The estimate shall indicate the quantity and unit cost of each item of materials, and the number of hours of work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown if required by the Engineer. The Contractor shall promptly revise and resubmit such estimate if the Engineer determines that it is not in compliance with the requirements of this Article, or that it contains errors of fact or mathematical errors. If required by the Engineer, in order to establish the exact cost of new Work added or previously required Work omitted, the Contractor shall obtain and furnish to the Engineer bona fide proposals from recognized suppliers for furnishing any material included in such Work. Such estimates shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the Contractor's expense. The Contractor shall state in the estimate any extension of time required for the competition of the Work if the change or extra work is ordered.

ARTICLE 14 - CHANGES IN THE WORK; CLAIMS

14.02 *Progress Payments*

SC-14.02. Delete 14.02.C.1 in its entirety and replace with the following:

1. Thirty 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.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

SC-16.01. Add the following paragraph immediately after Paragraph 16.01.C:

D. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings unless otherwise agreed in writing by Owner and Contractor.

END OF SECTION

SECTION 00941

CHANGE ORDER

No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:	**CHANGE IN CONTRACT TIMES:**
Original Contract Price: $_____	Original Contract Times: ☐ Working days ☐ Calendar days Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: $_____	[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: Substantial completion (days): _____ Ready for final payment (days): _____
Contract Price prior to this Change Order: $_____	Contract Times prior to this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] of this Change Order: $_____	[Increase] [Decrease] of this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
Contract Price incorporating this Change Order: $_____	Contract Times with all approved Change Orders: Substantial completion (days or date): _____ Ready for final payment (days or date): _____

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized
Date: _____	Date: _____	Date: _____

DIVISION 1

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes a description of work to be performed, schedule of alternates, owner furnished products, work by Owner, work by others, work schedule, work sequence, use of premises and other special conditions and provisions to be performed under the Contract.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 PROJECT WORK IDENTIFICATION

A. In general and without limitation, the work to be done under this Contract includes: reconstruction of roadways; construction of stormwater drainage system; and paving. All work will be completed within designated easements and the streets and rights-of-way of the designated roadways in the Town of Moultonborough, New Hampshire. The work to be performed shall include the work shown on the Drawings and stated in the Specifications.

B. A general description of the work to be performed under this Contract shall include but will not be limited to the following construction operations:

1. Clearing and grubbing, stripping and stockpiling and protection of plantings and existing above-grade structures and features.
2. Excavating, filling, backfilling, grading and compacting for installation of pipe, utilities, appurtenances and for site restoration.
3. Furnishing, installing and cleaning all drain pipe, catch basins, and appurtenances.
4. Locating, protecting and shoring all existing utilities. Coordinating all activities with appropriate utility authority.
5. Repairing and/or relocating any utilities broken or conflicting with construction.
6. Providing all traffic control and maintenance of detours.
7. Disposal of excess excavated material.
8. Abandonment, removal, salvage and/or disposal of existing utilities to be replaced. Handling and transport of salvaged materials to a storage location designated by the Owner.
9. Excavating, filling, backfilling, grading and compaction of roadway base courses.

10. Furnishing, placing and compacting hot bituminous pavement. Installing pavement markings. Performing all saw cutting, tack coat, cold planning, and infrared heating.

11. Replacement and restoration of disturbed pavement surfaces, curbing, utilities, plantings, grass, structures, posts, fences, signs, bounds, mailboxes and other surface features within the limits of work and areas outside the limits of work disturbed by construction operations.

12. Slope stabilization, turf establishment, site restoration and clean-up.

C. The work shall also conform to such additional drawings and addenda to these Specifications and Drawings as may be published or exhibited prior to the opening of the bids and to such drawings in explanation of details or as may be furnished by the Engineer from time to time during the construction.

D. Work and materials which are necessary in the construction but which are not specifically referred to in the Specification, or shown on the Drawings, but implied by the Contract shall be furnished by the Contractor at his own cost and expense and shall correspond with the general character of the work as may be determined by the Engineer, whose decisions as to the necessity for and character of such work and materials shall be final and conclusive. It is the intent of these Specifications and Drawings to produce a complete, finished job whether shown in every detail or not.

1.4 SCHEDULE OF ALTERNATES

A. Alternates quoted in the Bid will be reviewed and accepted or rejected at the Owner's option.

B. Contractor shall coordinate related work and modify surrounding work to integrate with the work of each Alternate.

C. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions and other Division 1 Specifications apply to the work completed under each Alternate accepted by the Owner.

D. Bid Alternate No. 1 is an add alternate. If the Owner accepts Bid Alternate No. 1, the amount stated in the Bid will be added to the Base Bid amount. Under Bid Alternate No. 1, the Contractor shall furnish all labor, equipment and materials necessary to complete the reconstruction of Paradise Drive at the entrance to the Balmoral Development as herein specified and as directed by the Engineer.

1.5 OWNER FURNISHED PRODUCTS

Not Used

1.6 WORK BY OWNER

Not Used

1.7 WORK BY OTHERS

A. Contractor shall be responsible for coordinating with appropriate utility authorities who are impacted by contractor operations. Utility authorities may include but not be limited to:

1. Water
2. Cable
3. Electric
4. Telephone

B. The water utility (Lakes Region Water Company) is proposing to complete upgrades to the water system in Paradise Drive. Contractor shall coordinate operations with the water utility and provide access to the water system.

1.8 WORK SCHEDULE

A. The following major items of work shall be completed for substantial completion:

1. Installation of all storm drainage structures.
2. Disposal of all excess materials.
3. Salvage, removal and relocation of materials as designated by Owner.
4. Placement, grading and compaction of all roadway aggregate base course materials
5. Installation of permanent base pavement. For reconstructed roadway sections, once base course pavement is installed, no further trenching or excavating will be allowed.
6. Slope stabilization, turf establishment and site restoration.

B. The Contractor shall promptly start and continue the work under this Contract with the necessary labor, equipment and materials to properly execute and complete the work within the time specified in the Contract. No cessation of Contractor's operations will be allowed without the approval of the Owner.

C. The Contractor shall furnish required crews and equipment necessary to install the work. Prior to utilizing additional crews in other locations of the work, the Contractor shall request permission from the Engineer and the allowed actual on-site working time will be adjusted accordingly.

D. The rate of progress shall be satisfactory to the Owner and the Engineer. The Owner and Engineer reserve the right to modify any schedule as required to meet the prevailing conditions.

E. Should the prosecution of the work for any reason be discontinued, the Contractor shall notify the Engineer at least 48 hours in advance of resuming operations.

F. Normal construction activity shall be limited to normal business hours of 7:00 AM to 5:30 PM, Monday through Thursday (except holidays) unless otherwise approved by the Engineer.

G. Work in streets, roadways and areas adjacent to them shall cease at noon on days before legal holidays and at noon on Fridays prior to Monday holidays.

H. The work of placing the newly constructed facilities into operation as well as the necessary modifications and renovations to existing facilities shall be thoroughly planned and fully coordinated with the requirements of the Owner, and every effort shall be made to insure smooth transitions.

1.9 WORK SEQUENCE

A. The order of construction shall be reviewed with the Engineer a minimum of 3 weeks in advance of commencing with any major portion of the work.

1.10 CONTRACTOR'S USE OF PREMISES

A. Contractor shall assume full responsibility for security of all his and his subcontractors' materials and equipment stored on the site.

B. If directed by the Owner, Contractor shall move stored items which interfere with operations of Owner.

C. Obtain and pay for additional storage or work areas if needed to perform the work.

1.11 OWNER OCCUPANCY

A. The Owner will occupy the site during the entire period of construction for the conduct of normal operations. The Contractor shall cooperate with the Owner to minimize conflicts and to facilitate Owner's operations. Contractor shall schedule the work to accommodate this requirement.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01200

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes description of payment items, work requirements per payment item and measurement requirements per payment item.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this Section.

1.3 SUBMITTALS

A. Application for Payment: The Application for Payment shall be submitted on a form acceptable to the Engineer. Refer to General Conditions for additional requirements.

B. Schedule of Values: The Contractor shall submit a breakdown of the cost of all lump sum items in the Bid in a manner that may be used as the basis for estimating the value of the work completed to the end of any month. The basis and detail of the breakdown shall meet with the Engineer's approval. The schedule of values of all lump sum items in the Bid shall be submitted within seven (7) calendar days from the date of the Notice to Award.

1.4 PROCEDURES

A. The Contractor shall furnish all labor, equipment, materials, supplies and plant, and do all operations necessary to complete all work specified or shown. All supervision, overhead items, protection and precautions and all other costs, incidental to the construction work, complete, and as specified, are included.

B. A complete working job shall be produced whether or not any particular wording or direction is omitted or not clearly stated.

C. Measurement for payment shall be by the Engineer, except where noted elsewhere in this Specification.

D. Each price stated in the Bid shall constitute full compensation for each item of work completed.

E. For unit price items, the Contractor shall be paid for the actual amount of work accepted during the period of construction. After the work is completed and before final payment is made, the Engineer shall make final measurements to determine the quantities of the various

items of work accepted as the basis of final payment.

F. For lump sum items, the Contractor shall be paid in accordance with the progress schedule and schedule of values on the basis of the percentage of the actual work accepted during the period of construction. After the work for the respective lump sum items is completed, 100% of the lump sum price may be paid, less retained amounts, unless otherwise specified.

G. At the end of each workday, the Contractor shall meet with the Engineer and determine the quantities of the unit price and/or lump sum items completed during the workday.

H. Payment for Material Delivered: Refer to General Conditions for requirements for partial payment of materials delivered and stored on site.

I. The Owner reserves the right to delete any item of work from the Contract without penalty.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.1 ITEM DESCRIPTIONS

A. Item 1, Mobilization:

1. The lump sum price under this Item shall constitute full compensation to move equipment to the site and prepare to begin construction.

2. Mobilization costs are the costs of initiating the Contract, exclusive of the cost of materials.

3. Mobilization costs shall be payable when the Contractor is operational on site. Operational shall mean the substantial commencement of work on site, not prior to commencement.

4. The lump sum price bid for mobilization shall not exceed 5 percent of the total of all items excluding this item.

B. Item 2, Exploratory Excavation:

1. The unit price under this Item shall constitute full compensation for furnishing all labor, equipment and materials necessary to complete exploratory excavations as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but not be limited to: excavation; backfill; gravel; pavement; compaction; cleanup; and all incidental work necessary to complete exploratory excavations and backfill.

2. Measurement for payment shall be by the cubic yards of material excavated.

C. Item 3, Common Excavation:

1. The unit price under this Item shall constitute full compensation to complete common excavations as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but not be limited to: clearing and grubbing; excavation; removal and disposal of excess excavated material; grading; compaction; cleanup; and all incidental work necessary to complete common excavation.

2. Measurement for payment shall be by the cubic yards of material excavated.

3. Backfill of excavated areas shall be paid for under the respective Borrow item in the Bid.

4. Payment under this Item shall be made for the construction of the roadbed to subgrade, drainage swales and drainage aprons only. Excavation required for utility installation, removal and relocation or other work is not included as common excavation and shall be subsidiary to the work being performed or shall be paid for under the respective items in the Bid.

D. Item 4, Excavation of Unsuitable Material:

1. The unit price under this Item shall constitute full compensation to complete excavation of unsuitable material as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but not be limited to: excavation; removal and disposal of unsuitable material; gravel backfill; compaction; and all incidental work necessary to complete excavation of unsuitable material and backfill.

2. Measurement for payment shall be by the cubic yards of unsuitable material excavated.

3. The depth of unsuitable material in pipe trenches shall be measured from the trench bottom below the invert of the pipe as indicated on the Drawings to the depth of replacement. The width of unsuitable material shall be the allowable trench width as indicated on the Drawings.

E. Item 5, Drain Pipe and End Sections:

1. The unit prices under the appropriate subdivision of this Item shall constitute full compensation for furnishing and installing drain pipe and end sections as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: locating and protecting existing utilities and structures; repair and/or relocation of any utilities and structures broken and/or conflicting with construction for which separate payment is not provided under other items in the Bid; clearing and grubbing; stripping and stockpiling; protection of trees and plantings; saw cutting paved surfaces; excavation, shoring and support; dewatering; disposal of excess excavated material; removal, disposal and salvage of existing pipe; pipe; pipe fittings; end sections; jointing materials; bedding, laying and jointing of pipe, fittings and end sections; filter fabric; cleaning of pipe; core drilling; pipe connections to structures; backfill; grading; compaction; stormwater flow control; surface restoration (excluding loam and seed and

pavement paid for under the respective Item in the Bid); cleanup; and all work required to install drain pipe and end sections.

2. Measurement for payment for drain pipe for the appropriate subdivision of this Item shall be by the linear foot to the nearest 0.1 foot along the horizontal projection of the centerline of the pipe installed.

3. Measurement for payment for end sections for the appropriate subdivision of this Item shall be by the number of each respective unit installed.

4. Drain pipe and structures that are not designated for replacement or installation and which require relocation or replacement due to Contractor operations shall be relocated or replaced at no cost to the Owner.

F. Item 6, Catch Basins:

1. The unit prices under the appropriate subdivision of this Item shall constitute full compensation for furnishing and installing catch basins as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: locating and protecting existing utilities and structures; repair and/or relocation of any utilities and structures broken and/or conflicting with construction for which separate payment is not provided under other items in the Bid; clearing and grubbing; stripping and stockpiling; protection of trees and plantings; saw cutting paved surfaces; excavation, shoring and support; dewatering; disposal of excess excavated material; reinforced precast concrete catch basin sections; bedding; installing catch basins; frames and grates; setting frames and grates; cleaning of catch basins; backfill; grading; compaction; stormwater flow control; surface restoration (excluding loam and seed and pavement paid for under the respective item in the Bid); cleanup; and all work required to install storm drains.

2. Measurement for payment for the appropriate subdivision of this Item shall be by the number of each type of catch basin installed.

G. Item 7, Remove Catch Basins:

1. The unit price under this Item shall constitute full compensation for removing and disposing of existing catch basins as shown on the Drawings as directed by the Engineer and as herein specified. Item shall include, but is not limited to: locating and protecting existing utilities and structures; repair and/or relocation of any utilities and structures broken and/or conflicting with construction for which separate payment is not provided under other items in the Bid; clearing and grubbing; stripping and stockpiling; protection of trees and plantings; saw cutting paved surfaces; dewatering; excavation, shoring and support; disposal of excess excavated material; removal, disposal and salvage of catch basin sections, castings and brickwork; backfill; grading; compaction; stormwater flow control; surface restoration (excluding loam and seed and pavement paid for under the respective item in the Bid); cleanup; and all work necessary to complete the removal and disposal of existing catch basins.

2. Measurement for payment shall be the number of each catch basin removed and disposed.

H. Item 8, Borrow:

1. Item 8a, Gravel

   a. The unit price under this Item shall constitute full compensation for furnishing and installing gravel in locations not included in other items of the Bid, as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: gravel; placement; grading; compaction and all work required to complete installation of gravel.

   b. Measurement for payment shall be by the cubic yards of gravel compacted in place.

2. Item 8b, Crushed Gravel

   a. The unit price under this Item shall constitute full compensation for furnishing and installing crushed gravel for locations not included in other items in the Bid, as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: crushed gravel; placement; grading; compaction and all work required to complete installation of crushed gravel.

   b. Measurement for payment shall be by the cubic yards of crushed gravel compacted in place.

3. Item 8c, Crushed Stone:

   a. The unit price under this Item shall constitute full compensation for furnishing and installing crushed stone in miscellaneous locations not included in other items in the Bid, as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: crushed stone; placement; grading; compaction and all work required to complete installation of crushed stone.

   b. Measurement for payment shall be by the cubic yards of crushed stone compacted in place.

   c. Crushed stone for bedding for pipes and structures shall not be paid for under this Item, but shall be paid for under the respective items in the Bid.

4. Item 8d, Class C Stone

   a. The unit price under this Item shall constitute full compensation for furnishing and installing Class C stone in locations not included in other items in the Bid, as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: Class C stone; filter fabric; placement; grading; compaction and all work required to complete installation of Class C stone.

   b. Measurement for payment shall be by the cubic yards of Class C stone compacted in

place.

I. Item 9, Soil Reinforcement Fabric:

1. The unit price under this Item shall constitute full compensation for furnishing and installing soil reinforcement fabric as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: fabric; subgrade preparation; compaction; installation of fabric; and all work necessary for the installing soil reinforcement fabric.

2. Measurement for payment shall be by the square yard to the nearest 1 square yard of fabric installed.

J. Item 10, Hot Bituminous Pavement (HPB):

1. The unit prices under the appropriate subdivision of this Item shall constitute full compensation for furnishing and installing hot bituminous pavement as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: saw cutting and grinding paved surfaces; cleaning pavement surfaces; tack coat; adjusting valve boxes, frames and covers, frames and grates, and other castings and structures not provided in other items in the Bid; pavement materials; placement; compaction; cleanup; and all work necessary for the installation of hot bituminous pavement.

2. Measurement for payment for the appropriate subdivision of this Item shall be by the ton of pavement installed.

3. Pavement quantities will be measured by the actual tonnage of pavement compacted in place less the quantity placed beyond specified thickness or outside payment limits. Payment limits will be as shown on the Drawings and stated in the Specifications.

4. The Contractor shall submit to the Engineer weight slips for hot bituminous pavement delivered and placed. The Engineer will measure pavement placed within the specified payment limits and multiply the area by the specified thickness and by a coefficient of 0.056 tons per square yard per inch of thickness to obtain the tonnage of hot bituminous pavement. Payment will be made based on the number of tons obtained using the measured in place method or the weight slips, whichever is less.

5. Pavement to adjust for settlement shall be furnished and installed at no cost to the Owner.

K. Item 11, Bituminous Curb:

1. The unit price under this Item shall constitute full compensation for installing bituminous curb as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: cleaning pavement surface; tack coat; pavement; placement; compaction; painting (where required); cleanup; and all work necessary for installing bituminous curb.

2. Measurement for payment shall be by the linear foot to the nearest 0.1 of a foot of curb installed. Measurement will be from end to end along the lower edge of the exposed face of the curb.

L. Item 12, Adjusting Castings:

1. The unit price under the appropriate subdivision of this Item shall constitute full compensation for raising castings as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: saw cutting paved surfaces; excavation; brick; concrete; adjusting castings to proper grade elevation; subgrade preparation; backfill; pavement replacement; compaction; and all work necessary for adjusting castings.

2. Measurement for payment for the appropriate subdivision of this Item shall be by the number of each type of casting adjusted.

3. Payment for the first adjustment of castings shall be paid for under the Hot Bituminous Pavement item in the Bid. Payment for resetting castings, as approved by the Engineer, shall be paid for under the appropriate subdivision of this Item. Castings that require adjustment due to improper setting of castings or placement of wearing course pavement shall be completed at no cost to the Owner.

M. Item 13, Pavement Markings:

1. The unit price under the appropriate subdivision of this Item shall constitute full compensation for installing pavement markings as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: cleaning pavement surface; obliterating exiting pavement markings; paint materials; painting; cleanup; and all work necessary for installing pavement markings.

