COPY NO.

15 COLUMBIA STREET AND 19 UNION STREET PARKING LOT REHABILITATION

STATE OF MAINE AUGUSTA, MAINE

BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS

APRIL 2019

14105A



STATE OF MAINE

AUGUSTA, ME

BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS

FOR

15 COLUMBIA STREET AND 19 UNION STREET PARKING LOT REHABILITATION

APRIL 2019



Prepared By:

Wright-Pierce 11 Bowdoin Mill Island, Suite 140 Topsham, Maine 04086 Phone: 207-725-8721

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00 11 13 Notice to Contractors

15 Columbia Street and 19 Union Street Parking Lot Rehabilitation

Work to be performed as part of the 15 Columbia Street and 19 Union Street Parking Lot Rehabilitation project includes full depth reconstruction of the parking lot surrounding 19 Union Street (Base Bid), the parking lot adjacent to the athletic fields (Bid Alternate 1), the parking lot surrounding 15 Columbia Street (Bid Alternate 2) and replacement of bituminuous curb in kind (Bid Alternate 3). Included with this contract is supply and installation of all aggregates and pavement, sidewalk reconstruction, granite curb installation, pavement striping and all else as indicated in the plans and specifications.

The cost of the work is approximately \$873,000. The work to be performed under this contract shall be completed on or before the **Final Completion date of July 31, 2019**.

1. Sealed Contractor bids, in envelopes plainly marked "Bid for 15 Columbia Street and 19 Union Street Parking Lot Rehabilitation" and addressed to:

Jill M. Instasi Bureau of Real Estate Management 4th Floor, Cross State Office Building, 111 Sewall Street 77 State House Station Augusta, Maine 04333-0077

will be opened and read aloud at the address shown above at 2:00 p.m. on May 1st, 2019. Any bid submitted after the noted time will not be considered a valid bid and will remain unopened.

- 2. The bid shall be submitted on the Contractor Bid Form (section 00 41 13) provided in the Bid Documents. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.
- 3. Bid security is required on this project.

 If noted above as required, the Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BREM website.
- 4. Performance and Payment Bonds are required on this project.

 If noted above as required, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BREM website.
- 5. Filed Sub-bids are not required on this project.
- 6. There are no Pre-qualified General Contractors on this project.
 If Pre-qualified General Contractors are identified for this project, the name of each company, with their city and state, are listed below.

00 11 13 Notice to Contractors

- 7. An on-site pre-bid conference will not be conducted for this project. If a pre-bid conference is scheduled, it is optional for General Contractors and optional for Subcontractors and suppliers. Contractors who arrive late or leave the meeting early may be prohibited from participating in this meeting and bidding. Not Applicable.
- 8. Bid Documents will be available on or about April 11, 2019. Bidding documents may be viewed and/or obtained in PDF format on-line at http://www.maine.gov/dafs/brem/business-opportunities#rfp at no cost to the bidder:

Bureau of Real Estate Management 4th Floor, Cross State Office Building, 111 Sewall Street 77 State House Station Augusta, Maine 04333-0077 Phone (207) 624-7341 E-mail Jill.Instasi@maine.gov

9. Bid Documents may be examined at:

AGC Maine 188 Whitten Road Augusta, ME 04332 Phone 207-622-4741 Fax 207-622-1625

00 21 13

Instructions to Bidders

- 1. Bidder Requirements
- 1.1 A bidder is a Contractor who is qualified, or has been specifically pre-qualified by the Bureau of Real Estate Management, to bid on the proposed project described in the Bid Documents.
- 1.2 Contractors and Subcontractors bidding on projects that utilize Filed Sub-bids shall follow the requirements outlined in these Bid Documents for such projects. See Section 00 22 13 for additional information.
- 1.3 Contractors and Subcontractors are not eligible to bid on the project when their access to project design documents prior to the bid period distribution of documents creates an unfair bidding advantage. Prohibited access includes consultation with the Owner or with design professionals engaged by the Owner regarding cost estimating, constructability review, or project scheduling. This prohibition to bid applies to open, competitive bidding or pre-qualified contractor bidding or Filed Sub-bidding. The Bureau may require additional information to determine if the activities of a Contractor constitute an unfair bidding advantage.
- 1.4 Each bidder is responsible for becoming thoroughly familiar with the Bid Documents prior to submitting a bid. The failure of a bidder to review evident site conditions, to attend available prebid conferences, or to receive, examine, or act on addenda to the Bid Documents shall not relieve that bidder from any obligation with respect to their bid or the execution of the work as a Contractor.
- 1.5 Prior to the award of the contract, General Contractor bidders or Filed Sub-bidders may be required to provide documented evidence to the Owner or the Bureau showing compliance with the provisions of this section, their business experience, financial capability, or performance on previous projects.
- 1.6 The selected General Contractor bidder will be required to provide proof of insurance before a contract can be executed.
- 1.7 Contracts developed from this bid shall not be assigned, sublet or transferred without the written consent of the Owner.
- 1.8 By submitting a bid the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Director of the Bureau of Real Estate Management may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.
- 1.9 The Contractor attests that it is not presently indicted for or otherwise criminally or civilly charged by a Federal, State or local government entity with commission of any of the following offenses and has not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction, or contract under a public transaction, violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.
- 1.10 The Contractor shall not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs or State of Maine projects.

00 21 13

Instructions to Bidders

- 2. Authority of Owner
- 2.1 The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner and the State of Maine.
- 2.2 Subject to the Owner's stated right to accept or reject any or all bids, the Contractor shall be selected on the basis of the lowest sum of an acceptable Base Bid plus any Alternate Bids the Owner elects to include. An acceptable bid is one from a responsive and responsible bidder.
- 2.3 The Owner is exempt from the payment of Federal Excise Taxes and Federal Transportation Tax on all shipments, as well as Maine State Sales and Use Taxes on items "...physically incorporated in real property ...". The bidder shall not include these taxes in their bid. See Section 00 72 13 for additional information.
- 3. Submitting Bids and Bid Requirements
- 3.1 Each bid shall be submitted on the forms provided in the Bid Documents.
- 3.2 Each bid shall be valid for a period of thirty calendar days following the Project bid opening date and time.
- 3.3 A bid that contains an escalation clause is considered invalid.
- 3.4 Bidders shall include a Bid Bond or other approved bid security with the bid form submitted to the Owner when the bid form indicates such bid security is required. The bond value shall be 5% of the bid amount. The form of bond is shown in section 00 43 13.
- 3.5 Bidders shall include the cost of Performance and Payment Bonds in the bid amount if the bid amount will result in a construction contract value over \$125,000, inclusive of alternate bids that may be awarded in the contract. Pursuant to 14 M.R.S.A., Section 871, Public Works Contractors' Surety Bond Law of 1971, subsection 3, the selected Contractor is required to provide these bonds before a contract can be executed. The form of bonds are shown in section 00 61 13.13 and 00 61 13.16.
- 3.6 Bidders may modify bids in writing prior to the bid closing time. Such written amendments shall not disclose the amount of the initial bid. If so disclosed, the entire bid is considered invalid.
- 3.7 Bidders shall acknowledge on the bid form all Addenda issued in a timely manner. The Architect shall not issue Addenda affecting bidders less than 72 hours prior to the bid closing time. Addenda shall be issued to all companies who are registered holders of Bid Documents.
- 3.8 A bid may be withdrawn without penalty if a written request by the bidder is presented to the Owner prior to the bid closing time. Such written withdrawal requests are subject to verification as required by the Bureau. After the bid closing time, such written withdrawal requests may be allowed in consideration of the bid bond or, without utilizing a bid bond, if the Contractor provides documented evidence to the satisfaction of the Bureau that factual errors had been made on the bid form.
- 3.9 In the event State of Maine Offices unexpectedly close on the published date of a public bid opening in the location of that bid opening, prior to the time of the scheduled deadline, the new deadline for the public bid opening will be the following business day at the originally scheduled hour of the day, at the original location. Official closings are posted on the State of Maine government website.
- 3.10 Projects which require a State of Maine wage determination will include that schedule as part of the Bid Documents. See section 00 73 46, if such rates are required.
- 3.11 Projects which require compliance with the Davis-Bacon Act are subject to the regulations contained the Code for Federal Regulations and the federal wage determination which is made a part of the Bid Documents. See section 00 73 46, if such rates are required.