2. Measurement for payment for pavement markings shall be by the linear foot to the nearest 0.1 foot of pavement marking installed.

3. Double lines and combination solid/broken lines will be measured as separate lines according to the length of each individual marking installed.

N. Item 14, Calcium Chloride:

1. The unit price under this Item shall constitute full compensation for furnishing and applying calcium chloride as directed by the Engineer.

2. Measurement for payment shall be by the actual number of 100 pound bags or major fraction thereof, applied.

3. Dust control by use of water shall not be paid for under this Item.

O. Item 15, Sedimentation Barriers

1. Item 15a, Hay Bales

   a. The unit price under this Item shall constitute full compensation for furnishing, installing and maintaining hay bales for sedimentation and erosion control and protecting wetlands, waterways, catch basins, drains, etc., as shown on the Drawings, as directed by the Engineer, and as herein specified. Item shall include, but is not limited to: hay bales; stakes; installation, maintenance and replacement; removal and disposal; cleanup; and all work required to install and maintain hay bales.

   b. Measurement for payment shall be by the number of hay bales installed.

2. Item 15b, Silt Fence

   a. The unit price under this Item shall constitute full compensation for furnishing, installing and maintaining silt fence for sedimentation and erosion control and protecting wetlands, waterways, etc., as shown on the Drawings, as directed by the Engineer, and as herein specified. Item shall include, but is not limited to: silt fence; stakes; staples; installation, maintenance and replacement; removal and disposal; cleanup; and all work required to install and maintain silt fence.

   b. Measurement for payment shall be by the linear foot of silt fence installed.

P. Item 16, Loam and Seed

1. The unit price under this Item shall constitute full compensation for furnishing, placing and maintaining loam and seed as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: grading; preparation of subgrade and surface; placement and spreading of loam; application of fertilizer and limestone; seeding; maintenance; cleanup; and all work required for turf establishment.

2. Measurement for payment shall be by the square yards of material placed obtained by multiplying the length of area by the width of material placed to a maximum 10-foot average width.

3. No payment will be made until areas are properly fertilized, watered, lime applied, and growth occurs.

Q. Item 17, Maintenance of Traffic:

1. The lump sum price under this Item shall constitute full compensation for furnishing all labor, equipment and materials necessary to maintain safe and passable traffic conditions for pedestrians and vehicles as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but not be limited to: dust control; maintenance of excavated, backfilled and graded areas; traffic signs, barricades, lights, signals, delineators, pavement markings, concrete barriers and other traffic control warning devices; flaggers; and all work incidental to guiding vehicular and pedestrian traffic through the work zone in a safe and convenient manner.

2. Measurement for payment of this Item will be based on the percent complete as determined by the Engineer.

3. Payment for maintenance of traffic placed under other items in the Bid shall not be made under this Item.

4. Payment for uniformed police for traffic control shall not be paid for under this Item but shall be paid for under the respective item in the Bid.

R. Item 18, Granite Curb:

1. The unit price under the appropriate subdivision of this Item shall constitute full compensation for installing granite curb as shown on the Drawings, as directed by the Engineer and as herein specified. Item shall include, but is not limited to: saw cutting paved surfaces; excavation; cleaning pavement surface; removing, stockpiling, salvaging and resetting existing curb; crushed gravel; backfill; grading; compaction; surface restoration (excluding loam and seed and pavement paid for under the respective item in the Bid); cleanup; and all work necessary for installing granite curb.

2. Measurement for payment for the appropriate subdivision of this item shall be by the linear foot to the nearest 0.1 foot of curb installed. Measurement will be from end to end along the lower edge of the exposed face of the curbing.

S. Item 19, Uniformed Police for Traffic Control:

1. Payment for uniformed police shall be made for expenses billed to the Contractor by the Police Department in the normal course of providing supervision for traffic control during construction operations.

2. Uniformed police and police car fees, when required by the Chief of Police, shall be paid under the allowance stated in the Bid. The allowance stated in the Bid is approximate, and the actual amount to be paid may be more or less, but shall match the actual amount paid to the Police Department as authorized by the Engineer.

3. The Contractor shall record the actual amount paid for uniformed police and, at the end of each month, Contractor shall submit the total amount paid during the month to the Engineer for review. When verified, amounts owed will be included in monthly payment requests from the Contractor to the Owner.

4. If the uniformed police expenses are greater than the stated allowance, the Contractor shall be reimbursed the difference in the actual costs as billed. Any unexpended amount shall remain with the Owner as a credit on the total base bid.

5. No mark-up for uniformed police shall be allowed. Only documented police invoice amounts shall be reimbursed to the Contractor. No payment will be allowed for police details ordered but not utilized due to cancellation of work crews.

6. Uniformed police requirements will be determined by the local or state authority having

jurisdiction in the public right-of-way.

7. Uniformed police for traffic control will not be used as a substitute for flaggers or traffic control devices as provided in other Bid items and the Specifications.

END OF SECTION

SECTION 01310

SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the general methods and requirements of applicable work-related submittals including, but not limited to: shop drawings; product data; samples; mock ups; schedules; and certifications.

B. Refer to technical specifications for additional requirements.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 SUBMITTAL PROCEDURES

A. Submittals shall be made in accordance with approved schedule and work progress, and in such promptness and sequence as to cause no delay in the work or in the work of any other contractor.

B. Submittals shall bear the Contractor's certification that he has reviewed, checked and approved the submittal, that they are consistent with the requirements of the project and with the provisions of the Contract Documents, and that the submittal has been reviewed and verified for materials, products required, field dimensions and measurements, field construction criteria, and conformance with the Contract Documents. The Contractor shall also certify that the work represented by the submittal is recommended by the Contractor and that the Contractor's warranty shall apply.

C. The Contractor shall be responsible for the preparation, coordination and review of all submittals prior to delivery to Engineer. All submittals by subcontractors shall be sent directly to the Contractor for approval. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in the work.

D. Coordinate submittals into logical groupings by Specification section to facilitate review of interrelated items. Shop drawings, product data and sample submittals shall not be reviewed by the Engineer until a complete submittal grouping by Specification section is received.

E. Submittals shall include:

1. Project title and number.

2. Date of submission and date of any previous submissions.

3. Name of Contractor, supplier and manufacturer.

4. Identification of product by Specification section number, page and paragraph.

5. Field dimensions and construction criteria.

6. Relation to adjacent or critical features of the work or products.

7. Applicable standards.

8. Identification of deviations from Contract Documents.

9. Identification of revisions on resubmittals.

F. All submittals shall be accompanied by a standard transmittal form approved by the Engineer. Form shall include project title and number, owner name, date, name of contractor and subcontractor, transmittal number and appropriate Specification section number.

G. Engineer Review:

1. The Engineer will be the sole judge regarding the completeness of the submittal. Partial submittals will be rejected.

2. All submittals shall be complete and submitted in advance of construction requirements to provide no less than fifteen (15) days (excluding Saturdays, Sundays and legal holidays) for review from the time the submittal is received by the Engineer. Contractor shall make submittals in advance of the fifteen (15) days for review of major equipment and items that require review by more than one engineering discipline. Engineer will respond to submittals with reasonable promptness.

3. Review by the Engineer is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action indicated is subject to the requirements of the Contract Documents. Engineer assumes no responsibility for identifying deviations from the Contract Documents that are not clearly identified in submittals. Contractor is responsible for details and accuracy, for dimensions to be confirmed and correlated at the job site, for information that pertains to the fabrication processes or to techniques of construction, for coordination of the work of all trades, and for the satisfactory performance of all work.

4. The review and approval of submittals by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All

risks of error and omission are assumed solely by the Contractor and not by the Engineer or Owner.

5. The Engineer will review each submittal and the first resubmittal at no cost to the Contractor. The Contractor shall reimburse the Owner for all reasonable costs associated with the Engineer's, and his consultants, review of each subsequent submittal.

H. Substitutions and Or Equal Items:

1. All requests for consideration of a product other than the brand(s) or model(s) named in the Specifications (substitutions) shall be submitted to the Engineer in writing. Substitutions will not be considered when they are indicated or implied on shop drawings or product data submittals, without separate written request, or when acceptance will require revisions to the Contract Documents.

2. A request constitutes a representation that the Contractor has investigated the proposed product and has determined that it meets or exceeds the quality level of the specified product.

3. Contractor shall furnish written evidence that such product conforms in all respects to the specified requirements, and that it has been used successfully elsewhere under similar conditions. Where the specified requirements involve conformance to recognized codes or standards, the Contractor shall furnish evidence of such conformance in the form of test or inspection reports, prepared by a recognized agency, complete with authorized signature verifying compliance with the Specifications.

4. Manufacturers' standard data and catalog cut sheets will not be considered sufficient in themselves, and the Engineer will not be responsible for seeking further data from the manufacturer, or for otherwise researching the product. Failure to provide complete data will be cause for rejection of the product.

5. The Contractor shall provide the same warranty for the substitution as for the specified product. Engineer reserves the right to require an extended warranty on substitutions as a condition of acceptance.

6. The Contractor shall be responsible for all additional costs necessary to accommodate the proposed substitution. This shall include, but not be limited to: coordination for installation; modifications to the work; product licensing fees; and review or redesign services required by the Engineer, Owner or other approving authorities.

7. The Contractor shall waive all claims for a time extension which may subsequently become apparent.

8. Items which result in a cost reduction shall be presented and a change order reflecting the cost savings will be prepared and the contract price modified.

I. The Contractor shall, in writing, call the Engineer's attention to any deviations from the Contract Documents at the time of the first submission. Deviations or omissions in submittal

shall not relive the Contractor from his responsibility for meeting the specified requirements unless the Engineer has given written approval for the deviations or omissions identified.

J. No portion of the work requiring a shop drawing, product data or sample submittal shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings, product data or samples shall be at the Contractor's risk. The Owner will not be responsible for any expense or delay due to corrections or remedies required to accomplish conformity.

K. Distribution: Duplicate and distribute only reproductions of shop drawings, copies of product data and samples, which bear Engineer's stamp of "No Exception Taken" or "Make Corrections As Noted" to job site file, record documents file, subcontractors, suppliers, other affected contractors and other entities requiring the information.

1.4 SHOP DRAWINGS

A. Shop drawings shall include, but are not necessarily limited to: custom-prepared items such as fabrication and erection/installation drawings, schedule information, setting diagrams, actual shop work, manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, and individual system or equipment inspection and test reports, performance curves and certifications, as applicable to the work.

B. Submit six (6) copies of shop drawing. Three (3) copies will be retained by the Engineer; additional copies will be returned to the Contractor.

C. Submit all shop and working drawings on a 24-in. by 36-in. standard sheet, except those which are made by changing existing standard shop or working drawings.

D. Present shop drawings in a clear and thorough manner. Title each drawing with project name, number and date. Identify each element of the drawings by reference to sheet number, detail and schedule of the Contract Documents.

E. The Contractor shall check all subcontractor's shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.

F. All details on shop drawings submitted for approval shall show clearly the relation of the various parts of the main members and lines of the structure and equipment, and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the drawings before being submitted for approval.

1.5 PRODUCT DATA

A. Product data shall include, but are not necessarily limited to: standard prepared data for manufactured products such as the manufacturer's product specification and printed installation instructions, availability of colors and patterns, manufacturer's printed statements

of compliances including certificates of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications and recommended spare-parts listing, and printed product warranties, as applicable to the work.

B. Provide Material Safety and Data Sheets as required by OSHA for all chemicals to be supplied under this Contract.

C. Submit six (6) copies of product data. Three (3) copies will be retained by the Engineer; additional copies will be returned to the Contractor.

D. Submit only those pages that are pertinent. Mark each copy of standard printed data to identify pertinent products, models, options, and other data referenced to the Specification section number, page and paragraph. Supplement manufacturer's standard data with information unique to this project. Delete information that does not apply.

1.6 SAMPLES

A. Samples shall include, but are not necessarily limited to: physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.

B. Submit the number of samples required by individual Specification sections or as requested by the Engineer. Samples will not be returned.

C. Submit samples to illustrate functional and aesthetic characteristics of products, including parts and attachments.

D. Label each sample to identify project information and Specification section number or Drawing number.

1.7 CONSTRUCTION PROGRESS SCHEDULES

A. Submit six (6) copies of progress schedule: Three (3) copies will be retained by Engineer; additional copies will be returned to the Contractor.

B. Submit initial schedule at the preconstruction conference. This schedule shall include the proposed methods of construction, sequence of work and the time the Contractor proposes to complete the various items of work, within the time specified in the Contract. After review, resubmit revised schedule within seven (7) calendar days.

C. Submit revised progress schedules for review and approval, at a minimum, with each Application for Payment or whenever, in the Engineer's opinion, a timelier update is warranted.

D. If the Contractor's operations are materially affected by changes in the scope or quantity of the work, or if he has failed to comply with the submitted and reviewed schedule, the Contractor shall submit a revised schedule, if requested by the Engineer, within seven (7) days after the date of the Engineer's request. This revised schedule shall show how the Contractor proposes to prosecute the balance of the work, so as to complete the work within the time specified in the Contract.

E. Prepare schedules as a horizontal bar chart or network with separate bar or node for each major portion of the work or operation, identifying first work day of each week and identifying each portion of the work that is critical to timely project completion. All project scheduling shall include and be prepared using critical path method analysis.

F. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

G. Show accumulated percentage of completion of each item, and total percentage of work completed, as of the last day of each month.

H. Provide a narrative report, as required, to identify problem areas, anticipated delays and their impact on the schedule, corrective action recommended and its effect, and the effect of changes on the schedules of other Contractors.

1.8 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

A. Submit six (6) copies of certificate: Three (3) copies will be retained by the Engineer; additional copies will be returned to the Contractor.

B. Where manufactured materials are incorporated in the project, a manufacturer's certificate showing compliance with the Specifications shall accompany each item listed herein. No material shall be incorporated in the work until the certificate of compliance has been reviewed by the Engineer.

C. The certificate shall be properly executed by the manufacturer or producer. The essential components of the certificate of compliance shall include:

1. Name of company and address of its manufacturing or producing facility.

2. Brand name of the material or product.

3. Sufficient detail to describe the quantity, content of the shipment and its project destination including a date of shipment and adequate identification of the vehicle in which the shipment was made. When material was received in crated or packaged form via common carrier the serial number of the bill of lading accompanying such shipment shall be the identification criteria rather than vehicle identification.

4. A statement that material contained in the shipment meets or exceeds requirements of the Specifications.

5. The certificate shall be signed by an authorized representative of the manufacturer. The signature shall be notarized.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01320

COORDINATION AND MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies general requirements for project coordination and meetings.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 CONTRACTOR COORDINATION

A. Contractor shall provide sufficient administrative and on-site supervisory personnel to properly execute the work. Supervisory personnel shall be on-site at all times during construction operations, including those times when subcontractors are performing the work. On-site supervisory personnel shall have a minimum of 5 years experience in supervising the type of work performed.

B. Contractor shall coordinate scheduling, submittals and the work to assure the efficient and orderly installation of the independent construction elements.

1.4 PRECONSTRUCTION CONFERENCE

A. Engineer will schedule a preconstruction conference after Notice of Award and prior to the commencement of the work.

B. Attendees: Owner, Engineer, Contractor, State and Federal Regulatory and Funding Agency representatives.

1.5 PROGRESS MEETINGS

A. Engineer will schedule and administer meetings throughout the progress of the work at intervals not to exceed one month.

B. Attendees: Owner, Engineer, Contractor, Subcontractors, Suppliers, State and Federal Regulatory and Funding Agency representatives.

1.6 PREINSTALLATION CONFERENCE

Not Used

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01330

FIELD ENGINEERING AND SURVEY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, equipment, and materials, and performing all operations in connection with survey and engineering required in the execution of the work.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.3 SUBMITTALS

A. Submit name, address and telephone number and license number of Contractor's surveyor or engineer prior to the commencement of the work.

B. Submit documentation to verify accuracy of field engineering and survey work as requested by the Engineer.

C. Submit certificate signed by the Contractor's surveyor or engineer, that elevations and locations of the work are in conformance with Contract Documents.

D. Record Drawings:

1. Contractor shall maintain two sets of drawings indicating as-built locations and dimensions of work. Each major system of the work shall be recorded by a separate color on the record drawings. The Contractor shall record information concurrently with construction progress.

2. Submit progress prints of record drawings each month with payment applications.

3. Final record drawings shall be submitted to the Engineer at substantial completion or contract closeout, as determined by the Engineer.

4. Coordinate with Engineer regarding standards for submission of electronic files of record drawings. Contractor shall coordinate with Engineer in advance of preparation of record drawings.

1.4 FIELD MEASUREMENTS

A. The Engineer will provide benchmark information on the Drawings or separately in writing. The Contractor shall do all layout of the work from said benchmarks.

B. Contractor shall locate and protect survey control and reference points and shall field verify all control and reference points. If control and reference points have been disturbed by others prior to construction or are found in error, the Engineer shall be promptly notified.

C. Contractor shall carefully preserve benchmarks, reference points and stakes, and in case of destruction by his own operations shall be responsible for re-establishing benchmarks, reference points and stakes at no cost to the Owner. Any mistakes or delays caused by the disturbance or loss of benchmarks, reference points and stakes shall be the responsibility of the Contractor.

D. Contractor shall be responsible to offset control points where construction activities may destroy or disturb original points. Control points lost as a result of Contractor's activities shall be reset at Contractors expense.

E. All work shall be done to lines, grades and elevations as shown on the Drawings and as directed by the Engineer.

F. Contractor shall perform all survey, layout and measurement necessary to complete construction. Contractor shall be responsible for reestablishing existing profiles, alignments (vertical and horizontal), lines, grades and elevations and setting new profiles, alignments (vertical and horizontal), lines, grades and elevations. Survey, layout and measurements shall be verified with Engineer prior to construction.

   1. Contractor shall stakeout in the field all proposed construction as shown on the Drawings and as directed by the Engineer. Stakes shall remain in place until the Engineer reviews the work completed.

F. Contractor shall keep on site, at all times during construction operations, a level and transit and allow the Engineer unrestricted use of same at the work site. Any check by Engineer shall not be considered as approval of the Contractor's work.

G. Contractor shall designate a field superintendent who will be responsible for survey, layout and measurements. Superintendent shall have a minimum of 5 years experience in construction survey and layout for the work being performed.

H. Contractor shall retain a Registered Land Surveyor at his own expense. Surveyor shall be licensed in the state where the work is to be performed. Surveyor shall have a minimum of 5 years experience in the type of work to be performed. Surveyor shall employ experienced personnel and provide adequate supervision to satisfaction of the Engineer at all times when operations are in progress. At a minimum, Contractor shall retain a Registered Land Surveyor to complete the following operations:

   1. Establish permanent benchmarks during the progress of the work.

2. Replace property boundary markers destroyed, disturbed or removed as a result of Contractor operations.

3. Complete as-built surveys to meet requirements for submittal of record drawings. This may include but not be limited to:

   a. Location, size and type of structures and utilities.

   b. Utility rim and invert elevations.

   c. Roadway centerline and edgeline.

   d. Location of curb and sidewalk.

I. Contractor shall keep Engineer informed, in writing, two weeks in advance, of times and places at which work is to be performed, so that horizontal and vertical control points may be established and any checking deemed necessary by the Engineer may be performed.

J. Remove and reconstruct work that is improperly located as determined by the Engineer at no additional cost to the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01425

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general description and application of reference standards.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, federal standard, or applicable code, comply with the more stringent requirements.

B. Conform to reference standard by date of issue current with date for bid opening.

C. Each entity engaged in the construction of the work is required to be familiar with the industry standard applicable to the construction activity. Obtain copies of standards when required by Contract Documents and as necessary to assure compliance and maintain copy of standards at job site until Substantial Completion. Copies of standards shall be obtained directly from the publication source.

D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document. Reference standards shall not act to increase the Engineer's, Engineer's consultants or Owner's responsibilities or authority over that specified under Division 0.

1.4 SCHEDULE OF REFERENCES

A. This list is provided for informational purposes only, and is not intended to be fully comprehensive. It does not relieve the Contractor from complying with all applicable standards.

AASHTO	American Association of State Highway and Transportation
ACI	American Concrete Institute
AGA	American Gas Association
AGC	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction

AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASPA	American Sod Producers Association
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BIA	Brick Institute of America
BOCA	Building Officials and Code Administrators International, Inc.
CDA	Copper Development Association
CFR	Code of Federal Regulations
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
EJCDC	Engineers' Joint Contract Documents Committee
EPA	Environmental Protection Agency
FM	Factory Mutual System
FS	Federal Specification
IMIAC	International Masonry Industry All-Weather Council
ISA	Instrument society of America
ISO	Insurance Services Office
NHDOT	New Hampshire Department of Transportation
MSS	Manufacturers Standardization Society of the Valve and Fitting
NAPA	National Asphalt Pavement Association
NCMA	National Concrete Masonry Association
NEBB	National Environmental Balancing Bureau
NFPA	National Fire Protection Association
NSWMA	National Solid Wastes Management Association
OSHA	Occupational Safety Hazard Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PS	Product Standard
UL	Underwriters Laboratories, Inc.
WSC	Water Systems Council

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the furnishing of all plant, labor, equipment and materials and performing all operations in connection with providing temporary facilities and controls including, but not limited to: general construction requirements; temporary utilities and service; environmental controls; project signage; access and parking; security; temporary enclosures; traffic control; permits; and field offices.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 TRANSPORTATION, HANDLING AND STORAGE

A. Contractor shall transport, handle and store products and materials in accordance with manufacturer's instructions.

B. Contractor shall promptly inspect shipments to assure that products and materials comply with the requirements of the Contract Documents, quantities are correct, containers and packages are intact, labels are legible and products and materials are properly protected and undamaged.

C. Contractor shall provide equipment and personnel to properly transport, handle and store products and materials to prevent damage, soiling or disfigurement to the products and materials or surrounding surfaces and areas.

D. Contractor shall provide off-site storage and protection when site does not permit on-site storage or protection.

E. Contractor shall arrange storage of products and materials to provide access for inspection. Contractor shall periodically inspect products and materials to assure they are undamaged and are maintained under specified conditions.

F. Any product and material damaged because of improper transportation, handling or storage shall be unacceptable for installation and shall be removed from the site and replaced at the Contractor's expense.

G. Contractor shall remove surplus products and materials at the completion of the work.

1.4 GENERAL INSTALLATION PROVISIONS

A. Contractor shall inspect the conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner. Corrections shall be completed at no additional cost to the Owner.

B. Contractor shall comply with manufacturer's written installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in the Contract Documents.

C. Contractor shall inspect materials or equipment prior to installation. Reject damaged and defective items, all at no additional cost to the Owner.

D. Contractor shall provide attachment and connection devices and methods for securing work. Secure work true to line and level. Allow for expansion and movement.

E. Contractor shall recheck measurements and dimensions before starting installation or erection.

F. Contractor shall install each component during weather conditions and status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material to prevent deterioration.

G. Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

1.5 CUTTING AND PATCHING

A. Contractor shall match existing products and materials for patching and extending work.

B. Contractor shall remove, cut and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to original and specified condition.

C. Where new work abuts or aligns with existing, Contractor shall perform a smooth and even transition and match existing adjacent work in texture and appearance.

D. Contractor shall patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

E. Contractor shall finish surfaces as stated in Specifications.

1.6 COORDINATION WITH EXISTING FACILITIES

A. Where the dimensions and locations of existing structures are important in the installation or connection of any part of the work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

B. Contractor shall conduct operations so as to interfere as little as possible with existing works.

1.7 CLEANING AND PROTECTION OF INSTALLED WORK

A. Contractor shall control activity within the work area to prevent injury or damage to the work. All installed work shall be carefully protected from any injury or damage. All portions of the work injured or damaged shall be reconstructed by the Contractor at no additional cost to the Owner.

B. Contractor shall clean and protect construction in progress and adjoining materials in place. Install protective covering to ensure protection from damage or deterioration.

C. Contractor shall clean and maintain completed construction as frequently as necessary for the duration of the construction period.

D. Contractor shall supervise construction activities to ensure that no part of the work, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.8 CARE AND PROTECTION OF PROPERTY

A. Contractor shall not enter or occupy private property outside of easements, except by permission of the landowner. Contractor shall notify the Owner of receipt of said permission prior to the commencement of work.

B. Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor at Contractor's expense to a condition similar or equal to that existing before the damage was done.

1.9 EXPLORATORY EXCAVATIONS

A. Exploratory excavations for the purpose of locating underground utilities or structures in advance of the construction shall be excavated and backfilled by the Contractor at the direction of the Engineer and/or as shown on the Drawings. Exploratory excavations shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

1.10 TEMPORARY UTILITIES

A. Temporary Sanitary Facilities: Contractor shall provide and maintain sanitary facilities for the use of his employees and the Engineer. Contractor shall comply with the requirements and regulations of the local and state Departments of Health.

1.11 MAINTAINING WATER, SEWER AND DRAINAGE SERVICE

A. Contractor shall provide, maintain and operate all temporary facilities such as dams, conduits and pipelines, and provide all labor and equipment necessary to redirect flows from drains and water courses to a suitable point of discharge so as not to flow upon the work or create a nuisance. Temporary diversion of flows shall be performed at the Contractor's expense.

B. Procedures for maintaining existing flows and service shall be coordinated with the Engineer and appropriate utility authority well in advance of the interruption of any flows or service.

1.12 DUST CONTROL

A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of water as necessary, so as to minimize the creation and dispersion of dust during working and non-working hours.

B. Frequency of application shall be determined by site conditions and weather and as directed by the Engineer. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and apply the material as directed.

C. Calcium chloride shall be commercial grade, furnished in 100 lb, 5-ply bags, stored under weatherproof cover and stacked alternately for ventilation. Application for dust control shall be at the rate of approximately 1/2 pound per square yard, unless otherwise directed by the Engineer.

D. The use of petroleum products for dust control is prohibited.

1.13 SURFACE WATER CONTROL

A. Provide methods to control surface water to prevent damage to the site, utilities, structures or adjoining properties. Control fill, grading and ditching to direct surface water away from excavations, pits, tunnels and other constructed areas; and to direct surface water to proper runoff.

B. Dispose of surface water in a manner to prevent flooding, erosion, siltation or other damage to any portion of the site, utilities, structures or adjoining properties.

C. Contractor shall comply with all applicable local, state and federal statutes, regulations and ordinances.

1.14 EROSION AND SEDIMENTATION CONTROL

A. Plan and execute construction to prevent erosion and sedimentation from cuts and fills, borrow areas, stockpiles and waste disposal areas. Minimize areas of bare soil exposed at any one time.

B. Provide temporary control measures such as berms, dikes, diversion ditches and drains, sedimentation barriers and basins, silt fences and hay bales, and fiber matting as required and

as directed by the Engineer to prevent erosion and sedimentation. Contractor shall periodically inspect control measures and promptly correct any defects as required or as directed by the Engineer.

C. Protect existing drainage structures from silt and debris. Contractor shall promptly remove accumulated silt and debris from drainage structures impacted by construction activities.

D. Contractor shall keep streams, wetlands, and other water crossings clear of mud, silt, debris, and other objectionable materials resulting from Contractor's construction operations.

E. Contractor shall maintain the flow capacity of river and stream channels to prevent unnatural flooding due to Contractor's operations.

F. Contractor shall preserve existing natural drainage patterns and vegetative cover.

G. Contractor shall comply with all applicable local, state and federal statutes, regulations and ordinances.

1.15 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Provide equipment, personnel, and perform emergency measures, as may be required, to contain any spillage and to remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-site, in such a manner and at such location permitted by law, and according to Federal, state, and local regulations, and replace with suitable compacted fill and topsoil.

C. Maintain work areas free of extraneous debris. Maintain storage and lay down yards in neat and orderly fashion, free of debris and waste materials.

D. Initiate and maintain a specific program to prevent accumulation of debris at construction site storage and parking areas, or along access roads and haul routes.

1. Provide containers for deposit of debris.
2. Prohibit overloading of trucks to prevent spillage on access and haul routes. Provide periodic inspection of traffic areas to enforce requirements.

E. Maintain Material Safety Data sheets for substances used in the work, as required. Storage of construction materials shall be secured and contained. Display right-to-know and NFPA chemical hazard labels where appropriate.

F. Schedule periodic collection and disposal of debris. Provide additional collections and disposals of debris whenever the periodic schedule is inadequate to prevent accumulation.

G. Protection of Natural Resource Areas:

1. Burning of rubbish and waste material on the site shall not be permitted.
2. Construction equipment shall be equipped with properly operating emission control devices and mufflers. Equipment not utilizing said devices shall be removed immediately from the site.
3. The following activities shall not be permitted within 50 feet of designated natural resource areas:
   a. Stockpiling and storage of equipment or materials.
   b. Refueling of equipment.
   c. Maintenance and repair of vehicles and equipment.
4. The Owner reserves the right to order the Contractor to immediately cease all activities on-site should the Owner deem that the Contractor's activities are unnecessarily detrimental to natural resource areas. The Contractor shall not resume activities until the situation is resolved to the satisfaction of the Owner. Any delay or additional work required shall be at the Contractor's expense.

H. Hazardous Material and Waste Control:

1. Disposal of volatile fluid wastes (such as mineral spirits, waste oil, gasoline, or paint thinner) in storm or sanitary sewer systems or into streams or waterways shall not be permitted. In the event that any such waste is spilled onto the ground, the Contractor shall immediately notify the Engineer, promptly clean up the spillage and all contaminated soil, and dispose of the cleanings as hazardous waste material. If a spill occurs, the clean-up activities shall take precedence over normal construction activities in order that damage to the environment is minimized.
2. Fuels, lubricants or other hazardous materials shall not be stored in proximity to any waterways or wetlands areas
3. Fuels, lubricants and other hazardous materials shall be stockpiled within an area of positive containment. The area shall have no open communication with surface water bodies or other resource areas, and shall have a base of relatively impermeable material and shall have an adequate supply of materials required for spill clean up.
4. All hazardous materials containers shall be properly marked and their contents identified. All fuel oil, lubricant, gasoline, and hydraulic fluid containers shall be fixed in place on the transport vehicle when the vehicle is in motion.
5. The construction project shall be in compliance with all local, state and federal laws with respect to hazardous materials.
6. All clean up and disposal operations shall comply with all applicable local, state and federal statutes, regulations and ordinances and anti-pollution laws.

I. Noise Abatement

1. Construction equipment including generators and compressors shall be enclosed or equipped with mufflers, silencers or other equipment to minimize noise.
2. The Contractor shall limit construction noise in accordance with local, state, EPA and

OSHA latest standard criteria.

J. Soil and Groundwater Contamination

1. Contractor shall immediately notify the Engineer and Owner if contaminated soil or groundwater is encountered.

1.16 RODENT CONTROL

A. Provide rodent control as necessary to prevent infestation of construction or storage areas. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

B. The use of any rodenticide shall be in full accordance with the manufacturer's printed instructions and recommendations, and shall be used only with the approval of local Board of Health, or other Owner's representative.

1.17 TRAFFIC CONTROL

A. When police details are not required, Contractor shall provide flagmen to regulate traffic when construction operations or traffic encroach upon public traffic lanes.

B. When police details are required, prior to construction and delivery of equipment and materials, the Contractor shall arrange for necessary police details with the appropriate police agency having authority. In general, local police shall be utilized on municipally-owned roads; state police shall be utilized on state-owned and -operated roads. The police agency shall determine the extent of police detail required during the project. Contractor shall provide 24-hour advance notice to the Police Department through the office of the Police Chief to request any changes to pre-approved traffic control details.

C. Road closures and/or traffic details shall not be allowed without prior permission of the Owner, and Police and Fire Departments.

D. Contractor shall furnish and maintain traffic cones, barriers, drums, flares and lights as may be required for traffic control. Cones, barriers, drums, lights and flares shall be in compliance with NHDOT standards, shall be relocated as the work progresses and shall be removed when they are no longer required.

E. Contractor shall furnish and maintain traffic control signage throughout the project and at all construction areas. Signs shall be standard signs in compliance with NHDOT standards. Signs shall be relocated as the work progresses and removed when the signage is no longer required. In general the following signs and devices shall be placed and maintained at each side of all work areas:

1. Construction Ahead - 1000 feet
2. Construction Ahead - 500 feet
3. Reduce Speed Ahead
4. Keep Left/Keep Right

5. End Construction
6. Left/Right Lane Closed Ahead
7. Safety Barrels with flashers

F. It is the intent of this Contract that traffic is maintained at all times in the areas of construction. Unless otherwise specified by the Owner, the Contractor shall maintain single lane two-way traffic at all times for municipally-owned roads and two lane two-way traffic at all times for state-owned and -operated roads. Local traffic shall be maintained at all times.

G. Contractor shall provide the necessary labor, equipment and materials to maintain roads affected by the Contractor's operations.

1. Contractor may be required to halt operations and/or transport material to areas beyond immediate work locations in order to minimize traffic disruptions.

2. Contractor shall perform all snow removal operations necessary to keep all roads, sidewalks and right-of-ways clear for vehicle and pedestrian traffic.

3. Maintenance shall be performed to the satisfaction of the Owner.

H. Contractor shall consult with authority having jurisdiction in establishing use of public roads to be used for haul routes and site access. Contractor shall confine operations to designated haul routes and provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

I. Contractor shall maintain access to private drives at all times.

J. Contractor shall provide a traffic coordinator. The traffic coordinator shall be responsible for coordinating the work with local businesses to minimize the disturbance of construction operations on businesses within the project area.

K. If required, Contractor shall submit traffic control plan to the Engineer, state and local Police Departments and NHDOT seven (7) calendar days prior to plan implementation. Contractor shall not proceed with plan without prior authorization from appropriate police agency having jurisdiction.

1.18 ACCESS ROADS AND PARKING AREAS

A. Contractor shall provide and maintain vehicular access to site and within site to provide uninterrupted access to temporary construction facilities, storage areas, and work areas by authorized personnel and equipment, emergency vehicles, Owner and Engineer.

B. Contractor shall provide and maintain temporary parking facilities for use by construction personnel, Owner and Engineer.

C. Parking of construction equipment and vehicles shall not be permitted on drives, walkways, adjacent streets and locations outside the work area unless otherwise approved by the Owner.

D. Contractor shall maintain access roads and parking areas in a sound, clean and dry condition. Repair or replace any portion of facilities damaged during the progress of the work.

E. Remove temporary access and parking facilities when no longer needed to perform the work and restore disturbed areas to original or specified conditions.

1.19 PERMITS

A. Contractor shall comply with all requirements of all applicable local, state and federal regulations and all permits issued for the Contract.

1. Owner has submitted a Minimum Impact Expedited Application to the New Hampshire Department of Environmental Services Wetlands Bureau (NHDES) to perform dredge and fill operations within jurisdictional wetland areas.

2. Owner has coordinated with the New Hampshire Department of Transportation (NHDOT) regarding work proposed within the NHDOT right-of-way. Contractor shall secure necessary permits as may be required by NHDOT.

B. Contractor shall prepare and submit a Stormwater Pollution Prevention Plan and Notice of Intent for coverage and authorization to discharge to surface waters under the Environmental Protection Agency's General National Pollution Discharge Elimination System Permit for construction, implementation and maintenance of erosion and sediment control measures and all dewatering activities.

C. Owner has submitted a Minimum Impact Expedited Application to the New Hampshire Department of Environmental Services Wetlands Bureau (NHDES) to perform dredge and fill operations within jurisdictional wetland areas. Contractor shall adhere to all the terms and conditions of all permits issued by NHDES.

1.20 PROJECT SIGNS

Not Used

1.21 ENGINEER'S FIELD OFFICE

Not Used

1.22 SECURITY

A. Contractor shall protect work, stored products and materials and construction equipment from theft and vandalism. Contractor shall initiate security measures promptly after mobilization and maintain security measures for the duration of the project.

B. Contractor shall provide control of all persons and vehicles entering and leaving the site.

C. Contractor shall be responsible for any loss of equipment, products or materials by theft or vandalism. Contractor shall be responsible for damage to any and all of Owner's property because of construction activities and or failure to provide adequate security. The Owner will seek reimbursement for replacement of property through direct invoicing of Contractor for costs incurred. Costs shall be recovered by reduction of pay application amounts and Owner shall be entitled to an appropriate decrease in Contract Price.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 GENERAL

A. Contractor shall furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract. If at any time such plant appears to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the efficiency, change the character or increase the plant equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of obligations to secure the quality of the work and rate of progress required.

B. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and related areas, as indicated on the Drawings or required in the Specifications.

C. During construction, the Owner may notify Contractor of nuisance conditions and will expect Contractor to make every effort to correct the nuisance immediately. If conditions remain uncorrected for a period in excess of 24 hours, the Owner reserves the right to take corrective action. The Owner reserves the right to perform any corrective work it deems appropriate if any of the temporary facilities and controls or procedures are inadequate. The Owner will seek reimbursement for taking corrective action through direct invoicing of Contractor for costs incurred. Costs shall be recovered by reduction of pay application amounts and Owner shall be entitled to an appropriate decrease in Contract Price.

END OF SECTION

SECTION 01715

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general requirements and procedures for contract closeout.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 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 ready for Engineer's inspection.

B. Provide submittals to Engineer such as certificates of inspections, certificate of occupancy, warranties and any other certificates that are required by governing or other authorities.

C. Submit an affidavit that all payrolls, bills for materials and equipment, subcontractor bills, and other indebtedness connected with the work for which the Owner might in any way be responsible, have been paid or otherwise satisfied.

D. Submit data establishing payment or satisfaction of all obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Owner. If any subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify against the Owner any lien resulting therefrom. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such lien, including all cost and reasonable attorney’s fee.

E. Submit written notice showing the disposition of all insurance filings and claims.

F. Submit final application for payment identifying total adjusted contract sum, previous payment, and sum remaining due.