15 Columbia Street and 19 Union Street Parking Lot Rehabilitation

To: *Jill M. Instasi*Bureau of Real Estate Management
111 Sewall Street
77 State House Station, 4th Floor
Augusta, Maine 04333-0077

The undersigned, or "Bidder", having carefully examined the form of contract, general conditions, specifications and drawings dated April 2019, prepared by Wright-Pierce for the 15 Columbia Street and 19 Union Street Parking Lot Rehabilitation project, as well as the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the following unit prices:

BASE BID: 19 UNION STREET

Item No.	Quantity	Brief Description of Item with Unit Bid Price in Words	Unit Bid In Figures	Amount In Figures
			III I iguics	In Figures
1	1 LS	Mobilization / Demobilization		
		The Sum of \$		
			\$	\$
		Per Lump Sum		
2	1 LS	Erosion and Sediment Control		
		The Sum of \$		
			\$	\$
		Per Lump Sum		
3	1,350 CY	Excavation / Demolition		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		

Item No.	Quantity	Brief Description of Item with Unit Bid Price in Words	Unit Bid In Figures	Amount In Figures
4	50 CY	Excavation (Hazardous Materials)*		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
5	100 SY	Woven Geotextile (Areas of Poor Subgrade)		
		The Sum of \$		
			\$	\$
		Per Square Yard		
6	900 CY	Aggregate Subbase (Type D)		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
7	450 CY	Aggregate Base (Type B)		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
8	350 TON	HMA Binder Course (19MM)		
		The Sum of \$		
			\$	\$
		Per Ton		
9	275 TON	HMA Wearing Course (12.5MM)		
		The Sum of \$		
			\$	\$
		Per Ton		

Item	Quantity	Brief Description of Item	Unit Bid	Amount
No.		with Unit Bid Price in Words	In Figures	In Figures
10	150 SF	Tapered Shiplap Pavement Joint		
		The Sum of \$		
			\$	\$
		Per Square Foot		
11	3 EA	Reset Catch Basin and Manhole Frames and Covers		
		The Sum of \$		
			\$	\$
		Per Each		
12	40 SY	Concrete Dumpster Pad		
		The Sum of \$		
			\$	\$
		Per Square Yard	·	·
		Ter Square Tara		
13	483 LF	Vertical Granite Curb		
		The Sum of \$		
			\$	\$
		Per Linear Foot	· · · · · · · · · · · · · · · · · · ·	
14	1,450 LF	Pavement Striping		
		The Sum of \$		
		Per Linear Foot	\$	\$
15	175 LF	Remove and Reset Vertical Granite Curb		
		The Sum of \$		
		- 1.1. Σ 3111 OT Ψ	\$	¢
			Φ	\$
		Per Linear Foot		

Item	Quantity	Brief Description of Item	Unit Bid	Amount
No.		with Unit Bid Price in Words	In Figures	In Figures
16	425 SY	Grind and Overlay with 12.5MM HMA Wearing Course		
		The Sum of \$		
			\$	\$
		Per Linear Foot		
ubtota	l (Base Bid)	amount of Items 1 through 16 above:		_(use words)

Item	Quantity	Brief Description of Item	Unit Bid	Amount
No.		with Unit Bid Price in Words	In Figures	In Figures
17	1 LS	Mobilization / Demobilization		
		The Sum of \$		
			\$	\$
		Per Lump Sum		
18	1 LS	Erosion and Sediment Control		
		The Sum of \$		
			\$	\$
		Per Lump Sum		
19	2,700 CY	Excavation / Demolition		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		

Item No.	Quantity	Brief Description of Item with Unit Bid Price in Words	Unit Bid In Figures	Amount In Figures
20	50 CY	Excavation (Hazardous Materials)*	- In Figures	mr igures
20	30 6 1	The Sum of \$		
		The Sum of \$	\$	\$
		Per Cubic Yard	Φ	Ψ
21	100 SY	Woven Geotextile (Areas of Poor Subgrade)		
		The Sum of \$		
			\$	\$
		Per Square Yard		
22	1,800 CY	Aggregate Subbase (Type D)		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
23	900 CY	Aggregate Base (Type B)		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
24	675 TON	HMA Binder Course (19MM)		
		The Sum of \$		
			\$	\$
		Per Ton		
25	525 TON	HMA Wearing Course (12.5MM)		
		The Sum of \$		
			\$	\$
		Per Ton		

Item No.	Quantity	Brief Description of Item with Unit Bid Price in Words	Unit Bid In Figures	Amount In Figures
26	250 SF	Tapered Shiplap Pavement Joint		
		The Sum of \$		
			\$	\$
		Per Square Foot		
27	5 EA	Reset Catch Basin and Manhole Frames and Covers		
		The Sum of \$		
			\$	\$
		Per Each		
28	125 SY	Paved Sidewalk Construction		
		The Sum of \$		
			\$	\$
		Per Square Yard		
29	225 LF	Vertical Granite Curb		
		The Sum of \$		
			\$	\$
		Per Linear Foot		
30	170 LF	Guardrail		
		The Sum of \$		
			\$	\$
		Per Linear Foot		
31	1,000 LF	Pavement Striping		
		The Sum of \$		
		- <u></u>	\$	\$
		Per Linear Foot		

Subtotal (Bid Alternate 1) amount of Items 17 through 31 above:

	(use words)
\$ (use figures)	

BID ALTERNATE 2: 15 COLUMBIA STREET

Item	Quantity	Brief Description of Item	Unit Bid	Amount
No.		with Unit Bid Price in Words	In Figures	In Figures
32	1 LS	Mobilization / Demobilization		
		The Sum of \$		
			\$	\$
		Per Lump Sum	·	
33	1 LS	Erosion and Sediment Control		
		The Sum of \$		
			\$	\$
		Per Lump Sum		
34	2,000 CY	Excavation / Demolition		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
35	50 CY	Excavation (Hazardous Materials)*		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		

Item	Quantity	Brief Description of Item	Unit Bid	Amount
No.		with Unit Bid Price in Words	In Figures	In Figures
36	4,000 SY	Woven Geotextile (Areas of Poor Subgrade)		
		The Sum of \$		
			\$	\$
		Per Square Yard	-	
37	1,350 CY	Aggregate Subbase (Type D)		
		The Sum of \$		
		Per Cubic Yard	\$	\$
38	700 CY	Aggregate Base (Type B)		
		The Sum of \$		
			\$	\$
		Per Cubic Yard		
39	500 TON	HMA Binder Course (19MM)		
		The Sum of \$		
			\$	\$
		Per Ton	<u> </u>	
40	400 TON	HMA Wearing Course (12.5MM)		
		The Sum of \$		
			\$	\$
		Per Ton		

Item	Quantity	Brief Description of Item	Unit Bid	Amount
No.		with Unit Bid Price in Words	In Figures	In Figures
41	1,000 SF	Tapered Shiplap Pavement Joint		
		The Sum of \$		
			\$	\$
		Per Square Foot		
42	7 EA	Reset Catch Basin and Manhole Frames and Covers		
		The Sum of \$		
			\$	\$
		Per Each		
43	150 SY	Concrete Dumpster Pad		
		The Sum of \$		
			\$	\$
		Per Square Yard		
44	2 EA	Shed Demolition		
		The Sum of \$		
			\$	\$
		Per Each	-	
Subtota	l (Bid Alter	nate 2) amount of Items 32 through 44 abo	ve:	
				_(use words)
\$		(use figures)		

BID ALTERNATE 3: REPLACEMENT OF BITUMINOUS CURB IN KIND

	tem Quantity No.	Brief Description with Unit Bid Price		Unit Bid In Figures	Amount In Figures
4	45 400 LF	Bituminous Curb Installation*	:		
		The Sum of \$			
					Ф
				\$	\$
		Per Lump S	um		
Su	btotal (Bid Alter	nate 3) amount of Item 45	above:		
				((use words)
\$		(us	e figures)		
1.	The Bidder ackno	wledges receipt of the following	ng addenda to the	e specifications and di	awings:
	Addendum No.	Dated:			
	Addendum No.	Dated:			
	Addendum No.	Dated:			
	Addendum No.	Dated:			
	Addendum No.	Dated:			
2.	The Bidder sh	uired on this project. all include a satisfactory Bid I be bid amount with this comple			or cashier's
3.		e not required on this project, cludes the following Filed Sulon Bid Depository.		re submitted to the Bio	lder and to the
4.	The Bidder agrees	, if this bid is accepted by the	Owner, to sign t	he designated Owner-	Contractor

contract and deliver it, with any and all bonds and affidavits of insurance specified in the Bid

twelfth day falls on a State of Maine government holiday or other closure day, a Saturday, or a

Documents, within twelve calendar days after the date of notification of such acceptance, except if the

Sunday, in which case the aforementioned documents must be received before 12:00 noon on the day following the holiday or other closure day, Saturday or Sunday.