G. Submit record drawings, documents and samples.

1.4 FINAL CLEANING

A. Complete cleaning operations before requesting inspection for Certification of Substantial Completion.

B. Clean site, sweep paved areas, rake and clean landscape surfaces. Leave all surface areas in a neat and satisfactory condition.

C. Remove all silt and debris from watercourses, ditches, gutters, drains, culverts, pipes, structures, and catch basins. Dispose of silt and debris in accordance with all local, state and federal regulations. Drainage systems shall be left in a neat and satisfactory condition.

D. Remove all rubbish, waste, surplus materials, and unneeded construction equipment and temporary buildings and facilities.

E. Contractor shall restore or replace any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. Suitable materials, equipment, and methods shall be used for such restoration. Restoration of existing property or structures shall be left in a satisfactory condition as determined by the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

DIVISION 2

SECTION 02210

SITE AND SUBSURFACE INVESTIGATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes Contractor requirements and responsibilities for site and subsurface investigations.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.3 SITE INVESTIGATIONS

A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work and the general and local conditions, including but not limited to: transportation; disposal, handling, and storage of materials; availability of labor; availability of water, electric power, and roads; uncertainties of weather, groundwater table and other similar physical conditions at the site; the conformation of subsurface materials to be encountered; the character of equipment and facilities needed prior to and during the prosecution of the work; and all other matters which can in any way affect the work or the cost thereof under this Contract.

B. Any failure by the Contractor to acquaint himself with all available information concerning the aforementioned conditions will not relieve the Contractor from responsibility for estimating properly the difficulty or cost of successfully performing the work.

1.4 SUBSURFACE DATA

A. Boring and probe locations are shown on the Drawings and boring logs, probe logs and additional geotechnical information are included in the Appendices. Such data is offered in good faith solely for the purpose of placing the Contractor in receipt of all information available. The Contractor must interpret such data according to the Contractor's own judgment. The Contractor acknowledges that he is not relying upon the subsurface data as accurately describing the subsurface conditions which may be found to exist.

B. The Contractor acknowledges that he assumes all risk contingent upon the nature of the subsurface conditions, to be actually encountered by Contractor in performing the work covered by the Contract, even though such actual conditions may result in the Contractor performing more or less work than he originally anticipated.

1. Groundwater levels shown on the boring and probe logs are those reported to exist at the specific location and at the specific time that the subsurface investigations were made, and do not necessarily represent permanent groundwater levels. Water levels at other locations may differ from the conditions indicated.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 02230

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, equipment, and materials, and performing all operations in connection with clearing and grubbing, protection of existing trees and vegetation, disposal of waste materials and debris, and stripping and stockpiling of topsoil, in accordance with the Drawings and Specifications and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

A. No clearing operations shall begin until the limits of clearing have been determined in the field by the Engineer and Contractor. Contractor shall flag limits of clearing for review by the Engineer prior to the start of any construction. Verify that existing plant life designated to remain is tagged or identified in the field.

B. Remove trees, shrubs, brush, vines, grass and other vegetation, improvements, or obstructions that are interfering with the installation of new construction, except as specified or indicated otherwise to be left standing. All stumps shall be removed in their entirety, unless otherwise specified. Roots and matted roots shall be grubbed out to at least 30 inches below the existing grades shown on the Drawings.

3.2 PROTECTION

A. Provide protection necessary to prevent damage to existing improvements indicated to remain in place or outside of the limits of work. Existing trees and shrubbery to remain shall be protected from injury. Except as otherwise directed, cutting and trimming of existing trees shall not be permitted. Existing trees to remain, and which are liable to be damaged by construction operations, shall be boxed and protected as directed. Protection shall be maintained until completion of the work of the Contractor, unless otherwise directed by the

Engineer.

1. Protect improvements on adjoining properties and on Owner's property.

2. Restore improvements damage by Contractor's clearing activities to their original condition at no additional cost to the Owner.

B. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing.

C. Conduct site clearing operations to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.

3.3 DISPOSAL OF WASTE MATERIALS

A. Remove waste, unsuitable and excess materials from Owner's property and dispose of same off site in accordance with all local, state and federal regulations. Contractor shall provide written documentation of proper disposal of all material cleared and grubbed from the site, and compliance with all applicable regulations.

B. All timber designated in the field not to be disposed of by the Contractor shall be stored at a nearby location for ultimate disposal by the Owner. Timber to be stored shall be de-branched, cut into six foot lengths and stacked as directed by the Engineer.

C. Burning and/or burial of cleared and grubbed material on site shall not be permitted.

3.4 STRIPPING AND STOCKPILING TOPSOIL

A. Topsoil shall be carefully removed, to the depths directed, over all areas to be excavated and over all other areas to be disturbed as a result of the Contractor's operations in the performance of the work.

B. The topsoil shall be transported and deposited in storage piles convenient to the areas which are subsequently to receive the application of topsoil, separate from other excavated materials, and in approved locations.

C. The topsoil shall be stockpiled free of roots, stones and other undesirable material. The Contractor shall take all necessary precautions to prevent other excavated material or other objectionable material from becoming intermixed with the topsoil, either before or after the stripping and stockpiling operations. Stripping operations shall be completed prior to excavation, trenching, or grading operations.

D. Topsoil which has been stripped and stockpiled, but is not needed after the completion of all final placement of topsoil and seed, shall be stockpiled on site in a location to be approved by the Engineer and shall remain the property of the Owner.

3.5 STOCKPILES

A. Stockpiles shall be neatly trimmed and graded to provide drainage from surfaces and to prevent depressions where water may become impounded. All construction operations shall be performed so as not to cause mixing of objectionable materials with the stockpiled material, and stockpiles shall be protected and shall not be disturbed except for subsequent operations for replacing the material. The location of stockpiles shall be approved by the Owner and the Engineer.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all plant, labor, equipment and materials and performing all operations in connection with excavations, excavation support systems, dewatering, blasting, backfilling, filling, grading, constructing embankments, compaction and appurtenant work, complete in place, in accordance with the Drawings and Specifications and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplementary Conditions and Division 1 Specification Sections apply to this Section.

B. The State of New Hampshire Department of Transportation (NHDOT) Standard Specifications for Road and Bridge Construction (hereinafter referred to as NHDOT Standard Specifications), latest edition.

1. All references to Method of Measurement, Basis of Payment and Payment Items in the NHDOT Standard Specifications are hereby deleted. References made to particular sections or paragraphs in the NHDOT Standard Specifications shall include all related articles mentioned therein.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Backfill Materials: The Contractor shall submit a grain size analysis and curve performed in accordance with ASTM D422 and a moisture density curve indicating the maximum dry density and optimum moisture content in accordance with ASTM D1557, for each proposed source of backfill for review by the Engineer. The grain size analysis shall indicate that the backfill material conforms to the gradation requirements specified.

C. Filter Fabric: Submit the manufacturer's information on the filter fabric to the Engineer for review.

D. Materials Testing Firm:

1. Submit the qualifications of the independent geotechnical testing firm performing soil testing and inspection services during earthwork operations. The geotechnical testing firm must demonstrate to the Engineer's satisfaction, based on evaluation of laboratory

submitted criteria conforming to ASTM D3740, that it has the experience and capability to conduct required field and laboratory geotechnical testing.

2. The firm's laboratory shall be supervised by a Registered Professional Engineer registered in the State of New Hampshire.

E. Excavation Support and Dewatering Plans:

1. Design Responsibility: The design of the excavation support and dewatering systems is the responsibility of the Contractor. The designs shall be prepared, sealed and signed by a registered Professional Engineer registered in the State of New Hampshire with a minimum of five years experience designing excavation support systems and dewatering systems.

2. Excavation Support Plan:

a. Design excavation support systems in accordance with the Drawings and the Specifications.

b. Design internal bracing support members for the maximum forces during excavation or removal stages.

c. Design excavation support systems in a manner permitting safe and expeditious construction of permanent structures, minimizing movement or settlement of the ground, and preventing damage to adjacent facilities.

d. For support systems in which bracing is installed between opposite sides of the excavation, design and construct support of both sides to obtain comparable rigidity.

e. Choose location of excavation support to allow for expected deviations from line during installation without encroaching on future permanent structures or right-of-way limits.

f. Tiebacks are not permitted.

g. Excavation support systems shall be located within the right-of-way or easements.

h. Submit drawings for the record, for contractor-designed excavation support systems.

i. Submit design calculations for the record, including theoretical deflections of all excavation support members, and anticipated surface settlement versus horizontal distance from excavation support members. The design calculations shall be prepared, sealed and signed by the Registered Professional Engineer, Registered in the State of New Hampshire responsible for the design.

j. Proceed with caution in areas of utility facilities. Expose utility facilities by hand excavation or by other methods acceptable to the utility owner and the Engineer.

k. If existing utility facilities interfere with the proposed method of support, modify or relocate such facilities as required. Written permission shall be obtained from the Engineer prior to any modification or relocation of any existing facility.

3. Dewatering Plan:

a. Design Criteria: The Contractor is responsible for the adequacy of the groundwater control systems, and for designing groundwater control systems, to:

1) Provide a substantially dry and stable subgrade for the prosecution of the subsequent operations.

2) Not result in damage to adjacent properties, buildings, structures, utilities, other work, work of adjacent contracts, and other facilities.

3) Prevent soil particles and debris from entering the discharge by providing trash racks and sedimentation basins as required.

4) Assure that after 12 hours of initial pumping, no soil particles will be present in discharge.

5) The groundwater level shall be maintained at least 3 feet below the pipe invert during excavation, construction and backfilling.

6) Collection and disposal of groundwater discharge shall be in accordance with all Federal, State and local codes, rules and regulations. The Contractor shall obtain all necessary permits.

b. Prior to installation of the groundwater control system, submit working drawings and design data for the record, showing the following:

1) The proposed type of groundwater control system.

2) Arrangement and location of groundwater control system components. Description of equipment and other components to be used, with installation, operation, maintenance, and sediment disposal procedures.

3) Types and sizes of sedimentation basins and filters.

4) Design calculations demonstrating adequacy of the purposes groundwater control system and equipment.

5) Within one week, resubmit revised working drawings as necessary to reflect changes required by field conditions.

6) Obtain and submit to the Engineer, required agency permits for discharge of effluent. Submit two copies of all required permits at least one week prior to system installation.

F. Blasting:

1. Submit the qualifications of independent blasting/vibration consultant. The vibration/blasting consultant shall be a Registered Professional Engineer in the State of New Hampshire and shall have a minimum of 10 years experience as a vibration/blasting consultant.

2. For the record, submit pre-blast surveys with photographs and videotape, blasting program and distance-quantity tables and blast records.

1.4 EXCAVATION CLASSIFICATIONS

A. Earth Excavation or "Excavation" consists of removal of materials encountered to the subgrade elevations indicated and subsequent reuse or disposal of the materials removed. All excavation is classified as earth excavation unless it otherwise meets the classifications provided below for unauthorized excavation, additional excavation, or rock excavation.

B. Unauthorized Excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at Contractor's expense.

1. Under footings, foundations bases, concrete slabs, retaining walls or other structures, fill unauthorized excavations to the proper elevations with lean concrete. Elsewhere, backfill and compact unauthorized excavations as specified for excavations of the same class, unless otherwise directed by the Engineer.

C. Additional Excavation:

1. When excavation has reached required subgrade elevations, notify the Engineer who will review subgrade conditions.

2. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by the Engineer.

3. Removal of unsuitable material and its replacement as directed will be paid on the basis of contract conditions relative to changes in work or as provided for under the unit rates for this classification.

D. Rock Excavation:

1. Rock excavation in trenches and pits includes removal and disposal of materials and obstructions encountered which cannot be excavated with a 1.0 cubic yard (heaped) capacity, 42-inch wide bucket on track-mounted power excavator rated at not less than 90HP flywheel power and 30,000 lb. drawbar pull.

2. Rock excavation in open excavations includes removal and disposal of materials and obstructions encountered which cannot be dislodged and excavated with modern track-

mounted heavy-duty excavating equipment without drilling, blasting or ripping. Rock excavation equipment is defined as track-mounted loader, rated at not less than 170HP flywheel power and developing 40,000 lb. break-out force.

a. Trenches in excess of 10 foot in width and pits in excess of 30 feet in either length or width are classified as open excavation.

3. Determination of rock excavation classification will be made by the Engineer. Typical of materials classified as rock are boulders 1.0 cu. yd. or more in volume, solid rock, rock in ledges, and rock-hard cementitious aggregate deposits. Intermittent drilling, blasting or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation. Do not perform rock excavation work until material to be excavated has been cross-sectioned and classified by Engineer. If the area to be excavated is preblasted prior to the excavation of overburden soils, the Engineer shall be notified at least two days in advance to allow observation of the preblast drilling by the Engineer in order to classify the excavation. Visual observation of the completed excavation may be made by the Engineer to modify the excavation classifications. Removal of rock excavation prior to classification by the Engineer shall be considered as earth excavation unless accepted by the Engineer in writing. Such excavation will be paid on the basis of contract unit rates for this classification.

1.5 QUALITY ASSURANCE

A. Testing: Employ a certified, independent testing laboratory acceptable to Owner and Engineer to perform field and laboratory material evaluation tests. Materials and installed work may require testing and retesting at any time during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS

A. Common Fill: Common fill shall be soil containing no stone greater than 2/3 loose lift thickness. The materials shall be free of trash, ice, snow, tree stumps, roots and other organic and deleterious materials. Common fill shall not contain more than 35 percent by weight of silt and clay. It shall be of such a nature and character that it can be compacted to the specified densities in a reasonable length of time. Topsoil and subsoil shall not be considered common fill.

B. Structural Fill: Structural fill shall consist of gravel and sand consisting of hard durable particles, and free from trash, ice and snow, tree stumps, roots and other organic and deleterious or organic matter. Structural fill shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
8-inch	100 (a)
3-inch	70-100
1-inch	45-90
No. 4	20-70
No. 10	15-60
No. 40	10-40
No. 200	0-10
(a) Four-inch maximum particle size within 12 inches of slab, footing or pavement grade.	

C. Stone Fill, Class B: Class B stone fill shall be irregular in shape with approximately 50 percent of the mass having a minimum volume of 3 cubic feet, approximately 40 percent of the mass ranging between 1 and 3 cubic feet, and the remainder of the mass composed of spalls.

D. Stone Fill, Class C: Class C stone fill shall consist of clean, durable fragments of ledge rock of uniform quality, reasonably free from thin or elongated pieces. The stone shall be made from rock which is free from topsoil and other organic material. The stone shall meet the following requirements and shall meet NHDOT Standard Specifications, Section 585.

Sieve Size	Percent Passing by Weight
12-inch	100
4-inch	50-90
1 ½ -inch	0-30
¾-inch	0-10

E. Crushed Ledge: Crushed ledge shall consist of durable crushed ledge, free from ice, and snow, sand, clay, loam or other deleterious or organic material. Crushed ledge shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
1-inch	90-100
½ -inch	60-80
No. 4	30-50
No. 200 (a)	0-10
(a) Fraction passing the No. 4 Sieve.	

F. Crushed Stone: Crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam, or other deleterious or organic material. The crushed stone shall be uniformly blended and shall conform to the following requirements and shall meet NHDOT Standard Specifications, Section 520, Standard Stone Size No. 67 and 89.

Sieve Size	Percent Passing by Weight	
	3/4-inch Stone (No. 67)	**1/2-inch Stone (No. 89)**
1-inch	100	---
3/4-inch	90-100	---
1/2-inch	---	100
3/8-inch	20-55	90-100
No. 4	0-10	20-55
No. 8	0-5	5-30
No. 16	---	0-10
No. 50	---	0-5

G. Crushed Gravel: Crushed gravel shall consist of durable gravel and shall be free from ice and snow, sand, clay, loam, or other deleterious or organic material. Crushed gravel shall meet the following requirements and shall meet NHDOT Standard Specifications, Section 304.

Sieve Size	Percent Passing by Weight
3-inch	100
2-inch	95-100
1-inch	55-85
No. 4	27-52
No. 200 (a)	0-12
(a) Fraction passing the No. 4 Sieve.	

H. Gravel: Gravel shall consist of durable gravel and shall be free from ice and snow, rots, sod, rubbish, sand, clay, loam, or other deleterious or organic material. Gravel shall meet the following requirements and shall meet NHDOT Standard Specifications, Section 304.

Sieve Size	Percent Passing by Weight
6-inch	100
No. 4	20-75
No. 200 (a)	0-12
(a) Fraction passing the No. 4 Sieve.	

I. Sand: Sand shall consist of clean inert, hard, durable grains of quartz or other hard durable rock, free from clay, organic, surface coatings or other deleterious material. Sand shall conform to the following gradation requirements meeting NHDOT Standard Specification Section 304.

Sieve Size	Percent Passing by Weight
6-inch	100
No. 4	70-100
No. 200 (a)	0-12
(a) Fraction passing the No. 4 Sieve.	

J. Controlled Density Fill: Controlled Density Fill (CDF) shall be self compacting, excavatable, cement-based backfill material. It shall consist of cement, fine aggregate, fly ash and water; air-entraining mixtures may also be added. The 28 day compressive strength shall be less than 100 psi, in place density shall be 90 to 100 psf. Air entrainment shall be 25% to 30%.

K. Asphalt Stabilized Base: The material shall consist of the existing pavement blended with the underlying sand and gravel sub-base as required to meet these specifications. Reclaimed stabilized base shall have a minimum bitumen content between 3 and 5 percent and conform to the following gradation:

Sieve Size	Percent Passing by Weight
3"	100
1"-1½"	80-100
3/4"	55-90
No. 4	40-70
No. 200	3-10

2.2 GEOTEXTILES

A. Geotextile fabric shall be as specified in NHDOT Standard Specifications, Section 593.

B. Geotextile fabric shall be made from polypropylene or polyethylene filaments, fibers or yarns. The fabric shall be inert to biological degradation and resist naturally occurring chemicals, alkalis and acids encountered in the soil. The fabric shall be woven or nonwoven as specified below:

1. Subsurface Drainage: Geotextile for this application consists of fabric placed against a soil to allow long-term passage of water into a subsurface drain system while retaining the in-situ soils. The fabric shall be Mirafi 160N as manufactured by TenCate Geosynthetics, Pendergrass, GA, GT-160 as manufactured by Skaps Industries, Athens, GA or equal.

2. Separation: Geotextile for this application consists of fabric placed to prevent mixing of in-situ or subgrade soil with aggregate cover material. The fabric shall be Mirafi 180N as manufactured by TenCate Geosynthetics, Pendergrass, GA, GT-180 as manufactured by Skaps Industries, Athens, GA or equal.

3. Stabilization: Geotextile for this application consists of fabric placed in wet, saturated conditions to provide the coincident functions of separation and filtration and/or to provide the function of reinforcement. The fabric shall be Mirafi 600X as manufactured by TenCate Geosynthetics, Pendergrass, GA, 315W as manufactured by Willacoochee Industrial Fabrics, Willacoochee, GA or equal.

PART 3 - EXECUTION

3.1 EXCAVATION

A. The Contractor shall perform all excavations of every description and of whatever substances encountered, in a manner as required to allow for placing of temporary earth support, forms, installation of pipe and other work, and to permit access to the Engineer for the purpose of observing the work. Bottoms of trenches and excavations shall be protected from frost and shall be firm, dry and in an acceptable condition to receive the work; work shall not be placed on frozen surfaces nor shall work be placed on wet or unstable surfaces.

B. All excavations made in open cut will be controlled by the conditions existing at the various locations and shall always be confined to the limits as designated by the Engineer. In no case shall earth be excavated or disturbed by machinery so near to the finished subgrade for structures and pipelines as to result in the disturbance of the earth below the subgrade. The final excavation to subgrade should be accomplished with a smooth faced bucket or by hand if directed by the Engineer.

C. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property.

D. Contractor shall provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress.

3.2 GROUNDWATER CONTROL

A. The Contractor shall provide, at his own expense, adequate pumping and drainage facilities to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. The drainage of all water resulting from pumping shall be managed so as not to cause damage to adjacent property.

B. Any damage resulting from the failure of the dewatering operations of the Contractor, and any damage resulting from the failure of the Contractor to maintain all the areas of work in a suitable dry condition, shall be repaired by the Contractor, as directed by the Engineer, at no additional expense to the Owner. The Contractor's pumping and dewatering operations shall be carried out in such a manner as to prevent damage to the Contract work and so that no loss of ground will result from these operations. Precautions shall be taken to protect new work from flooding during storms or from other causes. Pumping shall be continuous where directed by the Engineer to protect the work and/or to maintain satisfactory progress.

C. All pipelines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected. Water from the trenches, excavations and drainage operations shall be disposed of in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.

D. The Contractor shall control the grading in the areas surrounding all excavations so that the

surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, temporary ditches shall be provided for drainage. Upon completion of the work and when directed, all areas shall be restored by the Contractor in a satisfactory manner and as directed.

3.3 FILLING AND BACKFILLING

A. Backfill Material Selection:

1. Unless otherwise specified or directed, material used for filling and backfilling shall meet the requirements as herein specified.

2. In general, the material used for backfilling utility trench excavations shall be material removed from the excavations provided that the reuse of these materials result in the required trench compaction and meets the requirements specified for common fill.

3. All backfill placed within building limits shall be structural fill unless otherwise specified.

4. In areas where the bottom of the excavation is in fine sand and silt and is below the groundwater table, the first lift of backfill shall be 12 inches of compacted crushed stone, unless otherwise indicated on the Drawings, to provide a working mat and drainage layer.

5. Maintain backfill material with a uniform moisture content, with no visible wet or dry streaking, between plus 2 percent and minus 3 percent of optimum moisture content. The final filled soil mass shall be as uniform as possible in lift thickness, moisture content, and effort required to compact soil mass.

B. Trench Backfill:

1. The trenches shall be backfilled as soon as practicable with suitable material. All trench backfilling shall be done with special care, in the following manner and as directed by the Engineer.

2. Backfill material for pipe bedding shall be deposited in the trench, uniformly on both sides of the pipe, for the entire width of the trench to the springline of the pipe. The selected backfill material shall be placed by hand shovels, in layers not more than 4 inches thick in loose depth, and each layer shall be thoroughly and evenly compacted by tamping on each side of the pipe to provide uniform support around the pipe, free from voids.

3. The balance of backfill shall be spread in layers not exceeding 12 inches in loose depth. Each layer shall be thoroughly compacted by mechanical methods and shall contain no rock, stones or boulders larger than 4 inches in their greatest dimension.

4. All trench backfilling shall be done with special care and must be carefully placed so as not to disturb the work at any time; if necessary, a timber grillage or other suitable method shall be used to break the fall of material.

5. The moisture content of the backfill material shall be such that proper compaction will be obtained. Puddling of backfill with water will not be permitted.

6. Backfill within areas to receive topsoil or pavement construction shall be made to grades required to establish the proper subgrade for the placement of topsoil or pavement base courses.

7. In backfilling trenches, each layer of backfill material shall be moistened and compacted to a density at least equal to that of the surrounding undisturbed earth, and in such a manner as to permit the rolling and compaction of the filled trench or excavation with the adjoining earth to provide the required bearing value, so that paving of the excavated and disturbed areas, where required, can proceed immediately after backfilling is completed.

8. Any trenches or excavations improperly backfilled or where settlement occurs shall be reopened, to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional expense to the Owner.

9. During filling and backfilling operations, pipelines will be checked by the Engineer to determine whether any displacement of the pipe has occurred. If the observation of the pipelines shows poor alignment, displaced pipe or any other defects, they shall be remedied in a manner satisfactory to the Engineer at no additional cost to the Owner.

10. The top 18 inches of backfill in unpaved roads shall be constructed with 6 inches of crushed gravel on top of 12 inches of gravel. The material shall be placed in three 6-inch lifts, each lift proof rolled and compacted with rollers before placing subsequent lifts.

C. Backfilling Against Structures:

1. Backfilling against masonry or concrete shall not be done until permitted by the Engineer. The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking or other damage. As soon as practicable after the structures are structurally adequate and other necessary work has been satisfactorily completed, special leakage tests of the structures shall be made by the Contractor, as required by the Engineer. After the satisfactory completion of leakage tests and the satisfactory completion of any other required work in connection with the structures, the backfilling around the structures shall proceed using suitable and approved excavation material. The best of the backfill material shall be used for backfilling within 2 feet of the structure. Just prior to placing backfill, the areas shall be cleaned of all excess construction material and debris and the bottom of excavations shall be in a thoroughly compacted condition.

2. Symmetrical backfill loading shall be maintained. Special care shall be taken to prevent any wedging action or eccentric loading upon or against the structures. During backfilling operations, care shall be exercised that the equipment used will not overload the structures in passing over and compacting these fills. Except as otherwise specified

or directed, backfill shall be placed in layers not more than 12 inches in loose depth and each layer of backfill shall be compacted thoroughly and evenly using approved types of mechanical equipment. Each pass of the equipment shall cover the entire area of each layer of backfill.

3. In compacting and other operations, the Contractor shall conduct his operations in a manner to prevent damage to structures due to passage of heavy equipment over, or adjacent to, structures, and any damage thereto shall be made good by the Contractor at no additional expense to the Owner.

D. After backfilling trenches and excavations, the Contractor shall maintain the surfaces of backfill areas in good condition so as to present a smooth surface at all times level with adjacent surfaces. Any subsequent settling over backfilled areas shall be repaired by the Contractor immediately, in a manner satisfactory to the Engineer, and such maintenance shall be provided by the Contractor for the life of this Contract, at no additional expense to the Owner.

E. The finished subgrade of the fills and filled excavations upon which topsoil is to be placed, or pavements are to be constructed, shall not be disturbed by traffic of other operations and shall be maintained in a satisfactory condition until the finished courses are placed. The storage or stockpiling of materials on finished subgrade will not be permitted.

F. Geotextile Installation: Geotextile fabric shall be installed as specified in NHDOT Standard Specifications, Section 593 and in accordance with manufacturer recommendations.

3.4 COMPACTION

A. Compaction Requirements: The degree of compaction is expressed as a percentage of the maximum dry density at optimum moisture content as determined by ASTM Test D1557, Method C unless otherwise noted. The compaction requirements are as follows:

Area	**ASTM Density Degree of Compaction**
Below footings	95%
Below slabs	95%
Wearing and base course pavement	95% *
Aggregate and reclaim base course below pavement	95% *
Subgrade below aggregate/reclaim base course	92%
Trench backfill - below pavements - below landscaped areas - below structures	95% 90% 95%
Other areas	90%

* The criteria for degree of compaction and density testing methodology shall be as specified in NHDOT Standard Specifications.

B. Moisture Control:

1. Fill that is too wet for proper compaction shall be disced, harrowed, or otherwise dried to a proper moisture content to allow compaction to the required density. If fill cannot be dried within 24 hours of placement, it shall be removed and replaced with drier fill.

2. Fill that is too dry for proper compaction shall receive water uniformly applied over the surface of the loose layer. Sufficient water shall be added to allow compaction to the required density.

C. Unfavorable Conditions:

1. In no case shall fill be placed over material that is frozen. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, fill operations shall not be resumed until the moisture content and the density of the previously placed fill are as specified.

2. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of the day's operations. Prior to terminating work for the day, the final layer of compacted fill shall be rolled with a smooth wheeled roller to eliminate ridges of soil left by compaction equipment.

D. Compaction Control:

1. In-place density tests shall be made in accordance with ASTM D1556, D2922, D2167 or NHDOT Standard Specifications (roadway construction only) as the work progresses, to determine the degree of compaction being attained by the Contractor. Any corrective work required as a result of such tests shall be performed by the Contractor at no additional expense to the Owner. In-place density tests shall be made a Contractor's expense by a testing laboratory experienced and certified to complete required testing.

2. The Engineer's duties do not include supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the Engineer nor any observation and testing performed by Engineer shall excuse the Contractor from defects discovered in his work at that time or subsequent to the testing.

3. In-place density tests shall be performed as a minimum according to the following or as directed by the Engineer:

   a. Two tests per lift under spread footings and slabs.

   b. A minimum of every 10 cubic yards of backfill in trenches or around structures.

   c. In accordance with NHDOT Standard Specifications for roadway construction.

3.5 GRADING

A. Grade all excavated and filled sections, embankments and adjacent transition areas, and all areas disturbed as a result of the Contractor's operations to the line, grade, slope, elevation, cross section and true surface as indicated on the Drawings and as directed. The finished surfaces shall be smooth, compacted and free from surface irregularities.

1. Provide a smooth transition between adjacent existing grades and proposed grades.

2. Provide constant gradients between given elevations unless otherwise noted.

3. All areas shall drain with flow lines and shall be free of depressions which permit water to stand. Slope to drains where provided.

4. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances. Fill low sections, holes or depressions with accepted materials. All soft or otherwise unsuitable material shall be removed and replaced with suitable material from excavation or borrow.

5. Compact excavated and graded areas as specified. This operation shall include any required reshaping and wetting to obtain proper compaction. Any portion which is not accessible to a roller shall be thoroughly compacted by other mechanical methods.

B. Accuracy: Finish subgrades to the required elevations within the following tolerances.

1. Pavements: Plus or minus 1/4-inch provided that this 1/4-inch above or below grade is not maintained for a distance longer than 25 feet and that the required crown and cross slope is maintained.

2. Lawn (except recreation fields) or Unpaved Areas: Plus or minus 1 inch.

3. Walkways: Plus or minus 1/4 inch.

4. Recreation Fields: Plus or minus 1/4 inch.

C. Grading for recreation fields shall be performed by a compact laser guided grading machine with a maximum weight of 3,500 pounds.

3.6 TEMPORARY EARTH SUPPORT

A. The Contractor shall furnish, place and maintain such sheeting, shoring, and bracing at locations necessary to support the sides of excavations and to prevent danger to persons or damage to pavements, facilities, utilities, or structures, and to prevent injurious caving or erosion or the loss of ground, and to maintain pedestrian and vehicular traffic as directed and required.

B. In all sheeting, shoring and bracing operations, care shall be taken to prevent injury to persons or damage to structures, facilities, utilities and services. Any injuries to persons shall

be the responsibility of the Contractor; and any damage to the work occurring as a result of settlement, water or earth pressure, or other causes due to inadequate bracing or other construction operations of the Contractor shall be satisfactorily repaired or made good by the Contractor, at no additional expense to the Owner.

C. Where sheeting is to be used, it shall be driven ahead of excavation operations to the extent practicable so as to avoid the loss of material from behind the sheeting; where voids occur outside of the sheeting, they shall be filled immediately with selected fill and thoroughly compacted.

D. The Contractor shall leave in place all sheeting and bracing at the locations and within the limits ordered by the Engineer in writing. The Contractor shall cut off the sheeting at elevations to be determined by the Engineer.

E. The Contractor shall comply with all federal, state, and local safety regulations, and requirements.

F. Install, maintain, and remove the excavation support system in accordance with the record drawings, and in such a manner as to prevent movement, settlement, or loss of ground, removal of fines from the adjacent ground, and damage to or movement of adjacent structures.

G. Perform field welding by certified welders in accordance with American Welding Society Standard AWS D 1.1, "Structural Welding Code."

H. The distance from ground surface to the uppermost brace level or tieback shall not exceed 5 feet. The vertical distance between brace levels shall not exceed 12 feet. The maximum distance between the lowermost brace level to the excavation bottom shall not exceed 10 feet.

I. Soldier Piles and Lagging:

1. Use only in areas where the groundwater table outside of the excavation support system is lower than the bottom of excavation.

2. Prebore holes for soldier poles to a diameter at least 4 inches larger than the maximum diagonal dimension of the pile sections. Extend holes to the full design depth of the soldier pile.

3. Carry bottom of soldier pile design below the main excavation adequate to prevent lateral and vertical movement. In areas where additional excavation is required below the main excavation subgrade after the soldier poles have been installed, make provisions to prevent movement of main excavation supports.

4. After seating soldier piles in pre-excavated holes, encase piles with structural concrete by tremie methods up to the lowest point of the excavation adjacent to the pile location. Immediately fill remainder of the hole with lean concrete or sand by tremie methods, completely encasing the pile.

5. After concrete filled soldier piles have attained 25% of concrete design strength, excavation may proceed. As excavation proceeds, remove lean concrete or sand from pile as long as excavation progresses sufficient to place lagging. Follow the excavation closely with placement of lagging.

6. Use timber lagging, precast reinforced concrete lagging, or steel sheeting secured in place to soldier piles, or installed behind flanges. Use precast reinforced concrete members or steel sheeting secured in place to soldier piles when excavation support system is to be left in place.

7. Carefully perform excavation for the installation of lagging to minimize the formation of voids.

8. If unstable material is encountered during excavation, take suitable measures to stabilize it and prevent ground displacement.

9. Maintain a sufficient quantity of material on hand for lagging, bracing, and other operations for protection of the work and for use in case of an accident or an emergency.

10. Fill voids behind lagging with sand bags or other material acceptable to the Engineer.

11. The hole bottom shall be cleaned free of all loose soil using methods acceptable to the Engineer.

J. Sheet Piling:

1. Install sheet piling to the depth below the bottom of excavation to prevent movement of the supported soil, to cut off groundwater, and prevent heaving or piping of the bottom of the excavation.

2. Grout may be used by the Contractor, or the Contractor may be directed by the Engineer to use grout to increase the stability and strength of soil, to minimize soil loss, or to control seepage through interlocks.

K. Internal Bracing for Support System:

1. Use wales, struts, and rakers as necessary to provide internal excavation support. Continuous wales shall be used for either sheet piles, or soldier piles and lagging.

2. When wales are used, obtain tight bearing between wales and wall, and ample bearing area with wedges and packing for load transfer. Connections between struts, wales, and the wall system shall be capable of resisting the design compressive loads as well as a tensile load equal to ten percent of the strut compressive design load.

3. Provide struts with intermediate bracing as needed to enable the struts to carry the maximum load without distortion or buckling. The slenderness ratio of the struts shall be less than 120.

4. Provide diagonal bracing as needed for stability of the system.

5. Include web stiffeners, plates, or angles as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.

6. Install and maintain internal bracing support members in tight contact with each other and with the surface being supported.

7. Preload internal bracing members, including struts, shores and similar members to 50 percent of the design load.

    a. Use procedures that produce uniform loading members without inducing harmful eccentricities, over-stressing, or distortion.

    b. Make provisions for permanently fixing each member with steel shims or wedges welded into place.

    c. Accomplish preloading by jacking supports in place against soldier piles or wales. Do not use wooden wedges to preload bracing members.

    d. Include in the preloading system the means to determine, within five percent, the amount of preload induced into bracing members.

8. Excavate no more than 2 feet below the bottom of strut about to be placed. Install strut, and preload immediately after installation and before continuing excavation.

9. Do not remove internal bracing and transfer loads to the permanent structure except as provided in the accepted design. When removing struts, increased vertical spacing will not be allowed.

L. Removal of Excavation Support:

1. Remove all portions of the excavation support system. When removing the excavation support system, do not disturb or damage adjacent buildings, structures, waterproofing material, or utilities. Fill voids immediately with lean concrete.

2. Remove non-salvageable material of the excavation support system from the site immediately.

3. The Contractor shall be responsible for any damage to adjacent buildings, structures, waterproofing material, or utilities due to the removal of the excavation support system. All damage to existing buildings, structures, waterproofing materials, or utilities shall be repaired immediately by the Contractor to the satisfaction of the Owner, Utility Owner, and the Engineer, at no additional cost to the Owner or the Utility Authority.

3.7 BLASTING

A. Employ an approved, independent, vibration/blasting consultant to conduct pre-blast surveys

of the interior and exterior of all buildings, to conduct test blasting prior to production blasting, to devise suitable blasting procedures for production blasting, and to monitor production blasting.

B. Conduct a pre-construction survey of the interior and exterior of all buildings located within 75 feet of the work area. Survey shall include videotape and still photographs to document pre-construction conditions.

C. Test blast to develop control procedures for production blasting so that no disturbance or damage shall be done to utilities, equipment, buildings, or structures.

D. Based on the results of test blasting, have the vibration blasting consultant develop a suitable blasting program and distance-quantity of explosive tables for the production blasting. Submit the blasting program and distance-quantity tables for the record to the Engineer prior to commencement of production blasting. Conduct production blasting operations in accordance with the blasting program.

E. Require the vibration/blasting consultant to perform continuous monitoring of blasting operations. Monitor blasting with a minimum of two 3-component seismometers that record the entire particle velocity wave train and not just peak velocities. Obtain accurate, legible seismometer records of monitored blasts. Submit three copies of blast records to the Engineer within 7 days after blasting.

F. Perform continuous monitoring of construction operations and periodic monitoring of structures adjacent to work area to ensure structures are not affected by construction operations. Establish a temporary benchmark elevation on adjacent structures and monitor structures for potential settlement.

G. Keep and submit to Engineer and at time specified by Engineer, an accurate record of each blast showing general location of blast, depth and number of drillholes, kind and quantity of explosive used, kind and number and interval of delay periods used, and other data required for a complete record.

F. If evidence of disturbance or damage to utilities, equipment, buildings, or structures is observed or reported, immediately notify the Engineer and discontinue blasting operations and require vibration/blasting consultant to recommend revised blasting procedures. Consult with Engineer regarding revised procedures.

G. Initiate the revised procedures before blasting is continued.

H. Restore or replace utilities, equipment, buildings, or structures damaged by blasting operations at no cost to the Owner.

I. Safety Requirements

1. Keep explosives on the site only in such quantity as needed for work under way and only during time as being used. Notify Engineer at least 24 hours in advance of intention to store and use explosives. Store explosives in a secure manner and separate from all tools.

Store caps or detonators safely at a point over 100 ft. distant from explosives. Promptly remove from premises remaining material when need for explosives has ended.