As a guarantee thereof, the Bidder submits, together with this bid, a bid bond or other acceptable instrument as and if required by the Bid Documents.

Signature:	
Printed name and	
Company name:	
Mailing address:	
-	
City, state, zip code:	

5. This bid is hereby submitted by:

Phone number:

Email address:

	AdvantageME CT#	
--	-----------------	--

State of Maine CONSTRUCTION CONTRACT

Large Construction Project

(Contract value \$50,000 or greater. Contract includes Project Manual, Specifications and Drawings)

Agreement entered into by and between the State of Maine through the <u>Bureau of Real Estate</u> <u>Management</u> hereinafter called the *Owner* and <u>insert Contractor company name</u> hereinafter called the *Contractor*.

BREM Project No.: _____Other Project No.: _____

For the following Project: <u>15 Columbia Street and 19 Union Street - Parking Lot</u>
<u>Rehabilitation</u> at <u>the Department of Labor and Bureau of General services</u>, <u>Augusta</u>, Maine.

The Specifications and the Drawings have been prepared by *Wright-Pierce*, acting as Professional-of-Record and named in the documents as the Consultant Architect or Engineer.

The Owner and Contractor agree as follows:

ARTICLE 1 COMPENSATION AND PAYMENTS

- 1.1 The Owner shall pay the Contractor to furnish all labor, equipment, materials and incidentals necessary for the construction of the work described in the Specifications and shown on the Drawings the Contract Sum of \$.00.
- **1.2** The Contractor's requisition shall contain sufficient detail and supporting information for the Owner to evaluate and support the payment requested.
- **1.2.1** Payments are due and payable twenty-five working days from the date of receipt of a Contractor requisition which is approved by the Owner.
- **1.2.2** Provisions for late payments will be governed by 5 M.R.S. Chapter 144, *Payment of Invoices Received from Business Concerns*, and interest shall be calculated at 1% per month.

ARTICLE 2 TIME OF COMPLETION

2.1 The work of this Contract shall be completed on or before the Final Completion date of *XX Month 2019*.

ARTICLE 3 INELIGIBLE BIDDER

3.1 By signing this contract the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Bureau of Real Estate Management may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred

from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.

- 3.2 By signing this contract the Contractor attests that it is not presently indicted for or otherwise criminally or civilly charged by a Federal, State or local government entity with commission of any of the following offenses and has not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction, or contract under a public transaction, violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.
- 3.3 The Contractor shall not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs or State of Maine projects.

ARTICLE 4 CONTRACTOR'S RESPONSIBILITIES

- **4.1** On this project, the Contractor <u>shall</u> furnish the Owner the appropriate contract bonds in the amount of 100% of the Contract Sum. Contract bonds are mandated if the Contract Sum exceeds \$125,000, or if bonds are specifically required by the Contract Documents.
- **4.2** Property Insurance for this construction contract, described in the Insurance Requirements section of the General Conditions of the contract, shall be *Non-standard project insured by Contractor*.
- 4.3 The Contractor shall comply with all laws, codes and regulations applicable to the work.
- 4.4 The Contractor shall acquire all permits and third-party approvals applicable to the work not specifically identified as provided by the Owner. Costs for Contractor-provided permits and third-party approvals shall be included in the Contract Sum identified in Section 1.1 above.
- **4.5** The Contractor shall remain an independent agent for the duration of this Contract, shall not become an employee of the State of Maine, and shall assure that no State employee will be compensated by, or otherwise benefit from, this Contract.
- **4.6** The Contractor shall be responsible for any design cost, construction cost, or other cost incurred on the Project to the extent caused by the negligent acts, errors or omissions of the Contractor or their Subcontractors in the performance of work under this Contract.

ARTICLE 5 OWNER'S RESPONSIBILITIES

- **5.1** The Owner shall provide full information about the objectives, schedule, constraints and existing conditions of the project. The Owner has established a budget with reasonable contingencies that meets the project requirements.
- **5.2** By signing this contract the Owner attests that all State of Maine procurement requirements for this contract have been met, including the solicitation of competitive bids.

ARTICLE 6 INSTRUMENTS OF SERVICE

6.1 The Contractor's use of the drawings, specifications and other documents known as the Consultant's Instruments of Service is limited to the execution of the Contractor's scope of work of this project unless the Contractor receives the written consent of the Owner and Consultant for use elsewhere.

ARTICLE 7 MISCELLANEOUS PROVISIONS

- 7.1 This Contract shall be governed by the laws of the State of Maine.
- 7.2 The Owner and Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to this Contract. Neither party to this Contract shall assign the Contract as a whole without written consent of the other party, which consent the Owner may withhold without cause.
- 7.3 Notwithstanding any other provision of this Agreement, if the Owner does not receive sufficient funds to fund this Agreement or funds are de-appropriated, or if the Owner does not receive legal authority from the Maine State Legislature or Maine Courts to expend funds intended for this Agreement, then the Owner is not obligated to make payment under this Agreement; provided, however, the Owner shall be obligated to pay for services satisfactorily performed prior to any such non-appropriation in accordance with the termination provisions of this agreement. The Owner shall timely notify the Consultant of any non-appropriation and the effective date of the non-appropriation.

ARTICLE 8 CONTRACT DOCUMENTS

- **8.1** The General Conditions of the contract, instructions to bidders, bid form, Special Provisions, the written specifications and the drawings, and any Addenda, together with this agreement, form the contract. Each element is as fully a part of the Contract as if hereto attached or herein repeated.
- 8.2 Specifications: *Month /2019*
- 8.3 Drawings: See Drawing Index on Plan Cover Sheet
- 8.4 Addenda: note each addenda number and date, or "none"

BREM Project No.:		02 10		
The Agreement is effect	ctive as of the date last e	xecuted by the parties.		
OWNER		CONTRACTOR		
(Signature) name and title	(Date)	(Signature) name and title	(Date)	
name of contracting e	ntity	name of contractor company		
Indicate names of the	review and approval ina	lividuals appropriate to the	e approval authority.)	
Bureau of Real Estate	Management			
Reviewed by:		Approved by:		
(Signature)	(Date)	(Signature)	(Date)	
Jill M. Instasi Project Manager/ Con	ntract Administrator	Joseph H. Ostwald Director, Planning, L	Design & Construction	

00 61 13.13 Contractor Performance Bond

Bond No.: insert bond number

We, the undersigned, <u>insert company name of Contractor</u>, <u>select type of entity</u> of <u>insert name of municipality</u> in the State of <u>insert name of state</u> as principal, and <u>insert name of surety</u> as Surety, are hereby held and firmly bound unto <u>select title of obligee</u> in the penal sum of the Contract Price \$ <u>insert</u> <u>the Contract Price in numbers</u> for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly and faithfully perform the contract entered into this <u>insert day</u>, i.e.: 8th day of <u>select month</u>, <u>select year</u>, which is the same date as the date the Owner signs the construction contract, for the construction of <u>insert name of</u> <u>project as designated in the contract documents</u>, then this obligation shall be null and void.

Otherwise, the same shall remain in force and effect- it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

00 61 13.13 Contractor Performance Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this <u>insert day, i.e.: 8th</u> day of <u>select month</u>, <u>select year</u>, which is the same date as that of the construction contract.

Contractor

(Signature) insert name and title insert company name insert address insert city state zip code Surety (Signature) insert name and title insert company name insert address insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

00 61 13.16 Contractor Payment Bond

Bond No.: insert bond number

We, the undersigned, <u>insert company name of Contractor</u>, <u>select type of entity</u> of <u>insert name of municipality</u> in the State of <u>insert name of state</u> as principal, and <u>insert name of surety</u> as Surety, are hereby held and firmly bound unto <u>select title of obligee</u> in the penal sum of the Contract Price \$ <u>insert</u> the Contract Price in numbers for the use and benefit of claimants, defined as an entity having a contract with the principal or with a subcontractor of the principal for labor, materials, or both labor and materials, used or reasonably required for use in the performance of the contract, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly satisfy all claims and demands incurred for all labor and materials, used or required by the principal in connection with the work described in the contract entered into this *insert day*, *i.e.: 8th* day of *select month*, *select year*, which is the same date as the date the Owner signs the construction contract, for the construction of *insert name of project as designated in the contract documents*, and shall fully reimburse the oblige for all outlay and expense with said oblige may incur in making good any default of said principal, then this obligation shall be null and void.

Otherwise, the same shall remain in force and effect- it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

00 61 13.16 Contractor Payment Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this <u>insert day, i.e.: 8th</u> day of <u>select month</u>, <u>select year</u>, which is the same date as that of the construction contract.

Contractor

(Signature) insert name and title insert company name insert city state zip code Surety insert name and title insert company name insert company name insert address insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

State of Maine CONSTRUCTION CONTRACT Change Order

Parking Lot Rehabilitation

Contractor company name

Bureau of Real Estate Management 15 Columbia St and 19 Union St

Augusta, ME 04330

C. O. Number:

Issue Date:

XX/XX/2019

1

BREM Project No.: Other Project No.:

Table A

(Show Deducts as negative numbers.)

	Add	Deduct	Total
Amount of this Change Order	\$0	\$0	
Amount of Previous Change Orders	\$0	\$0	
Net of Change Orders to Date	\$0	\$0	\$0
Original Contract Amount	\$0		
	\$0		

Table B

(Show Deducts as negative numbers.)

	Add	Deduct	Total
Calendar Days Adjusted by this Change Order	0	0	
Calendar Days Adjusted by Previous Change Orders	0	0	
Net of Change Orders to Date	0	0	0
Original Contract Completion Date		31-Jan-2019	
Revised Contract Completion Date			31-Jan-2019

(Calculate and type in revised date.)

Consultant (Architect or Engineer) type firm name here type person's name here	signature	date
Contractor type company name here type person's name here	·	
	signature	date
Owner type contracting authority name here type person's name here	signature	date
Type position of other signer, if used type entity name here type person's name here		
	signature	date
Bureau of Real Estate Management type position title here type person's name here		
	signature	date

(Attach all supporting documentation for Change Order items.)

00_63_63_00ChangeOrder 00 63 63

State of Maine CONSTRUCTION CONTRACT

Change Order - List of Items

15 Columbia St & 19 Union St Parking Lot Rehabilitation Contractor company name

C. O. Number:

1

Table C

CO Item No.	Item name	Reason Code	Calendar Days	Cost
1	Insert brief name of CO item here		0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
		Totals	0	\$0

Reason Code

EO Error or omission of Consultant

UC Unforeseen job site condition

OC Owner-generated change

RC Regulatory authority-generated change

CC Contractor-generated change

Use this Table C (list of items) sheet with the BREM Change Order Table A (cost) and Table B (time) summaries and signature sheet, and the BREM Change Order Table D (detailed data) sheet. Use multiples of this Table C sheet, if necessary, with a subtotal on each sheet, and the sum of subtotals of each sheet equal to the totals on Table A and Table B.

State of Maine CONSTRUCTION CONTRACT

Change Order - Details

15 Columbia St & 19 Union St Parking Lot Rehab Contractor company name

C. O. Number:

TABLE D

ASI No.	RFI No.	CR No.	CP No.	CO Item No.
Item name				
Description of Work				
Reason or Necessity of Work				
Cost Breakdown	Subcontractor base cost	Subcontractor Markup (≤ 20%)	Contractor base cost	Contractor Markup $(\le 10\% \text{ or } \le 20\%)$
	\$0	\$0	\$0	\$0
Reason Code	СС		Total Cost	\$0
Compensation	lump sum		Calendar Days	0
Initiated by	Consultant	Suppor	rting documentation	is attached

Reason Code

- EO Error or omission of Consultant
- UC Unforeseen job site condition
- OC Owner-generated change
- RC Regulatory authority-generated change
- CC Contractor-generated change

- Use one Table D sheet for each Change Order item.
- Use Table D sheets with the BREM Change Order Table A (cost) and Table B (time) summaries and signature sheet, and the BREM Change Order Table C (list of items) sheet

	signature	date
Consultant (A/E)		
Contractor		
Owner		
Other		
Bureau of Real Estate Management		

1. Definitions

- 1.1 *Addendum*: A document issued by the Consultant that amends the Bid Documents. Addenda shall not be issued less than seventy-two hours prior to the specified bid opening time.
- 1.2 Allowance: A specified dollar amount for a particular scope of work or service included in the Work that is identified in the Bid Documents and included in each Bidder's Bid. The Contractor shall document expenditures for an Allowance during the Project. Any unused balance shall be credited to the Owner. The Contractor is responsible for notifying the Owner of anticipated expenses greater than the specified amount and the Owner is responsible for those additional expenses.
- 1.3 Alternate Bid: The Contractor's written offer of a specified dollar amount, submitted on the Bid Form, for the performance of a particular scope of work described in the Bid Documents. The Owner determines the low bidder based on the sum of the base Bid and any combination of Alternate Bids that the Owner selects.
- 1.4 *Architect*: A Consultant acting as, or supporting, the Professional-of-Record who is responsible for the design of the Project. Equivalent to "Consultant" in State of Maine contract forms.
- 1.5 Architectural Supplemental Instruction (ASI): A written instruction from the Architect for the purpose of clarification of the Contract Documents. An ASI does not alter the Contract Price or Contract Time. ASIs may be responses to RFIs and shall be issued by the Architect in a timely manner to avoid any negative impact on the Schedule of Work.
- 1.6 *Bid*: The Contractor's written offer of a specified dollar amount or amounts, submitted on a form included in the Bid Documents, for the performance of the Work. A Bid may include bonds or other requirements. A base Bid is separate and distinct from Alternate Bids, being the only cost component necessary for the award of the contract, and representing the minimum amount of Work that is essential for the functioning of the Project.
- 1.7 *Bid Bond*: The security designated in the Bid Documents, furnished by Bidders as a guaranty of good faith to enter into a contract with the Owner, should a contract be awarded to that Bidder.
- 1.8 *Bidder*: Any business entity, individual or corporation that submits a bid for the performance of the work described in the Bid Documents, acting directly or through a duly authorized representative.
- 1.9 *Bid Documents*: The drawings, procurement and contracting requirements, general requirements, and the written specifications -including all addenda, that a bidder is required to reference in the submission of a bid.
- 1.10 *Bureau*: The State of Maine Bureau of Real Estate Management (formerly known as Bureau of General Services, or BGS) in the Department of Administrative and Financial Services.
- 1.11 *Calendar days*: Consecutive days, as occurring on a calendar, taking into account each day of the week, month, year, and any religious, national or local holidays. Calendar days are used for changes in Contract Time.
- 1.12 *Certificate of Substantial Completion*: A document developed by the Consultant that describes the final status of the Work and establishes the date that the Owner may use the facility for its intended

- purpose. The Certificate of Substantial Completion may also include a provisional list of items a "punch list" remaining to be completed by the Contractor. The Certificate of Substantial Completion identifies the date from which the project warranty period commences.
- 1.13 *Certificate of Occupancy*: A document developed by a local jurisdiction such as the Code Enforcement Officer that grants permission to the Owner to occupy a building.
- 1.14 Change Order (CO): A document that modifies the contract and establishes the basis of a specific adjustment to the Contract Price or the Contract Time, or both. Change Orders may address correction of omissions, errors, and document discrepancies, or additional requirements. Change Orders should include all labor, materials and incidentals required to complete the work described. A Change Order is not valid until signed by the Contractor, Owner and Consultant and approved by the Bureau.
- 1.15 Change Order Proposal (COP) (see also Proposal): Contract change proposed by the Contractor regarding the contract amount, requirements, or time. The Contractor implements the work of a COP after it is accepted by all parties. Accepted COPs are incorporated into the contract by Change Order.
- 1.16 *Clerk of the Works*: The authorized representative of the Consultant on the job site. Clerk of the Works is sometimes called the Architect's representative.
- 1.17 Construction Change Directive (CCD): A written order prepared by the Consultant and signed by the Owner and Consultant, directing a change in the Work prior to final agreement with the Contractor on adjustment, if any, in the Contract Price or Contract Time, or both.
- 1.18 *Contract*: A written agreement between the Owner and the successful bidder which obligates the Contractor to perform the work specified in the Contract Documents and obligates the Owner to compensate the Contractor at the mutually accepted sum, rates or prices.
- 1.19 Contract Bonds (also known as Payment and Performance Bonds): The approved forms of security, furnished by the Contractor and their surety, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials and equipment by the Contractor.
- 1.20 *Contract Documents*: The drawings and written specifications (including all addenda), Standard General Conditions, and the contract (including all Change Orders subsequently incorporated in the documents).
- 1.21 Contract Price: The dollar amount of the construction contract, also called Contract Sum.
- 1.22 *Contract Time*: The designated duration of time to execute the Work of the contract, with a specific date for completion.
- 1.23 *Contractor*: Also called the "General Contractor" or "GC" the individual or entity undertaking the execution of the general contract work under the terms of the contract with the Owner, acting directly or through a duly authorized representative. The Contractor is responsible for the means, methods and materials utilized in the execution and completion of the Work.
- 1.24 *Consultant*: The Architect or Engineer acting as Professional-of-Record for the Project. The Consultant is responsible for the design of the Project.