2. Conform to State, Federal, and municipal laws, ordinances, and regulations relating to transportation, storage, handling, and use of explosives. If any of above-mentioned laws, ordinances, or regulations require a licensed blaster to perform or supervise the work of blasting, employ a licensed blaster. Require him to have his license on site and permit examination by Engineer or other officials having jurisdiction.

3. Conduct operations involving explosives with all possible care to avoid injury to persons and property. Do blasting only with such quantities and strengths of explosives and in such manner as will break rock approximately to intended lines and grades, leaving rock not to be excavated in an unshattered condition. Avoid excessive cracking of rock upon or against which any structure will be built. Prevent injury to existing pipes, structures and property above or below ground. Cover rock with logs or mats, or both. Give sufficient warning to persons in vicinity of work before a charge is exploded.

4. Complete blasting within a distance of 50 ft. before any portion of a masonry structure is placed or any pipe is laid.

5. Determine presence of two-way radios, stray electrical currents and other conditions adversely affecting blasting operations and implement necessary precautions to prevent accidents and premature blasts.

J. Use sufficient explosive to shatter rock for future excavation. Complete shattering before any pipe or fitting is placed within 50 ft. of rock to be shattered.

K. Remove shattered rock. If rock below normal depth is shattered due to drilling or blasting operations of Contractor and Engineer considers such shattered rock to be unfit for foundations, remove it and backfill excavation with concrete as required, except that in pipe trenches, use screened gravel for backfill. Do such removal and backfilling at no additional compensation.

L. Remove dirt and loose rock, as directed, from designated areas and clean surface of rock thoroughly, using steam to melt snow and ice, if necessary. Remove water in depressions, so that whole surface of designated area can be inspected to determine whether seams or other defects exist.

M. Rough surfaces of rock foundations sufficiently to bond well with masonry and embankments to be built thereon and, if required, cut to rough benches or steps.

N. Remove from the rock surface to remain all vegetation, dirt, sand, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. Use picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means to accomplish this cleaning, and remove free water left on the surface of rock. Perform all of above before any masonry or embankment is built on or against rock.

O. Remove piles of boulders or loose rock encountered within limits of earth embankments to a suitable place of disposal.

P. Use excavated rock in backfilling trenches subject to following limitations:

1. Do not use pieces of rock larger than permitted by the Engineer.

2. Do not allow rock quantities used in backfill in any location to result in formation of voids.

3. Do not place rock backfill within 16 in. of surface of finish grade.

4. Backfill with material obtained from outside sources at no additional compensation, when material suitable for backfilling is not available in sufficient quantity from other excavations.

END OF SECTION

SECTION 02370

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, equipment, and materials and performing all operations in connection with the construction, maintenance and removal of erosion and sedimentation checks and controls, stabilization of slopes and disturbed areas, protection of resource areas, and disposal of sediment and surface water, in accordance with the Drawings and Specifications and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 SUBMITTALS

A. Submit in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Submit manufacturer's literature and catalog data, or both, showing that the materials provided meet the requirements of this Specification.

C. Submit manufacturer's certificates of compliance that the silt fence and matting/blankets meet the Specifications.

D. Submit samples of silt fence and matting/blanket materials.

E. Submit erosion and sedimentation control plan as directed by the Engineer.

PART 2 - PRODUCTS

2.1 HAY BALES

A. Hay bales shall consist of hay from acceptable grasses and legumes, free from weeds, reeds, twigs, chaff, debris, other objectionable material or excessive amounts of seeds and grain. It shall be free from rot or mold and the moisture content shall not exceed fifteen (15) percent by weight at the time of weighing.

B. The hay shall be securely baled with wire of adequate size to allow for possible rusting while in use and to permit rehandling when the bale is in a saturated condition.

C. Individual bales shall be of a longitudinal shape not exceeding one hundred (100) pounds

when weighed.

2.2 SILT FENCE

A. Filter fabric for silt fence shall consist of pervious sheets of woven propylene, nylon, polyester, or ethylene yarn. Material shall meet the following requirements:

Requirement	Property	Test Method
Tensile Strength	ASTM D 1682 Grab Test	100 lbs. min.
Grab Elongation	ASTM D 1682 Grab Test	30 % +/- 10%
Equivalent Opening Size	100 sieve min. 40 sieve max.	Corps of Engineers CW 02215
Bursting Strength	ASTM D 751 Diaphragm	175 psi min. Bursting Tester

B. Filter fabric shall contain a stabilizer and/or inhibitors to make the filaments resistant to deterioration resulting from exposure to sunlight or heat to provide a minimum of 6 month of expected usable construction life at a temperature range of 0 degrees to 120 degrees F. The fabric filter shall be a minimum of 36 inches wide, cut from a continuous roll to finish fence length to avoid the use of seams. Splice filter fabric together only when absolutely necessary and only at a support post, with a minimum 6 inch overlap and securely sealed. The filter fabric shall be free of defects or flaws which significantly affect its physical and/or filtering properties.

C. Wire fence reinforcement for fabric silt fences shall be a minimum of 30 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches. The wire fence reinforcement shall be used with all filter fabrics except those approved for use without a wire fence reinforcement by the manufacturer.

D. Posts shall be of wood or steel and a minimum of 4 feet long. Wood posts shall be at least nominal 2 x 2 inches. Steel posts shall be round or U, T or C shaped with a minimum weight of 1.3 pounds per foot and have projections for fastening the wire to the fence.

E. Wire staples for attaching filter fabric to wooden posts shall be No. 9 gauge and shall be at least one inch long.

2.3 MATTING/BLANKETS

A. Jute Matting: Undyed and unbleached jute yarn woven into a uniform open, plain weave mesh, furnished in rolled strips conforming to the following physical requirements:

Property	Requirement
Width	48”, plus or minus 1” 78 warp ends per width of cloth. 41 weft ends per yard
Weight	1.22 - 1.80 lbs/sq.yd., plus or minus 5%

B. Excelsior Matting: Uniform web of interlocking wood excelsior fibers with a backing of mulch net fabric on one side only. The mulch net shall be of either twisted paper chord or cotton cord. Excelsior matting shall be furnished in rolled strips and shall conform to the following physical requirements.

Property	Requirement
Width	36”, plus or minus 1”
Weight	0.80 lbs/sq.yd., plus or minus 5%

C. Soil Erosion Matting: Enkamat Type 7020, 0.9 mm thick, by BASF Corp., or approved equal.

D. Erosion Control Mulching Blanket: Hold/Gro by Gulf State Paper Corps., or approved equal.

E. Staples: No. 11 (or heavier) plain iron wire, made from at least 12-inch lengths of wire bent to form a U of 1-1/2 to 2 inch width. Use longer staples for loose soils where otherwise required.

PART 3 - EXECUTION

3.1 GENERAL

A. Erosion and sedimentation control measures shall be installed in accordance with manufacturer’s recommendations, as indicated on the Drawings and as directed by the Engineer.

B. Erosion and sedimentation control measures shall be installed following clearing and prior to grubbing operations. No removal of stumps, boulders, topsoil or preparation of excavation shall be performed until Engineer has approved the installation of erosion and sedimentation control measures.

C. Contractor shall comply with all permits and conditions of permits issued for the project. Compliance shall be Contractor’s responsibility whether or not the Contractor obtained the permit.

D. Contractor shall comply with all local, federal and state regulations.

E. Erosion and sedimentation control measures shall remain in place and be maintained by the Contractor until permanent measures have been established, unless otherwise directed by the Engineer. Maintenance of control measures shall be performed by the Contractor at no additional cost to the Owner.

3.2 WORK IN RESOURCE AREAS

A. Resource Areas: Resource areas are those areas, conditions or features which, when disturbed by construction activities, create an adverse environmental impact. Such areas include, but are not necessarily limited to densely wooded areas, steep slopes, wetland areas, streams, brooks, rivers and other water bodies.

B. A sedimentation barrier consisting of a continuous row of staked hay bales and/or silt fence shall be placed between all resource areas and the work area to prevent soil materials from entering the resource area. This sedimentation barrier shall be inspected and maintained on a daily basis.

C. The following activities shall not be permitted within 50 feet of designated resource areas:

1. Stockpiling and storage of equipment or materials.

2. Refueling of equipment.

3. Maintenance and repair of vehicles and equipment.

D. Should the Owner deem that the Contractor's activities are unnecessarily detrimental to resource areas, then the Owner reserves the right to order the Contractor to immediately cease all activities on-site until the situation is resolved to the satisfaction of the Owner.

3.3 MITIGATION

A. All operations, particularly those associated with excavation and backfilling, shall be planned and executed in such a manner as to minimize the amount of excavated and exposed fill or other foreign material that is washed or otherwise carried into waterways or wetlands. The water quality of waterways or wetlands shall not be degraded due to construction operations.

B. It is the intent of these Specifications to prevent the unnecessary occurrence of sedimentation or siltation of the adjacent waterways, wetlands, and their various impoundments. In the event that sedimentation or siltation prevention measures used by the Contractor prove to be inadequate, as determined by the Engineer, the Contractor shall be required to adjust his operations to the extent necessary to prevent any such sedimentation or siltation from occurring.

C. Contractor shall keep streams, wetlands, and other water crossings clear of mud, silt, debris, and other objectionable materials resulting from Contractor’s construction operations.

D. Contractor shall protect existing drainage structures from siltation. Contractor shall remove accumulated silt from drainage structures at no additional cost to the Owner.

E. Contractor shall maintain the flow capacity of river and stream channels to prevent unnatural flooding due to Contractor's operations.

F. Contractor shall preserve existing natural drainage patterns and vegetative cover.

G. Contractor shall use temporary vegetation, soil stabilization matting and mulching to protect areas exposed during construction. Contractor shall minimize the amount of bare earth exposed at any one time during construction, and he shall also minimize the length of time bare earth is exposed.

H. Baled hay shall be placed to form temporary water stops, dams, diversions, dikes, berms and for other uses connected with water pollution control. Bales that become to clogged to be effective shall be removed from the site and new bales provided as directed by the Engineer. Bales shall be replaced as often as necessary to provide effective sedimentation control.

I. On sloping terrain, hay bales may be used to trap sediment until vegetation has become established.

J. Install hay bale or gravel check dams at 50-foot intervals along the centerline of drainage ditches as shown on the Drawings and as directed by the Engineer until permanent surface treatments are installed and fully stabilized.

K. Hay bales or other materials necessary for sedimentation and erosion control shall be placed and maintained along wetland and waterway boundaries and along street drains in roadways if sediment is to be left overnight or if there is rain during construction activities. All soil left overnight along roadways adjacent to waterways and wetlands shall be covered.

L. Sediment-laden water that is being pumped from the trenches or excavations shall not be pumped directly into watercourses or wetlands. Sedimentation basins of hay bales, check dams, silt fence or other means acceptable to the Engineer shall be used for this purpose.

M. Spoil resulting from trench excavation or grading shall be leveled or removed to permit free entry of water from adjacent land surfaces without excessive erosion or harmful ponding.

N. No volume of fill additional to preconstruction conditions shall be left in areas subject to flooding.

O. A stockpile of haybales and silt fence will be maintained at the project for use as needed for repair or reinforcement of the sedimentation controls until the area is stabilized.

P. Silt fence and sedimentation barriers shall be maintained at no additional cost to the Owner as follows:

1. Inspect silt fences and sedimentation barriers immediately after each rainfall and at least

daily during prolonged rainfall. Provide any required repairs immediately. Should the fabric on a fabric silt fence decompose or become ineffective prior to the end of the expected useful life, and the barrier still be necessary, replace the fabric promptly.

2. Remove sediment deposits after each storm event as directed by the Owner. As a minimum, remove sediment when deposits reach approximately one-half the height of the barrier.

3. Dispose of sediment deposits off-site, placed upland in a manner which will prevent its later erosion into the resource protection area, or in manner approved by the Owner.

4. Maintain the fabric silt fence until all upslope soils are permanently stabilized by vegetation.

Q. Periodically inspect earthwork to detect any evidence of erosion and sedimentation and promptly apply corrective measures.

R. Erosion and sedimentation control measures shall be disposed of in accordance with all local, state and federal regulations following the completion of construction activities in a particular area.

END OF SECTION

SECTION 02630

STORM DRAINAGE SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, equipment, and materials and performing all operations in connection with the construction of drain pipe, drain manholes, catch basins and headwalls in accordance with the Drawings and Specifications and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

B. The State of New Hampshire Department of Transportation (NHDOT) Standard Specifications for Road and Bridge Construction (hereinafter referred to as NHDOT Standard Specifications) and NHDOT Standard Plans for Road and Bridge Construction (hereinafter referred to as NHDOT Standard Plans), latest edition.

1. All references to Method of Measurement, Basis of Payment and Payment Items in the NHDOT Standard Specifications are hereby deleted. References made to particular sections or paragraphs in the NHDOT Standard Specifications shall include all related articles mentioned therein.

1.3 SUBMITTALS

A. Submit in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Submit manufacturer's technical product data and installation instructions for materials and products.

C. Submit shop drawings, descriptive literature and manufacturer’s data showing pipe dimensions and joint system for each type and class of pipe.

D. Submit manufacturer’s certificates of compliance with these Specifications on all products and materials.

1.4 QUALITY ASSURANCE

A. The quality of all new materials, the process of manufacture, and the finished product shall be subject to the review of the Engineer. Such review may be made at the place of manufacturer, or on the site after delivery, or at both places and the pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements even though sample product may have been accepted as satisfactory. The Engineer reserves the right to apply such

tests as he may from time to time deem necessary to check on compliance with the Specifications.

PART 2 - PRODUCTS

2.1 CULVERTS AND STORM DRAINS

A. Galvanized Corrugated Metal Pipe:

1. Galvanized corrugated metal pipe shall be as specified in NHDOT Standard Specifications, Section 603.

2. For pipe replacement, metal thickness shall be equal to or greater than that of the pipe being replaced.

3. Pipe and couplings shall be completely coated inside and out with asphalt cement. Asphalt coating for the pipe shall conform to AASHO-M190, Type C Coating. The asphalt coating for coupling bands shall conform to Type A Coating.

B. Reinforced Concrete Pipe:

1. Reinforced concrete pipe shall be manufactured by an established manufacturer of good reputation in the industry. Manufacturer shall have a minimum of 5 years experience.

2. Reinforced concrete pipe shall be manufactured in a permanent plant adapted to meet all the design requirements of the pipe.

3. Reinforced concrete pipe shall have an interior surface that is smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind.

4. Reinforced concrete pipe shall be as specified in NHDOT Standard Specifications, Section 603.

C. High Density Polyethylene (HDPE) Pipe:

1. HDPE pipe shall be manufactured by an established manufacturer of good reputation in the industry. Manufacturer shall have a minimum of 5 years experience.

2. HDPE pipe shall be manufactured in a permanent plant adapted to meet all the design requirements of the pipe.

3. HDPE pipe shall have corrugated exterior surface and an interior surface that is smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind.

4. HDPE pipe shall be HI-Q Sure-Lok ST pipe as manufactured by Hancor. Pipe shall meet the requirements of AASHTO M294 Type S.

5. Fittings shall be suitable for the intended application and match the pipe materials. Fittings shall meet the requirements of AASHTO M294.

6. Pipe and fittings shall meet ASTM D3350 Cell Classification 324420C.

2.2 UNDERDRAINS

A. Perforated Corrugated Polyethylene (PE) Pipe and Tubing:

1. PE pipe and tubing shall be as specified in NHDOT Standard Specifications, Section 605.

2.3 CATCH BASINS AND DRAIN MANHOLES

A. Catch basins and drain manholes shall be precast concrete structures and shall be as specified in NHDOT Standard Specifications, Section 604.

B. Drain manholes shall be 48-inches inside diameter.

C. Catch basins and drain manholes shall be designed for H-20 loading.

D. Precast concrete bases shall be manufactured to contain wall openings of the minimum size to receive the ends of the pipes. Openings shall be accurately set to conform with line and grade of the adjoining pipes. Subsequent cutting or tampering in the field, for the purpose of creating new openings or altering existing openings will not be permitted.

2.4 CASTINGS

A. Castings shall be cast iron of uniform quality, free from blowholes, shrinkage, distortion or other defects. They shall be smooth and well cleaned by shotblasting. All castings shall be manufactured true to pattern; component parts shall fit together in satisfactory manner. Castings shall have continuously machined bearing surfaces to prevent rocking and rattling. Covers and grates shall be machined to fit securely and evenly on the frame. Covers shall have a diamond surface design.

B. Castings shall be Class 30 minimum and shall conform to ASTM A48 for Gray Iron Castings.

C. Covers for all drain manholes shall have the word "DRAIN" cast into the top surface in 3” letters.

D. Drain manhole frames shall have a minimum clear opening diameter of 24-inches.

E. Standard drain manhole frames and covers shall be standard frames and covers as manufactured by Neenah Foundry Co., LeBaron Foundry Co., or equal.

F. Catch basins grates and frames shall be standard grates and frames by type as specified in NHDOT Standard Specifications, Section 604.

2.5 BRICK AND MORTAR

A. Brick and mortar for inverts, tables, and raising castings to grade shall be as specified in NHDOT Standard Specifications, Section 604.

2.6 HEADWALL

A. Refer to Drawings for headwall type, size and configuration. Materials shall be as specified in NHDOT Standard Plans and Specifications.

2.7 BEDDING, BACKFILL AND FILTER FABRIC

A. Refer to Drawings for bedding, backfill and filter fabric requirements. Materials shall be as specified in Section 02300.

PART 3 - EXECUTION

3.1 GENERAL

A. Excavation and backfill shall conform to the provisions of Section 02300

3.2 RECONSTRUCTION

A. The Contractor shall reconstruct existing drainage structures, ditches and swales in close conformity with the existing lines, grades, slopes, dimensions and materials unless otherwise indicated on the Drawings or directed by the Engineer.

B. The Contractor shall reuse the existing material if, in the opinion of the Engineer, the material is suitable. If, in the opinion of the Engineer, and if, due to the Contractor's operations, the material is not suitable, the Contractor shall replace existing structures with new structures of the same material at no additional cost to the Owner.

C. Upon excavation, if it is determined that the existing drainage pipe or structures are inadequate; the Owner may direct the Contractor to remove and replace such materials. Work shall be considered extra work and shall be performed in accordance with the Contract Documents and Owner regulations. Payment for extra work and materials shall be in accordance with the General Conditions and, when provided, unit prices as specified in the Bid shall govern.

3.3 PIPE INSTALLATION

A. Pipe, fittings and accessories shall be handled and stored in accordance with manufacturer's instructions and in a manner to ensure pipe, fittings and accessories are installed in a sound and undamaged condition.

B. Contractor shall furnish slings, straps and/or other approved devices to provide satisfactory support of the pipe when lifted. Transportation from delivery areas to the trench shall be

restricted to operations which cause no damage to the pipe units.

C. Contractor shall take care not to damage pipe by impact, bending, compression or abrasion during handling and installation. Pipe shall not be dropped from trucks onto the ground or into trench.

D. Upon delivery and prior to and after installation, all pipe and fittings shall be inspected for cracks and defects and any other evidence of unsuitability. Pipe which has been damaged or which does not meet the requirements of these Specifications shall be rejected and shall be immediately removed from the site at the Contractor's expense. No pipe or fitting which is found to be defective shall be installed. If any pipe is discovered to be defective after it has been laid, it shall be removed and replaced with a non-defective pipe at the Contractor's expense. The Contractor shall furnish such labor and assistance as may be required for inspection purposes.

E. Pipe, fittings and excavation shall be to the line and grade as indicated on the Drawings and as specified herein.

F. Pipe shall be laid in the dry and at no time shall water in the trench be permitted to flow into the pipe. Provide temporary diversion of water as required to permit the installation of pipe in the dry.

G. Except where a concrete cradle or envelope is required, the pipe shall be laid in a cradle as indicated on the Drawings. The pipe shall be in contact with the shaped bedding throughout its full length. In trenches, no blocking or supporting of the pipe by concrete, stones, bricks, wooden wedges, or method of other than bedding the pipe as indicated on the Drawings will be permitted. Each length of pipe shall be shoved home against the pipe previously laid and held securely in position. Joints shall not be "pulled" or "cramped". Pipe shall be jointed in accordance with manufacturer's instructions.

H. Jointing:

1. High Density Polyethylene Pipe: Pipe shall be joined with the Sure-Lok (bell and spigot) joint and shall provide a minimum pull apart strength of 400 pounds. The bell shall be an integral part of the pipe. The joint shall use a gasket to form a silt-tight connection. Gaskets shall be installed in the bell by the pipe manufacturer. Joints shall remain silt-tight when subject to a 1.5 degree axial misalignment.

I. Allow time for observation of the work by the Engineer and Owner before any backfill is placed. Relay any pipe out of alignment and remove any pipe that is damaged.

J. When work is not in progress, the end of pipe shall be suitably closed to prevent entry of animals, material, debris, etc.

K. Existing utilities damaged or broken during construction shall be repaired immediately by the Contractor. All repairs shall be made prior to the continuation of work. The Engineer, Owner and utility authority shall be immediately notified of any breaks or unanticipated disruptions of service.

L. At the end of each work day or at intervals determined by the Engineer, the Engineer, with the Contractor, will review the pipe for alignment. Unsatisfactory work shall be reinstalled to the satisfaction of the Engineer at no additional cost to the Owner.

M. During construction, Contractor shall provide all reasonable and necessary materials and labor for laying out the pipe, setting stakes and making measurements including the furnishing of a licensed land surveyor. Contractor shall not proceed until he has made timely request of the Engineer for and has received from him, such controls and instructions as may be necessary for the work to progress. The work shall then he done in strict conformity with such controls and instructions.

N. Refer to NHDOT Standard Specifications, Section 603 and Section 605 for additional requirements.

3.4 CATCH BASINS, DRAIN MANHOLES AND CASTINGS

A. Catch basins, drain manholes and castings shall be reconstructed and installed in accordance with NHDOT Standard Specifications, Section 604, except as herein modified:

1. The top 6-inches of the dome shall be built of brick and mortar to permit adjustment of the frame to meet finished grade.

2. Precast concrete bases shall be supported on a compacted level foundation of crushed stone. The depth of the compacted stone shall be the greater of 6-inch or as indicated on the Drawings.

3. Invert channels shall be formed of brick and mortar placed on the base. The inverts shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining pipes.

4. Brickwork to be laid with close joints shall not to exceed ¼-inch for face work, all joints well broken and bonded and each seventh course to be headers.

a. Each brick is to be thoroughly wet just before laying and is to be completely embedded in mortar under its bottom, its side and its end at one operation. Care is to be taken to have every joint full of mortar and the outside is to be fully filled and the inside pointed.

b. The hardest, regular shaped brick are to be used for the tables and inverts of manholes, the Contractor culling the brick for this purpose. Great care is to be taken in building and shaping sewer inverts and only competent masons are to be employed in this work.

c. No brick work is to be laid in water and no water is to be allowed to rise on the work until it has set at least 24 hours. No drainage shall be affected through manholes or sewers or drains.

d. Do not plaster or mortar over brickwork inside the manholes.

B. Upon completion of the work, Contractor shall clean all catch basins and drain manholes of silt and other debris.

3.5 DRAINAGE SWALES

A. Refer to Drawings.

3.6 HEADWALL

A. Refer to NHDOT Standard Plans and Specifications.

END OF SECTION

SECTION 02700

BASES AND PAVEMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, equipment, and materials, and performing all operations in connection with constructing base courses and pavements for roadways, drives, curbs and waterways and installing pavement markings, complete in place, in accordance with the Drawings and Specifications and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

B. The State of New Hampshire Department of Transportation (NHDOT) Standard Specifications for Road and Bridge Construction (hereinafter referred to as NHDOT Standard Specifications), latest edition.

1. All references to Method of Measurement, Basis of Payment and Payment Items in the NHDOT Standard Specifications are hereby deleted. References made to particular sections or paragraphs in the NHDOT Standard Specifications shall include all related articles mentioned therein.

1.3 SUBMITTALS

A. Submit in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Submit a statement of qualifications for the paving contractor. The information shall include the name of the paving contractor, key personnel resumes, equipment lists and list of prior experience.

C. Submit certificates of compliance that the proposed materials to be used for the work comply with the Specifications.

1. Certificate of compliance for job mix formula for the various types of bituminous pavement materials shall be issued by the NHDOT.

2. The job mix formula shall state the source, gradation, and percentage of each fraction of the aggregate and filler (if required). It shall state the name of the refiner and supplier of the particular bituminous material to be used and the plant location.

D. No paving shall be placed until submittals have been reviewed by the Engineer.

1.4 QUALITY ASSURANCE

A. All work to be performed under this Contract is under the control of the Owner for all municipal roads and the NHDOT for all state roads.

B. All permits required by the Owner and NHDOT shall be obtained and paid for by the Contractor.

C. The paving contractor completing the work shall have a minimum of 5 years experience in municipal and state roadway paving operations. The Owner reserves the right to reject paving contractors who, in the judgment of the Engineer, lacks the necessary experience or equipment to perform the work as specified, or who displays a lack of ability based on the actual performance of the work completed. There shall be no change in the contract price for paving or claim for delay resulting from the dismissal of the paving contractor.

D. The paving plant used by the Contractor for the preparation of the bituminous concrete shall be acceptable to the Engineer. The Engineer reserves the right to inspect the plant and the making of the material.

PART 2 - PRODUCTS

2.1 BASE COURSES

A. Aggregate base course material shall be as specified in Section 02300.

B. Reclaimed stabilized base course material shall be as specified in NHDOT Standard Specifications, Section 306.

2.2 PAVEMENT

A. Pavement shall meet the requirements of NHDOT Standard Specifications, Section 401.

B. Job mix formula for bituminous pavement materials for binder course shall be as follows:

1. Aggregate Size: 3/4-inch (19 mm) in accordance with NHDOT Standard Specifications, Section 401, Table 1.

2. Mix Design: 50 gyration N.

3. Grade of Asphalt Binder: PG 58-28.

C. Job mix formula for bituminous pavement materials for wearing course shall be as follows:

1. Aggregate Size: 3/8-inch (9.5 mm) in accordance with NHDOT Standard Specifications, Section 401, Table 1.

2. Mix Design: 75 gyration N.

3. Grade of Asphalt Binder: PG 58-28.

D. Job mix formula for bituminous pavement materials for leveling course pavement shall be as specified in NHDOT Standard Specifications, Section 411, Table 1, Type H.

1. Grade of Asphalt Binder: PG 58-28.

E. Job mix formula for temporary pavement material shall be binder course pavement as herein specified.

F. Job mix formula for bituminous driveway material shall be wearing course pavement as herein specified.

G. Job mix formula for bituminous waterway material shall be wearing course pavement as herein specified.

H. Job mix formula for bituminous curb shall be as specified in NHDOT Standard Specifications, Section 609.

2.3 TACK COAT

A. Tack coat materials shall be as specified in NHDOT Standard Specifications, Section 410.

2.4 PAVEMENT MARKINGS

A. Permanent Pavement Markings: Materials for permanent pavement markings shall be as specified in NHDOT Standard Specifications, Section 632. Pavement markings shall be retroreflective pavement marking paint unless otherwise approved by the Owner. Color shall be as follows:

1. Edgelines: White

2. Centerline: Yellow

3. Crosswalk: White

4. Parking: White

B. Temporary Pavement Markings: Temporary pavement markings shall be raised plastic markings for centerline installation. Color shall be reflectorized yellow on two sides. Markings shall conform to NHDOT Standard Specifications.

PART 3 - EXECUTION

3.1 GENERAL

A. The Owner reserves the right to delete any paving items of work from the Contract without penalty.

B. The Contractor shall replace all pavement, markings, curbs, waterways and drives which have been removed or damaged during construction operations. Pavement replacement shall include satisfactory repair by the Contractor of roadways, curbs, sidewalks, drives and any other surface disturbed by his operations by the same materials as removed or as specified herein. Care shall be taken to minimize trench widths in paved areas.

3.2 BASE COURSES AND SUBGRADE

A. After the subgrade has been shaped to line, grade, and cross section, it shall be thoroughly compacted. This operation shall include any required reshaping and wetting to obtain proper compaction. All soft or otherwise unsuitable material shall be removed and replaced with suitable material from excavation or borrow. The resulting area, and all low sections, holes, or depressions shall be brought to the required grade with approved material and thoroughly compacted. Refer to Section 02300 for compaction requirements and additional requirements for fine grading.

B. Base courses shall be constructed to the depths and areas shown on the Drawings.

C. Aggregate base courses shall be constructed in accordance with NHDOT Standard Specifications, Section 304, except as herein modified:

1. Gravel and crushed gravel base courses shall be placed in 6-inch lifts and compacted to 95% maximum density unless otherwise directed by the Engineer. Refer to Section 02300 for additional compaction requirements.

2. Crushed gravel shall be fine graded with a power grader or other approved equipment. Tolerances shall be within 1/2” or less.

3. No pavement shall be placed until fine grading has been checked by the Engineer.

D. Reclaimed stabilized base courses shall be constructed in accordance with NHDOT Standard Specifications, Section 306, except as herein modified:

1. Excess reclaimed base course material shall become the property of the Owner unless otherwise directed by the Engineer. Contractor shall remove excess material from the work site and haul and stockpile material in a location to be determined by the Owner. Excess material not salvaged by the Owner, as determined by the Owner, shall become the property of the Contractor.

2. All cobbles, stones and boulders 6-inch in diameter or greater that are exposed under the

existing pavement shall be removed from the work area.

3. No pavement shall be placed until fine grading has been checked by the Engineer.

E. The Contractor shall regrade and recompact the base course for installation of permanent binder and wearing course pavement in areas which are disturbed during construction, and in areas as directed by the Engineer.

F. After the base course has been rolled to the required grade, any broken or irregular edges of the existing pavement shall be saw cut in straight lines leaving a sound vertical face 12-inches back from the edge of the trench or other excavations to accept placement of a 12-inch minimum overlap of bituminous binder course pavement on undisturbed material.

G. Tack coat shall be applied to the edges of existing pavement so that the new pavement material may be properly bonded to the existing.

3.3 PAVEMENT

A. Bituminous binder course and wearing course pavement shall be constructed in accordance with NHDOT Standard Specifications, Section 401 and Section 403 except as herein modified:

1. The pavement shall be placed and compacted only at such times as to permit the proper checking by the Engineer.

2. The Contractor shall place all bituminous pavement by machine method only unless otherwise permitted by the Engineer. Placing bituminous pavement by hand method will be permitted only for particular locations in the work where because of irregularity, inaccessibility or other unavoidable obstacles mechanical spreading and finishing cannot be performed.

3. The equipment for spreading and finishing shall be mechanical, self-powered pavers, capable of spreading and finishing the pavement true to the established line, grade, width and crown. Paving boxes shall be of proper size for the intended purpose.

4. Pavement shall only be placed when the underlying surface is dry, frost-free and the surface temperature is above 50 degrees F, unless otherwise directed by the Engineer.

5. Pavement shall only be placed during daylight hours.

6. All utility structures (frames, grates, covers, valve boxes, etc.) within the limits of pavement shall be adjusted by the Contractor prior to placing wearing course pavement.

7. All catch basins and manholes shall be covered with acceptable cover before paver passes over structure.

8. Castings shall be sprayed with kerosene or other product before the paver passes over casting. The casting shall be clean of asphalt at the completion of the paving.

9. The Contractor shall do the required work around catch basins to provide a downward slope to catch basin grates.

B. Temporary pavement shall be constructed in accordance with NHDOT Standard Specifications, Section 401 and Section 403 except as herein modified.

1. Temporary pavement shall be placed in areas where test pits or exploratory excavations occur in paved areas, where the road is to be reconstructed by others and as directed by the Engineer.

2. Contractor shall place temporary pavement the full width of the excavation within the same week of the trench being backfilled unless otherwise directed by the Engineer.

3. Temporary pavement shall be repaired as necessary to maintain the surface of the pavement until replaced by the permanent pavement. If points of settlement or holes appear in the temporary pavement, the Contractor shall repair the same within 24 hours of notification by the Engineer, at no additional cost to the Owner.

4. After the specified time period for trench settlement has elapsed and when so directed by the Engineer, the Contractor shall remove and dispose of the temporary pavement, cut the trench edges and regrade the base course for installation of the permanent pavement.

C. Leveling course pavement shall be constructed in accordance with NHDOT Standard Specifications, Section 411.

3.4 CURBS AND WATERWAYS

A. Bituminous curbs shall be replaced as required and installed as indicated on the Drawings and directed by the Engineer.

B. Bituminous curbs shall be constructed in accordance with NHDOT Standard Specifications, Section 609, except as herein modified:

1. The bituminous curb shall be placed on the permanent binder course pavement. The wearing course pavement shall be constructed after placement of the bituminous curbs.

2. Prior to placing the bituminous curb, the permanent binder course pavement shall be cleaned and painted with a tack coat of bituminous material.

3. Bituminous curbs shall not be placed within 24 hours of last rainfall.

4. Bituminous curbs shall be placed by extruding curb paver and compacted to 95% maximum density.

D. Curbs shall conform to the grade of roadway and adjacent curb sections.

E. When replacing damaged sections of curb, replacement sections shall match existing sections in material, dimension and alignment.

F. Areas behind curbs shall be graded smooth. Areas shall receive loam and seed, gravel or sidewalk replacement as required.

G. The Contractor shall be responsible for damage to curbs until final completion.

H. Bituminous waterways shall be replaced as required and installed as indicated on the Drawings and directed by the Engineer. Waterways shall be placed in two 1-inch thick bituminous courses on a 12-inch compacted crushed gravel base unless otherwise indicated on the Drawings. Material shall be compacted by tamping or rolling. The Contractor shall be responsible for damage to the waterway until final completion.

3.5 TACK COAT

A. Install tack coat as specified in NHDOT Standard Specifications, Section 410.

3.6 PAVEMENT MARKINGS

A. Pavement markings shall be placed in accordance with NHDOT Standard Specifications, Section 632.

B. Pavement markings shall be placed where required by Owner on municipal roads and by NHDOT on state roads.

C. Contractor shall repaint existing pavement markings where markings have been damaged due to construction operations. All painting repairs shall meet with the approval of the Owner or NHDOT as required.

D. Temporary pavement markers shall be installed on all pavement that will be unmarked for a period exceeding 48 hours, unless otherwise directed by the Engineer.

3.7 COLD PLANING

A. Complete cold planing as specified in NHDOT Standard Specifications, Section 417.

3.8 INFRARED HEATER REPAIRS

A. Infrared heater repairs shall be performed by an experienced infrared operator.

B. Areas to be repaired shall be swept clean to remove all loose and foreign materials.

C. An approved infrared heater shall be positioned over the area to be repaired for a period of time required to soften the existing pavement to a depth of two or more inches. Oxidation of the pavement, caused by improper heating techniques, must be avoided. Unsuitable material must be discarded, if this condition occurs.

D. The softened area shall be scarified and raked to a workable condition.

E. Any necessary additional bituminous concrete mix must be obtained from a suitable infrared

heated storage unit required to keep asphalt mix at near constant temperature throughout the working day. The minimum temperature of asphalt mix shall be 200°F.

F. After the paving mixture has been properly admixed and raked to grade, compaction shall be obtained by use of a steel wheeled roller of sufficient weight to establish a uniform density comparable to that of the adjacent surface within the working area. The finished patch shall be level with no depression retaining water on any of its surface.

G. Edges of the rolled area shall be sealed with suitable asphalt emulsion, and sand spread over the entire area that has been patched.

3.9 FIELD QUALITY CONTROL

A. Thickness and Surface Tolerances:

1. Bituminous pavement courses shall be tested in-place for compliance with compacted thickness and surface tolerance requirements.

2. Contractor shall repair or remove and replace unacceptable pavement and retest as directed by the Engineer, all at no additional cost to the Owner.

3. Testing, tolerances and replacement shall be as specified in NHDOT Standard Specifications, Section 401.

4. In-place density tests shall be completed at Contractor's expense by a testing laboratory experienced and certified to complete the testing required.

B. Compaction: Refer to Section 02300

C. Guarantee: During the guarantee period, the Contractor shall maintain the integrity of the roadway surface and shall promptly fill any depressions and holes that may occur. Fill material shall be in compliance with these Specifications and as directed by the Engineer or Owner. Contractor shall commence work within 24 hours of being notified by the Engineer or Owner of deficiencies. All work shall be completed at no additional cost to the Owner.

END OF SECTION

SECTION 02920

LAWNS AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, equipment, and materials and performing all operations in connection with the application of loam, fertilizer, lime, mulch, seed and sod, and maintenance and protection of lawns and grasses in accordance with the Drawings and Specifications and as directed by the Engineer.

1.2 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, General Conditions, Supplemental Conditions and Division 1 Specification Sections apply to this Section.

1.3 SUBMITTALS

A. Submit in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Submit samples of all materials requested by the Engineer. Analyses shall be certified by the manufacturer, dealer or testing laboratory, whichever is appropriate.

1.4 QUALITY ASSURANCE

A. The Engineer reserves the right to test and reject any material not meeting these Specifications by utilizing tests in accordance with methods adopted by the Association of Official Agricultural Chemists. Costs for these tests shall be paid by the Contractor

B. For the duration of the guarantee period, the Contractor shall insure that the soil remains free from erosion and that the grass cover remains in good condition. In addition, for the duration of the guarantee period, the Contractor shall maintain the slopes and grass cover at the Contractor's own expense when notified by the Engineer or the Owner to do so. All repair work shall be done to the satisfaction of the Engineer and Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Loam:

1. Loam shall be fertile, natural soil, typical of the locality, free from large stones, roots, sticks, boards, clods, clay, hardpan, peat, weeds, sod, lime, cement, bricks, ash, cinders, slag, concrete, tar, toxic materials that harmful to plants, and other deleterious material.