- 1.25 *Drawings*: The graphic and pictorial portion of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.
- 1.26 *Engineer*: A Consultant acting as, or supporting, the Professional-of-Record who is responsible for the design of the Project. Equivalent to "Consultant" in State of Maine contract forms.
- 1.27 *Filed Sub-bid*: The designated major Subcontractor's (or, in some cases, Contractor's) written offer of a specified dollar amount or amounts, submitted on a form included in the Bid Documents, for the performance of a particular portion of the Work. A Filed Sub-bid may include bonds or other requirements.
- 1.28 *Final Completion*: Project status establishing the date when the Work is fully completed in compliance with the Contract Documents, as certified by the Consultant. Final payment to the Contractor is due upon Final Completion of the Project.
- 1.29 General Requirements: The on-site overhead expense items the Contractor provides for the Project, typically including, but not limited to, building permits, construction supervision, Contract Bonds, insurance, field office, temporary utilities, rubbish removal, and site fencing. Overhead expenses of the Contractor's general operation are not included. Sometimes referred to as the Contractor's General Conditions.
- 1.30 *Owner*: The State agency which is represented by duly authorized individuals. The Owner is responsible for defining the scope of the Project and compensation to the Consultant and Contractor.
- 1.31 *Owner's Representative*: The individual or entity contracted by the Owner to be an advisor and information conduit regarding the Project.
- 1.32 Overhead: General and administrative expenses of the Contractor's principal and branch offices, including payroll costs and other compensation of Contractor employees, deductibles paid on any insurance policy, charges against the Contractor for delinquent payments, and costs related to the correction of defective work, and the Contractor's capital expenses, including interest on capital used for the work.
- 1.33 *Performance and Payment Bonds (also known as Contract Bonds)*: The approved forms of security, furnished by the Contractor and their surety, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials and equipment by the Contractor.
- 1.34 *Post-Bid Addendum*: Document issued by the Consultant that defines a potential Change Order prior to signing of the construction contract. The Post-Bid Addendum allows the Owner to negotiate contract changes with the Bidder submitting the lowest valid bid, only if the negotiated changes to the Bid Documents result in no change or no increase in the bid price.
 - A Post-Bid Addendum may also be issued after a competitive construction Bid opening to those Bidders who submitted a Bid initially, for the purpose of rebidding the Project work without readvertising.

- 1.35 *Project*: The construction project proposed by the Owner to be constructed according to the Contract Documents. The Project, a public improvement, may be tied logistically to other public improvements and other activities conducted by the Owner or other contractors.
- 1.36 Proposal (see also Change Order Proposal): The Contractor's written offer submitted to the Owner for consideration containing a specified dollar amount or rate, for a specific scope of work, and including a schedule impact, if any. A proposal shall include all costs for overhead and profit. The Contractor implements the work of a Proposal after it is accepted by all parties. Accepted Proposals are incorporated into the contract by Change Order.
- 1.37 Proposal Request (PR): An Owner's written request to the Contractor for a Change Order Proposal.
- 1.38 *Punch List*: A document that identifies the items of work remaining to be done by the Contractor at the Close Out of a Project. The Punch List is created as a result of a final inspection of the work only after the Contractor attests that all of the Work is in its complete and permanent status.
- 1.39 Request For Information (RFI): A Contractor's written request to the Consultant for clarification, definition or description of the Work. RFIs shall be presented by the Contractor in a timely manner to avoid any negative impact on the Schedule of Work.
- 1.40 Request For Proposal (RFP): An Owner's written request to the Contractor for a Change Order Proposal.
- 1.41 Requisition for Payment: The document in which the Contractor certifies that the Work described is, to the best of the Contractor's knowledge, information and belief, complete and that all previous payments have been paid by the Contractor to Subcontractors and suppliers, and that the current requested payment is now due. See Schedule of Values.
- 1.42 *Retainage*: The amount, calculated at five percent (5%) of the contract value or a scheduled value, that the Owner shall withhold from the Contractor until the work or portion of work is declared substantially complete or otherwise accepted by the Owner. The Owner may, if requested, reduce the amount withheld if the Owner deems it desirable and prudent to do so. (See Title 5 M.R.S.A., Section 1746.)
- 1.43 *Sample*: A physical example provided by the Contractor which illustrates materials, equipment or workmanship and establishes standards by which the Work will be judged.
- 1.44 *Schedule of the Work*: The document prepared by the Contractor and approved by the Owner that specifies the dates on which the Contractor plans to begin and complete various parts of the Work, including dates on which information and approvals are required from the Owner.
- 1.45 *Schedule of Values*: The document prepared by the Contractor and approved by the Owner before the commencement of the Work that specifies the dollar values of discrete portions of the Work equal in sum to the contract amount. The Schedule of Values is used to document progress payments of the Work in regular (usually monthly) requisitions for payment. See *Requisition for Payment*.
- 1.46 *Shop Drawings*: The drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

- 1.47 *Specifications*: The portion of the Contract Documents consisting of the written requirements of the Work for materials, equipment, systems, standards, workmanship, and performance of related services.
- 1.48 *Subcontractor*: An individual or entity undertaking the execution of any part of the Work by virtue of a written agreement with the Contractor or any other Subcontractor. Also, an individual or entity retained by the Contractor or any other Subcontractor as an independent contractor to provide the labor, materials, equipment or services necessary to complete a specific portion of the Work.
- 1.49 Substantial Completion: Project status indicating when the Work or a designated portion of the Work is sufficiently complete in compliance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended purpose without unscheduled disruption. Substantial Completion is documented by the date of the Certificate of Substantial Completion signed by the Owner and the Contractor.
- 1.50 *Superintendent*: The representative of the Contractor on the job site, authorized by the Contractor to receive and fulfill instructions from the Consultant.
- 1.51 *Surety*: The individual or entity that is legally bound with the Contractor and Subcontractor to insure the faithful performance of the contract and for the payment of the bills for labor, materials and equipment by the Contractor and Subcontractors.
- 1.52 *Work*: The construction and services, whether completed or partially completed, including all labor, materials, equipment and services provided or to be provided by the Contractor and Subcontractors to fulfill the requirements of the Project as described in the Contract Documents.

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00 72 13

General Conditions

- 1. Preconstruction Conference
- 1.1 The Contractor shall, upon acceptance of a contract and prior to commencing work, schedule a preconstruction conference with the Owner and Consultant. The purpose of this conference is as follows.
- 1.1.1 Introduce all parties who have a significant role in the Project, including:

Owner (State agency or other contracting entity)

Owner's Representative

Consultant (Architect or Engineer)

Subconsultants

Clerk-of-the-works

Contractor (GC)

Superintendent

Subcontractors

Other State agencies

Construction testing company

Commissioning agent

Special Inspections agent

Bureau of Real Estate Management (BREM);

- 1.1.2 Review the responsibilities of each party;
- 1.1.3 Review any previously-identified special provisions of the Project;
- 1.1.4 Review the Schedule of the Work calendar submitted by the Contractor to be approved by the Owner and Consultant:
- 1.1.5 Review the Schedule of Values form submitted by the Contractor to be approved by the Owner and Consultant:
- 1.1.6 Establish routines for Shop Drawing approval, contract changes, requisitions, et cetera;
- 1.1.7 discuss jobsite issues;
- 1.1.8 Discuss Project close-out procedures;
- 1.1.9 Provide an opportunity for clarification of Contract Documents before work begins; and
- 1.1.10 Schedule regular meetings at appropriate intervals for the review of the progress of the Work.
- 2. Intent and Correlation of Contract Documents
- 2.1 The intent of the Contract Documents is to describe the complete Project. The Contract Documents consist of various components; each component complements the others. What is shown as a requirement by any one component shall be inferred as a requirement on all corresponding components.
- 2.2 The Contractor shall furnish all labor, equipment and materials, tools, transportation, insurance, services, supplies, operations and methods necessary for, and reasonably incidental to, the construction and completion of the Project. Any work that deviates from the Contract Documents which appears to be required by the exigencies of construction or by inconsistencies in the Contract Documents, will be determined by the Consultant and authorized in writing by the Consultant, Owner and the Bureau prior to execution. The Contractor shall be responsible for requesting clarifying information where the intent of the Contract Documents is uncertain.
- 2.3 The Contractor shall not utilize any apparent error or omission in the Contract Documents to the disadvantage of the Owner. The Contractor shall promptly notify the Consultant in writing of such errors or omissions. The Consultant shall make any corrections or clarifications necessary in such a situation to document the true intent of the Contract Documents.

00_72_13GeneralConditions

- 3. Additional Drawings and Specifications
- 3.1 The Owner shall provide to the Contractor, at no additional expense to the Contractor, a reasonable quantity of additional Drawings and Specifications for the execution of the Work.
- 3.2 The Consultant shall promptly furnish additional revised Drawings and Specifications that are created due to corrections or clarifications made by the Consultant. All such information shall be consistent with, and reasonably inferred from, the Contract Documents. The Contractor shall do no work without the proper Drawings and Specifications.
- 4. Ownership of Contract Documents
- 4.1 The designs represented on the Contract Documents are the property of the Consultant. The Drawings and Specifications shall not be used on other work without consent of the Consultant.
- 5. Permits, Laws, and Regulations
- 5.1 The Owner is responsible for obtaining any zoning approvals or other similar local project approvals necessary to complete the Work, unless otherwise specified in the Contract Documents.
- 5.2 The Owner is responsible for obtaining Maine Department of Environmental Protection, Maine Department of Transportation, or other similar state government project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.
- 5.3 The Owner is responsible for obtaining any federal agency project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.
- 5.4 The Owner is responsible for obtaining all easements for permanent structures or permanent changes in existing facilities.
- 5.5 The Contractor is responsible for obtaining and paying for all permits and licenses necessary for the implementation of the Work. The Contractor shall notify the Owner of any delays, variance or restrictions that may result from the issuing of permits and licenses.
- The Contractor shall comply with all ordinances, laws, rules and regulations and make all required notices bearing on the implementation of the Work. In the event the Contractor observes disagreement between the Drawings and Specifications and any ordinances, laws, rules and regulations, the Contractor shall promptly notify the Consultant in writing. Any necessary changes shall be made as provided in the contract for changes in the work. The Contractor shall not perform any work knowing it to be contrary to such ordinances, laws, rules and regulations.
- 5.7 The Contractor shall comply with local, state and federal regulations regarding construction safety and all other aspects of the Work.
- 5.8 The Contractor shall comply with the Maine Code of Fair Practices and Affirmative Action, 5 M.R.S. §784 (2).

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6. Taxes

- 6.1 The Owner is exempt from the payment of Federal Excise Taxes on articles not for resale and from the Federal Transportation Tax on all shipments, as well as Maine State Sales and Use Taxes. Pricing in all Change Order Proposals from the Contractor and Subcontractors shall not include these taxes.
- 6.2 Maine statute (36 M.R.S. §1760) allows "...an exemption from sales and use tax on items which will be physically incorporated in real property of an exempt organization. This exemption only applies to lumber, hardware, doors and windows, nails, insulation and other building materials actually affixed to realty. Tools, wearing apparel, consumable supplies, machinery and equipment used by the Contractor are taxable even if purchased specifically for the exempt job."
- 6.3 The Contractor may contact Maine Revenue Services, 24 State House Station, Augusta, Maine 04333 for guidance on tax exempt regulations authorized by 36 M.R.S. §1760 and detailed in Rule 302 (18-125 CMR 302).

7. Labor and Wages

- 7.1 The Contractor shall conform to the labor laws of the State of Maine, and all other laws, ordinances, and legal requirements affecting the work in Maine.
- 7.2 The Consultant shall include a wage determination document prepared by the Maine Department of Labor in the Contract Documents for state-funded contracts in excess of \$50,000. The document shows the minimum wages required to be paid to each category of labor employed on the project.
- 7.3 On projects requiring a Maine wage determination, the Contractor shall submit monthly payroll records to the Owner ("the contracting agency") showing the name and occupation of all workers and all independent contractors employed on the project. The monthly submission must also include the Contractor's company name, the title of the project, hours worked, hourly rate or other method of remuneration, and the actual wages or other compensation paid to each person.
- 7.4 The Contractor shall not reveal, in the payroll records submitted to the Owner, personal information regarding workers and independent contractors, other than the information described above. Such information shall not include Social Security number, employee identification number, or employee address or phone number, for example.
- 7.5 The Contractor shall conform to Maine statute (39-A M.R.S. §105-A (6)) by providing to the Workers' Compensation Board a list of all subcontractors and independent contractors on the job site and a record of the entity to whom that subcontractor or independent contractor is directly contracted and by whom that subcontractor or independent contractor is insured for workers' compensation purposes.
- 7.6 The Contractor shall enforce strict discipline and good order among their employees at all times, and shall not employ any person unfit or unskilled to do the work assigned to them.
- 7.7 The Contractor shall promptly pay all employees when their compensation is due, shall promptly pay all others who have billed and are due for materials, supplies and services used in the Work, and shall promptly pay all others who have billed and are due for insurance, workers

00_72_13GeneralConditions Page 4 of 22 00 72 13

- compensation coverage, federal and state unemployment compensation, and Social Security charges pertaining to this Project. Before final payments are made, the Contractor shall furnish to the Owner affidavits that all such payments described above have been made.
- 7.8 The Contractor may contact the Maine Department of Labor, 54 State House Station, Augusta, Maine 04333 for guidance on labor issues.
- 7.9 The Contractor may contact the Maine Workers' Compensation Board, 27 State House Station, Augusta, Maine 04333 for guidance on workers' compensation issues.

8. Indemnification

- 8.1 The Contractor shall indemnify and hold harmless the Owner and its officers and employees from and against any and all third party claims, including reasonable attorney's fees, for any and all injuries to persons or property, including claims for violation of intellectual property rights, to the extent caused by the negligent acts or omissions of the Contractor, its employees, agents, officers or subcontractors in the performance of work under this Agreement. The Contractor shall not be liable for claims to the extent caused by the negligent acts or omissions of the Owner or for actions taken in reasonable reliance on written instructions of the Owner.
- 8.2 The Contractor shall notify the Owner promptly of all claims arising out of the performance of work under this Agreement by the Contractor, its employees or agents, officers or subcontractors.
- 8.3 This indemnity provision shall survive the termination of the Agreement, completion of the project or the expiration of the term of the Agreement.

9. Insurance Requirements

- 9.1 The Contractor shall provide, with each original of the signed Contract, an insurance certificate or certificates acceptable to the Owner and BREM. The Contractor shall submit insurance certificates to the Owner and BREM at the commencement of this Contract and at policy renewal or revision dates. The certificates shall identify the project name and BREM project number, and shall name the Owner as certificate holder and as additional insured for general liability and automobile liability coverages. The submitted forms shall contain a provision that coverage afforded under the insurance policies will not be canceled or materially changed unless at least ten days prior written notice by registered letter has been given to the Owner and BREM.
- 9.2 The Owner does not warrant or represent that the insurance required herein constitutes an insurance portfolio which adequately addresses all risks faced by the Contractor or its Subcontractors. The Contractor is responsible for the existence, extent and adequacy of insurance prior to commencement of work. The Contractor shall not allow any Subcontractor to commence work until all similar insurance required of the Subcontractor has been confirmed by the Contractor.
- 9.3 The Contractor shall procure and maintain primary insurance for the duration of the Project and, if written on a Claims-Made basis, shall also procure and maintain Extended Reporting Period (ERP) insurance for the period of time that any claims could be brought. The Contractor shall ensure that all Subcontractors they engage or employ will procure and maintain similar insurance in form and amount acceptable to the Owner and BREM. At a minimum, the insurance shall be

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of the types and limits set forth herein protecting the Contractor from claims which may result from the Contractor's execution of the Work, whether such execution be by the Contractor or by those employed by the Contractor or by those for whose acts they may be liable. All required insurance coverages shall be placed with carriers authorized to conduct business in the State of Maine by the Maine Bureau of Insurance.

9.3.1 The Contractor shall have Workers' Compensation insurance for all employees on the Project site in accordance with the requirements of the Workers' Compensation law of the State of Maine.