Loam shall be obtained from naturally well-drained areas.

2. Loam shall not be excessively acid or alkaline and shall have a pH value within the range of 6 to 7.

3. Loam shall not contain less than 4 percent or more than 20 percent decayed organic matter in that portion of the sample which passes a 1/4-inch sieve when determined by the wet combustion method on a sample dried at 105 degrees C.

4. One hundred percent of loam weight shall pass a 1-inch opening sieve and 97 to 100 percent shall pass a 1/4-inch sieve. In the latter material there shall be not less than 20 percent or more than 65 percent passing a 200 mesh sieve as determined by a wash test made in accordance with the standard test ASTM D1140.

5. Before any loam is delivered, the Contractor shall submit a sample of 1 cubic foot of product from each source of supply including on-site stockpiles for the Engineer's review and approval. Delivery may begin upon such approval. The approved sample shall be stored on the site until the supply from its source is exhausted or until no more loam is required.

6. Samples of loam from each source shall be provided and tested by a testing laboratory approved by the Engineer. Test analysis shall be accompanied by the laboratory's recommendations for amending the loam. Loam shall be tested in conformance with the Standards of the Association of Official Agricultural Chemists. All testing shall be done at the Contractor's expense.

7. No loam shall be delivered in a frozen or muddy condition.

8. Topsoil stockpiled as a result of Contractor operations may be used when approved by the Engineer. Additional topsoil furnished by the Contractor shall be subject to the Engineer's approval.

B. Commercial fertilizer shall be complete fertilizer and shall be a standard product complying with state and federal fertilizer laws. Fertilizer shall be delivered to the site in the original unopened containers which shall bear the manufacturer's name and guaranteed statement of analysis. At least 40 percent by weight of the nitrogen content of the fertilizer shall be derived from organic materials. Fertilizer for lawn areas shall contain not less than 8 percent nitrogen, 6 percent phosphorus and 4 percent potash by weight of ingredients or as otherwise indicated by loam test results.

C. Superphosphate shall be finely ground phosphate rock as commonly used for agricultural purposes and shall contain not less than 18 percent available phosphoric acid.

D. Ground limestone shall contain not less than 95 percent total carbonates and shall be ground to such fineness that 50 percent will pass through a 100 mesh sieve and 90 percent will pass through a 20 mesh sieve. Coarser material will be accepted provided the specified rates of application are increased proportionately on the basis of quantities passing the 100 mesh

sieve.

E. Water shall be furnished by the Contractor and shall be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment required for the work shall also be furnished by the Contractor.

F. Lawn seed mixture shall be a fresh, clean, Park Seed Type 15. Seed may be mixed by an approved method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis. If the seed is mixed by the dealer, the Contractor shall furnish to the Engineer the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

1. Lawn seed shall be purchased from a recognized distributor and shall be composed of the following varieties mixed in the percentages indicated. Seed shall test to minimum percentages of purity and germination specified.

2. Park Seed Type 15 shall normally be used on loam areas. This seed mixture shall conform to the following:

Kind of Seed	**Minimum Purity (%)**	**Minimum Germination (%)**	**Kilograms/Hectare (Lbs / Acre)**
Creeping Red Fescue	96	85	45 (40)
Perennial Ryegrass	98	90	55 (50)
Kentucky Bluegrass	97	85	30 (25)
Redtop	95	80	5 (5)

G. Fiber mulch shall be composed of wood cellulose fiber containing no germination or growth inhibiting factors. The fiber shall be colored green to allow visual metering during application, have the properties of even dispersal and suspension when agitated in water and, when uniformly sprayed on soil surface, form an absorbent cover allowing percolation of water to underlying soil.

H. All materials shall be delivered to the site in original unopened packages, showing weight, manufacturer's name and guaranteed analysis. Materials shall be stored in such a manner that their effectiveness and usability will not be diminished or destroyed and shall be uniform in composition, dry, unfrozen and free flowing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All work shall be performed by workmen experienced in lawn installation under the full-time supervision of a qualified foreman.

B. After acceptance of subgrade work, whatever additional grading is necessary shall be performed to bring the subgrade to a true, smooth slope parallel to and, except where otherwise indicated, to 6 inches below grade of all areas to receive loam. Furnish and install grade stakes sufficiently spaced to insure correct line and grade of subgrade and finished grade. Immediately before placing loam, loosen the surface of the subgrade. In areas that have been severely compacted, scarify to a depth of 12 inches by approved methods.

C. Place and spread loam to a depth sufficiently greater than the depth required for lawn areas so that after natural settlement and compaction, the complete work will conform to the lines, grades and elevations indicated. After loam has been spread, prepare it carefully by scarifying or harrowing and hand raking. Remove all large stiff clods, lumps, brush, roots, stumps, litter and other foreign material and stones over 1-inch in diameter and dispose of legally off site.

D. Apply commercial fertilizer and work thoroughly into the loam in two applications. The first application shall be within one week before the seeding or sodding, at the rate of 35 lbs per thousand square feet, harrowed into the top 2-inches of loam. The second application shall be as determined by the test results.

E. Apply ground limestone at the rate recommended by the testing laboratory and after loam has been spread and graded.

F. Incorporate superphosphate into the loam with the first application of commercial fertilizer at the rate of 20 lbs per thousand square feet or at the rate determined from the test results.

G. The season for the seeding shall be from April 1 to May 31 and from August 15 to October 15. The actual planting of lawns shall be done, however, only during periods within this season which are normal for such work as determined by weather conditions and by accepted practice in the local area. At option of and on responsibility of the Contractor, planting of grass may be done under unseasonable conditions without additional compensation, subject to approval as to time of work and methods of operation.

H. Seeding shall consist of soil preparation, seeding, raking, rolling, weeding, watering and otherwise providing all labor and materials necessary to secure the establishment of acceptable turf.

I. Immediately before any seed is sown, the ground shall be scarified, harrowed, raked and broomed until the surface is smooth, friable and of uniformly fine texture. No seeding shall be done during windy weather. Seed shall be sown in two directions at right angles to each other. Sow the seed evenly by hand or with an approved seeding device in the proportions and at the rate of 5 lbs. per 1,000 square feet of area. The seed shall be covered with a thin layer of loam by light raking or other approved method, rolled in both directions with a hand roller weighing not more than 100 lbs per foot of width, and watered with a fine spray. Necessary precautions shall be taken to keep the area undisturbed until the grass comes up.

J. All slopes 3:1 or steeper shall be overseeded with Annual Ryegrass, 98 percent purity, 90 percent germination, at the rate of 1 lb per 1,000 square feet, in addition to the specified seed

mix. This shall be a separate sowing executed after the sowing of the regular mixture and before the raking and rolling operations. All areas disturbed by the work of this contract and not required to be developed otherwise shall be seeded except as otherwise noted on the Drawings.

K. Hydroseeding: At his option, the Contractor may accomplish seeding by use of approved hydroseeding equipment designed specifically for this work. Mix seed, fertilizer, wood cellulose fiber mulch and non asphaltic-fiber binder in required amount of water to produce a homogeneous slurry. Add fiber mulch after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight. The slurry shall be applied within 30 minutes of mixing to prevent burning of the seed by fertilizer. Immediately following the application of the slurry mix, make separate application of fiber mulch and fiber binder at the rate of 1,000 pounds, dry weight, per acre except where erosion control blanket is applied immediately. When hydraulically sprayed on the ground, material shall form a blotter like cover impregnated uniformly with grass seed. Cover shall allow rainfall or applied water to percolate to underlying soil.

3.2 MAINTENANCE

A. Maintenance shall begin immediately after each portion of lawn is planted and the Contractor shall be responsible for maintenance of the lawn including watering, weeding, fertilization, mowing and replanting as necessary to establish a uniform stand of the specified grasses and until final acceptance. Scattered bare spots, none of which are larger than 72 square inches, will be allowed in seeded areas up to a maximum of 2 percent of any lawn area. After the grass has started, all areas and parts of areas which fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas and parts of areas shall be reseeded repeatedly until all areas are covered with a satisfactory growth of grass. At time of first cutting, keep mower blades not less than 2-1/2 inches high. Contractor is responsible for lawn maintenance until final acceptance or two cuttings, whichever is longer.

B. Prior to acceptance, any damage resulting from erosion, gulleys, washouts or other causes shall be repaired by filling with loam, tamping, refertilizing and resodding or reseeding.

C. Lawn areas shall be protected against trespassing and damage as required to insure satisfactory growth acceptable to the Engineer. Any means of protection shall require the approval of the Engineer prior to its erection.

D. All maintenance shall be completed at no additional cost to the Owner.

3.3 CLEANUP

A. After completion of the work, the Contractor shall remove all debris, materials, rubbish, etc. from the site and shall dispose of same in a manner satisfactory to the Engineer. The premises shall be left clean.

3.4 ACCEPTANCE

A. Upon written request by the Contractor, the Engineer will inspect all lawn areas to determine completion of contract work. This request must be submitted at least 10 days prior to the anticipated date. The lawns will become acceptable if they show a uniform, thick well developed stand of grass that may be occupied by the Owner for their intended use. When acceptance is made in writing to the Contractor, the Contractor's responsibility for maintenance shall terminate as herein specified.

B. The Contractor shall furnish to the Owner complete written instructions for maintenance of all lawn areas at time of acceptance.

C. Acceptance of the lawn area shall not occur before acceptance of the entire Project.

END OF SECTION

APPENDIX A

GEOTECHNICAL INFORMATION

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH
Project No: 10.011.NH
Date Start: 1/21/10
Date End: 1/21/10

Sheet 1 of 1
Boring No: B-1
Location: see plan
Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-4.5'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-1.0'	6"	6"	71	3"	Bituminous Pavement	
		S-1A	1.0-2.0'	12"	12"	41-79	1.0'	S-1: Light brown, fine to coarse sand, some gravel, trace silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	16"	7-10	2.0'	S-1A: Dark grey, fine to medium sand, little gravel, little silt. (FILL)	
						9-9			
5.0 '		S-3	4.0-6.0'	24"	20"	6-7		S-2: Light brown, fine to medium sand, trace silt. (moist)	
						8-9		S-3: Light brown, fine to medium sand with +/-5.0' lenses of brown silt. (wet)	
		S-4	6.0-8.0'	24"	24"	8-10		S-4: Grey, fine to medium sand, little to some silt. (wet)	
						10-12	8.0'		
								Terminated @ 8.0'	
10.0 '									
15.0 '									
20.0 '									
25.0 '									
30.0 '									

Driller: R. Marcoux
Helper: J. Martel
Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE
MOULTONBOROUGH, NH

Project No: 10.011.NH

Date Start: 1/21/10
Date End: 1/21/10

Sheet 1 of 1

Boring No: B-2

Location: see plan

Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-3.0'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-1.0'	6"	6"	40	3"	Bituminous Pavement	
		S-1A	1.0-2.0'	12"	12"	32-36	1.0'	S-1: Light brown, fine to coarse sand, some gravel, trace silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	20"	10-11		S-1A: Light brown, fine to medium sand, trace silt.	
						10-11		S-2: Same as S-1A. (wet)	
5.0 '		S-3	4.0-6.0'	24"	19"	8-10		S-3: Grey, fine to medium sand, little silt. (wet)	
						10-12			
		S-4	6.0-8.0'	24"	20"	7-9		S-4: Same as S-3.	
						8-7	8.0'		
								Terminated @ 8.0'	
10.0 '									
15.0 '									
20.0 '									
25.0 '									
30.0 '									

Driller: R. Marcoux
Helper: J. Martel
Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH

Project No: 10.011.NH

Date Start: 1/21/10

Date End: 1/21/10

Sheet 1 of 1

Boring No: B-3

Location: see plan

Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-3.0'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-1.0'	6"	6"	27	3"	Bituminous Pavement	
		S-1A	1.0-2.0'	12"	12"	37-46	1.0'	S-1: Light brown, fine to coarse sand, some gravel, trace silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	20"	18-11	3.0'	S-1A: Light brown, fine to medium sand, trace silt.	
						6-7		S-2: Olive brown silt, little fine sand. (wet)	
5.0 '		S-3	4.0-6.0'	24"	16"	6-8		S-3: Same as S-2.	
						7-10			
		S-4	6.0-8.0'	24"	18"	11-17		S-4: Grey, fine sand and silt. (wet)	
						24-32	8.0'		
								Terminated @ 8.0'	
10.0 '									
15.0 '									
20.0 '									
25.0 '									
30.0 '									

Driller: R. Marcoux

Helper: J. Martel

Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH

Project No: 10.011.NH

Date Start: 1/22/10

Date End: 1/22/10

Sheet 1 of 1

Boring No: B-4

Location: see plan

Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/22/10	+/-4.0'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-1.0'	6"	6"	10-8	1.5"	Bituminous Pavement	
							8"	S-1: Brown, fine to coarse sand, little gravel, trace silt. (Base Course FILL)	
		S-2	2.0-3.0'	12"	12"	16-7	3.0'	S-2: Dark brown, fine to medium sand, little silt, trace roots.	
		S-2A	3.0-4.0'	12"	10"	5-5		S-2A: Light brown, fine to medium sand, trace silt.	
5.0'		S-3	4.0-6.0'	24"	18"	2-5		S-3: Grey, fine to medium sand, trace silt. (wet)	
						6-6			
		S-4	6.0-8.0'	24"	22"	7-5		S-4: Same as S-3.	
						5-5	8.0'		
								Terminated @ 8.0'	
10.0'									
15.0'									
20.0'									
25.0'									
30.0'									

Driller: R. Marcoux

Helper: J. Martel

Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH
Project No: 10.011.NH
Date Start: 1/21/10
Date End: 1/21/10

Sheet 1 of 1
Boring No: B-5
Location: see plan
Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-3.0'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-0.75'	3"	6"	200/3"	1.75"	Bituminous Pavement	
							16"	S-1: Grey, fine to coarse sand, some gravel, little silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	17"	30-14		S-2: Grey, fine to medium sand, trace silt. (wet)	
						11-9			
5.0 '		S-3	4.0-6.0'	24"	18"	5-9		S-3: Grey, fine to medium sand, little silt. (wet)	
						9-9			
		S-4	6.0-8.0'	24"	14"	25-22		S-4: Brown, fine to coarse sand, trace gravel, trace silt. (wet)	
						20-22	8.0'		
								Terminated @ 8.0'	
10.0 '									
15.0 '									
20.0 '									
25.0 '									
30.0 '									

Driller: R. Marcoux
Helper: J. Martel
Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH
Project No: 10.011.NH
Date Start: 1/21/10
Date End: 1/21/10

Sheet 1 of 1
Boring No: B-6
Location: see plan
Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-5.5'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-1.0'	6"	4"	61	2.25"	Bituminous Pavement	
		S-1A	1.0-2.0'	12"	12"	38-23	0.75"	S-1: Light brown, fine to coarse sand, little gravel, little silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	17"	13-10		S-1A: Light brown, fine to medium sand, trace silt.	
						9-10		S-2: Grey, fine to medium sand, trace silt.	
5.0'		S-3	4.0-6.0'	24"	18"	6-7		S-3: Brown, fine to medium sand, trace silt. (moist)	
						9-10			
		S-4	6.0-8.0'	24"	20"	10-6	6.5'	S-4: Olive brown silt, trace fine sand. (wet)	
						5-5	8.0'		
								Terminated @ 8.0'	
10.0'									
15.0'									
20.0'									
25.0'									
30.0'									

Driller: R. Marcoux
Helper: J. Martel
Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH
Project No: 10.011.NH
Date Start: 1/21/10
Date End: 1/21/10

Sheet 1 of 1
Boring No: B-7
Location: see plan
Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-4.0'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-0.7'	2"	2"	100/2"	2"	Bituminous Pavement	(1)
							14"	S-1: Brown, fine to coarse sand, some gravel, little silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	20"	32-14		S-2: Brown, fine to medium sand, trace gravel, trace silt, trace asphalt. (FILL)	
						8-6			
5.0'		S-3	4.0-6.0'	24"	15"	3-7		S-3: Grey, fine to coarse sand, trace gravel, trace silt, trace asphalt. (wet) (FILL)	
						8-8			
		S-4	6.0-8.0'	24"	20"	9-9	7.0'	S-4: Brown, fine to coarse sand, trace gravel, trace silt. (wet)	
						11-12	8.0'		
								Terminated @ 8.0'	
10.0'									
15.0'									
20.0'									
25.0'									
30.0'									

Driller: R. Marcoux
Helper: J. Martel
Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES: (1) Split spoon could not penetrate frost in upper +/-2.0'; based on measurement within borehole, about 12" of Base Course material below ??.

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

TEST BORING LOG

MILLER ENGINEERING & TESTING, INC.
100 SHEFFIELD ROAD - PO BOX 4776 / MANCHESTER, NEW HAMPSHIRE 03108
TELEPHONE (603) 668-6016 / FAX (603) 668-8641

Project: PARADISE DRIVE MOULTONBOROUGH, NH

Project No: 10.011.NH

Date Start: 1/21/10

Date End: 1/21/10

Sheet 1 of 1

Boring No: B-8

Location: see plan

Surface Elev:

	CASING	SAMPLER
TYPE	Hollow Stem Auger	Split Spoon
SIZE	2-1/4" ID	1/3/8" ID
HAMMER	--	140 pounds
FALL	--	30 inches

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION PERIOD
1/21/10	+/-3.0'	4.0'	upon completion

Depth	Cas bl/ ft.	SAMPLE No.	Depth	Pen.	Rec.	Blows/6"	Strata Change	Sample Description	Notes
		S-1	0.5-1.5'	12"	12"	51-66	2"	Bituminous Pavement.	
		S-1A	1.5-2.0'	6"	6"	43	1.5'	S-1: Light brown, fine to coarse sand, little gravel, little silt. (Base Course FILL)	
		S-2	2.0-4.0'	24"	20"	13-12		S-1A: Light brown, fine to medium sand, trace silt.	
						10-11		S-2: Light brown, fine to coarse sand, trace silt. (moist)	
5.0'		S-3	4.0-6.0'	24"	16"	6-9		S-3: Same as S-2. (wet)	
						7-7			
		S-4	6.0-8.0'	24"	22"	6-5	7.0'	S-4: Grey, fine to medium sand, some silt. (wet)	
						5-5	8.0'		
								Terminated @ 8.0'	
10.0'									
15.0'									
20.0'									
25.0'									
30.0'									

Driller: R. Marcoux

Helper: J. Martel

Inspector: T. Strike

COHESIVE CONSISTENCY (Blows/Foot)	COHESIONLESS DENSITY (Blows/Foot)	PROPORTIONS USED
0 - 2 VERY SOFT	0 - 4 VERY LOOSE	TRACE: 0-10%
2 - 4 SOFT	4 -10 LOOSE	LITTLE: 10-20%
4 - 8 MEDIUM STIFF	10 -30 MEDIUM DENSE	SOME: 20-35%
8 -15 STIFF	30 -50 DENSE	AND: 35-50%
15-30 HARD	50+ VERY DENSE	

NOTES:

REMARKS THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES: TRANSITION MAY BE GRADUAL. WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.