Minimum acceptable limits for Employer's Liability are:

Bodily Injury by Accident	\$500,000
	\$500,000 Each Employee
	\$500,000 Policy Limit

9.3.2 The Contractor shall have Commercial General Liability insurance providing coverage for bodily injury and property damage liability for all hazards of the Project including premise and operations, products and completed operations, contractual, and personal injury liabilities. The policy shall include collapse and underground coverage as well as explosion coverage if explosion hazards exist. Aggregate limits shall apply on a location or project basis. Minimum acceptable limits are:

General aggregate limit	\$2,000,000
Products and completed operations aggregate	\$1,000,000
Each occurrence limit	\$1,000,000
Personal injury aggregate	\$1,000,000

9.3.3 The Contractor shall have Automobile Liability insurance against claims for bodily injury, death or property damage resulting from the maintenance, ownership or use of all owned, non-owned and hired automobiles, trucks and trailers. Minimum acceptable limit is:

Any one accident or loss\$500,000

9.3.4 The Contractor shall have Owner's Protective Liability insurance for contract values \$50,000 and above, naming the Owner as the Named Insured. Minimum acceptable limits are:

General aggregate limit	\$2,000,000
Each occurrence limit	\$1.000.000

- 9.4 The Owner has determined the appropriate coverage for this particular project, verified the coverage with the State of Maine Risk Management Division, and selected the proper option on the contract form. Property Insurance for this construction contract shall one of the options described below.
- 9.4.1 New construction insured by the Contractor –

The Contractor shall procure and maintain Builder's Risk insurance naming the Owner, Contractor and any Subcontractors as insureds as their interest may appear. Covered cause of loss form shall be all Risks of Direct Physical Loss, endorsed to include flood, earthquake, transit and sprinkler leakage where sprinkler coverage is applicable. Unless specifically authorized in writing by the Owner, the limit of insurance shall not be less than the initial contract amount and coverage shall apply during the entire contract period until the Certificate of Substantial Completion is accepted by the Owner.

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9.4.2 Renovations and additions to existing State-owned buildings insured by the State of Maine Risk Management Division –

Builder's Risk insurance will be provided by the State of Maine in accordance with the terms and conditions of the State's property policy. The Owner shall notify Maine Risk Management Division concerning the project, including the nature and value of the work, planned start and completion date, and the name of the General Contractor. Said insurance coverage shall cover the interests of the Contractor and Subcontractor, as their interests may appear. Exclusions common to commercial property policies may be applicable. A Builder's Risk certificate of insurance will be furnished to the Contractor upon request.

The \$500 per occurrence deductible is the responsibility of the Contractor. Should the Contractor or Subcontractor desire coverage in excess of that maintained by the State, it must be acquired by the Contractor and at Contractor expense.

9.4.3 Renovations and additions to existing buildings *not* insured by the State of Maine Risk Management Division –

The Contractor shall procure and maintain Builder's Risk insurance naming the Owner, Contractor and all Subcontractors as insureds as their interests may appear. The covered cause of loss form shall be Risks of Direct Physical Loss, endorsed to include flood, earthquake, testing and ensuing loss and shall include coverage for materials in transit and materials stored off site. Coverage shall be on a replacement cost and a completed value basis. Unless specifically authorized by the Owner, the limit of insurance shall not be less than the contract amount and coverage shall apply during the entire contract period until the Certificate of Substantial Completion is accepted by the Owner.

10. Contract Bonds

- When noted as required in the Bid Documents, the Contractor shall provide to the Owner a Performance Bond and a Payment Bond, or "contract bonds", upon execution of the contract. Each bond value shall be for the full amount of the contract and issued by a surety company authorized to do business in the State of Maine as approved by the Owner. The bonds shall be executed on the forms furnished in the Bid Documents. The bonds shall allow for any subsequent additions or deductions of the contract.
- 10.2 The contract bonds shall continue in effect for one year after final acceptance of the contract to protect the Owner's interest in connection with the one year guarantee of workmanship and materials and to assure settlement of claims for the payment of all bills for labor, materials and equipment by the Contractor.

11. Patents and Royalties

11.1 The Contractor shall, for all time, secure for the Owner the free and undisputed right to the use of any patented articles or methods used in the Work. The expense of defending any suits for infringement or alleged infringement of such patents shall be borne by the Contractor. Awards made regarding patent suits shall be paid by the Contractor. The Contractor shall hold the Owner harmless regarding patent suits that may arise due to installations made by the Contractor, and to any awards made as a result of such suits.

Any royalty payments related to the work done by the Contractor for the Project shall be borne by the Contractor. The Contractor shall hold the Owner harmless regarding any royalty payments that may arise due to installations made by the Contractor.

12. Surveys, Layout of Work

- 12.1 The Owner shall furnish all property surveys unless otherwise specified.
- 12.2 The Contractor is responsible for correctly staking out the Work on the site. The Contractor shall employ a competent surveyor to position all construction on the site. The surveyor shall run the axis lines, establish correct datum points and check each line and point on the site to insure their accuracy. All such lines and points shall be carefully preserved throughout the construction.
- 12.3 The Contractor shall lay out all work from dimensions given on the Drawings. The Contractor shall take measurements and verify dimensions of any existing work that affects the Work or to which the Work is to be fitted. The Contractor is solely responsible for the accuracy of all measurements. The Contractor shall verify all grades, lines, levels, elevations and dimensions shown on the Drawings and report any errors or inconsistencies to the Consultant prior to commencing work.

13. Record of Documents

- 13.1 The Contractor shall maintain one complete set of Contract Documents on the jobsite, in good order and current status, for access by the Owner and Consultant.
- 13.2 The Contractor shall maintain, continuously updated, complete records of Requests for Information, Architectural Supplemental Instructions (or equivalent), Information Bulletins, supplemental sketches, Change Order Proposals, Change Orders, Shop Drawings, testing reports, et cetera, for access by the Owner and Consultant.

14. Allowances

- 14.1 The Contract Price shall include all allowances described in the Contract Documents. The Contractor shall include all overhead and profit necessary to implement each allowance in their Contract Price.
- 14.2 The Contractor shall not be required to employ parties for allowance work against whom the Contractor has a reasonable objection. In such a case, the Contractor shall notify the Owner in writing of their position and shall propose an alternative party to complete the work of the allowance.

15. Shop Drawings

15.1 The Contractor shall administer Shop Drawings prepared by the Contractor, Subcontractors, suppliers or others to conform to the approved Schedule of the Work. The Contractor shall verify all field measurements, check and authorize all Shop Drawings and schedules required by the Work. The Contractor is the responsible party and contact for the Contractor's work as well as that of Subcontractors, suppliers or others who provide Shop Drawings.

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- 15.2 The Consultant shall review and acknowledge Shop Drawings, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents.
- 15.3 The Contractor shall provide monthly updated logs containing: requests for information, information bulletins, supplemental instructions, supplemental sketches, change order proposals, change orders, submittals, testing and deficiencies.
- 15.4 The Contractor shall make any corrections required by the Consultant, and shall submit a quantity of corrected copies as may be needed. The acceptance of Shop Drawings or schedules by the Consultant shall not relieve the Contractor from responsibility for deviations from Drawings and Specifications, unless the Contractor has called such deviations to the attention of the Consultant at the time of submission and secured the Consultant's written approval. The acceptance of Shop Drawings or schedules by the Consultant does not relieve the Contractor from responsibility for errors in Shop Drawings or schedules.

16. Samples

16.1 The Contractor shall furnish for approval, with reasonable promptness, all samples as directed by the Consultant. The Consultant shall review and approve such samples, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents. The subsequent work shall be in accord with the approved samples.

17. Substitutions

- 17.1 The Contractor shall furnish items and materials described in the Contract Documents. If the item or material specified describes a proprietary product, or uses the name of a manufacturer, the term "or approved equal" shall be implied, if it is not included in the text. The specific item or material specified establishes a minimum standard for the general design, level of quality, type, function, durability, efficiency, reliability, compatibility, warranty coverage, installation factors and required maintenance. The Drawing or written Specification shall not be construed to exclude other manufacturers products of comparable design, quality, and efficiency.
- 17.2 The Contractor may submit detailed information about a proposed substitution to the Consultant for consideration. Particular models of items and particular materials which the Contractor asserts to be equal to the items and materials identified in the Contract Documents shall be allowed only with written approval by the Consultant. The request for substitution shall include a cost comparison and a reason or reasons for the substitution.
- 17.3 The Consultant may request additional information about the proposed substitution. The approval or rejection of a proposed substitution may be based on timeliness of the request, source of the information, the considerations of minimum standards described above, or other considerations. The Consultant should briefly state the rationale for the decision. The decision shall be considered final.
- 17.4 The duration of a substitution review process can not be the basis for a claim for delay in the Schedule of the Work.

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18. Assignment of Contract

18.1 The Contractor shall not assign or sublet the contract as a whole without the written consent of the Owner. The Contractor shall not assign any money due to the Contractor without the written consent of the Owner.

19. Separate Contracts

- 19.1 The Owner reserves the right to create other contracts in connection with this Project using similar General Conditions. The Contractor shall allow the Owner's other contractors reasonable opportunity for the delivery and storage of materials and the execution of their work. The Contractor shall coordinate and properly connect the Work of all contractors.
- 19.2 The Contractor shall promptly report to the Consultant and Owner any apparent deficiencies in work of the Owner's other contractors that impacts the proper execution or results of the Contractor. The Contractor's failure to observe or report any deficiencies constitutes an acceptance of the Owner's other contractors work as suitable for the interface of the Contractor's work, except for latent deficiencies in the Owner's other contractors work.
- 19.3 Similarly, the Contractor shall promptly report to the Consultant and Owner any apparent deficiencies in their own work that would impact the proper execution or results of the Owner's other contractors.
- 19.4 The Contractor shall report to the Consultant and Owner any conflicts or claims for damages with the Owner's other contractors and settle such conflicts or claims for damages by mutual agreement or arbitration, if necessary, at no expense to the Owner.
- 19.5 In the event the Owner's other contractors sue the Owner regarding any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor's expense. The Contractor shall pay or satisfy any judgment that may arise against the Owner, and pay all other costs incurred.

20. Subcontracts

- 20.1 The Contractor shall not subcontract any part of this contract without the written permission of the Owner.
- 20.2 The Contractor shall submit a complete list of named Subcontractors and material suppliers to the Consultant and Owner for approval by the Owner prior to commencing work. The Subcontractors named shall be reputable companies of recognized standing with a record of satisfactory work.
- 20.3 The Contractor shall not employ any Subcontractor or use any material until they have been approved, or where there is reason to believe the resulting work will not comply with the Contract Documents.
- 20.4 The Contractor, not the Owner, is as fully responsible for the acts and omissions of Subcontractors and of persons employed by them, as the Contractor is for the acts and omissions of persons directly or indirectly employed by the Contractor.

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- 20.5 Neither the Contract Documents nor any Contractor-Subcontractor contract shall indicate, infer or create any direct contractual relationship between any Subcontractor and the Owner.
- 21. Contractor-Subcontractor Relationship
- The Contractor shall be bound to the Subcontractor by all the obligations in the Contract Documents that bind the Contractor to the Owner.
- 21.2 The Contractor shall pay the Subcontractor, in proportion to the dollar value of the work completed and requisitioned by the Subcontractor, the approved dollar amount allowed to the Contractor no more than seven days after receipt of payment from the Owner.
- 21.3 The Contractor shall pay the Subcontractor accordingly if the Contract Documents or the subcontract provide for earlier or larger payments than described in the provision above.
- The Contractor shall pay the Subcontractor for completed and requisitioned subcontract work, less retainage, no more than seven days after receipt of payment from the Owner for the Contractor's approved Requisition for Payment, even if the Consultant fails to certify a portion of the Requisition for Payment for a cause not the fault of the Subcontractor.
- 21.5 The Contractor shall not make a claim for liquidated damages or penalty for delay in any amount in excess of amounts that are specified by the subcontract.
- 21.6 The Contractor shall not make a claim for services rendered or materials furnished by the Subcontractor unless written notice is given by the Contractor to the Subcontractor within ten calendar days of the day in which the claim originated.
- 21.7 The Contractor shall give the Subcontractor an opportunity to present and to submit evidence in any progress conference or disputes involving subcontract work.
- 21.8 The Contractor shall pay the Subcontractor a just share of any fire insurance payment received by the Contractor.
- 21.9 The Subcontractor shall be bound to the Contractor by the terms of the Contract Documents and assumes toward the Contractor all the obligations and responsibilities that the Contractor, by those documents, assumes toward the Owner.
- 21.10 The Subcontractor shall submit applications for payment to the Contractor in such reasonable time as to enable the Contractor to apply for payment as specified.
- 21.11 The Subcontractor shall make any claims for extra cost, extensions of time or damages, to the Contractor in the manner provided in these General Conditions for like claims by the Contractor to the Owner, except that the time for the Subcontractor to make claims for extra cost is seven calendar days after the receipt of Consultant's instructions.

22. Supervision of the Work

During all stages of the Work the Contractor shall have a competent superintendent, with any necessary assistant superintendents, overseeing the project. The superintendent shall not be

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- reassigned without the consent of the Owner unless a superintendent ceases to be employed by the Contractor due to unsatisfactory performance.
- 22.2 The superintendent represents the Contractor on the jobsite. Directives given by the Consultant or Owner to the superintendent shall be as binding as if given directly to the Contractor's main office. All important directives shall be confirmed in writing to the Contractor. The Consultant and Owner are not responsible for the acts or omissions of the superintendent or assistant superintendents.
- 22.3 The Contractor shall provide supervision of the Work equal to the industry's highest standard of care. The superintendent shall carefully study and compare all Contract Documents and promptly report any error, inconsistency or omission discovered to the Consultant. The Contractor may not necessarily be held liable for damages resulting directly from any error, inconsistency or omission in the Contract Documents or other instructions by the Consultant that was not revealed by the superintendent in a timely way.

23. Observation of the Work

- 23.1 The Contractor shall allow the Owner, the Consultant and the Bureau continuous access to the site for the purpose of observation of the progress of the work. All necessary safeguards and accommodations for such observations shall be provided by the Contractor.
- 23.2 The Contractor shall coordinate all required testing, approval or demonstration of the Work. The Contractor shall give sufficient notice to the appropriate parties of readiness for testing, inspection or examination.
- 23.3 The Contractor shall schedule inspections and obtain all required certificates of inspection for inspections by a party other than the Consultant.
- 23.4 The Consultant shall make all scheduled observations promptly, prior to the work being concealed or buried by the Contractor. If approval of the Work is required of the Consultant, the Contractor shall notify the Consultant of the construction schedule in this regard. Work concealed or buried prior to the Consultant's approval may need to be uncovered at the Contractor's expense.
- 23.5 The Consultant may order reexamination of questioned work, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to conform to the Contract Documents, the Owner shall pay the expense of the reexamination and remedial work. If the work is found to not conform to the Contract Documents, the Contractor shall pay the expense, unless the defect in the work was caused by the Owner's Contractor, whose responsibility the reexamination expense becomes.
- 23.6 The Bureau shall periodically observe the Work during the course of construction and make recommendations to the Contractor or Consultant as necessary. Such recommendations shall be considered and implemented through the usual means for changes to the Work.

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24. Consultant's Status

- 24.1 The Consultant represents the Owner during the construction period, and observes the work in progress on behalf of the Owner. The Consultant has authority to act on behalf of the Owner only to the extent expressly provided by the Contract Documents or otherwise demonstrated to the Contractor. The Consultant has authority to stop the work whenever such an action is necessary, in the Consultant's reasonable opinion, to ensure the proper execution of the contract.
- 24.2 The Consultant is the interpreter of the conditions of the contract and the judge of its performance. The Consultant shall favor neither the Owner nor the Contractor, but shall use the Consultant's powers under the contract to enforce faithful performance by both parties.
- In the event of the termination of the Consultant's employment on the project prior to completion of the work, the Owner shall appoint a capable and reputable replacement. The status of the new Consultant relative to this contract shall be that of the former Consultant.

25. Management of the Premises

- 25.1 The Contractor shall place equipment and materials, and conduct activities on the premises in a manner that does not unreasonably hinder site circulation, environmental stability, or any long term effect. Likewise, the Consultant's directions shall not cause the use of premises to be impeded for the Contractor or Owner.
- 25.2 The Contractor shall not use the premises for any purpose other than that which is directly related to the scope of work. The Owner shall not use the premises for any purpose incompatible with the proposed work simultaneous to the work of the Contractor.
- 25.3 The Contractor shall enforce the Consultant's instructions regarding information posted on the premises such as signage and advertisements, as well as activities conducted on the premises such as fires, and smoking.
- 25.4 The Owner may occupy any part of the Project that is completed with the written consent of the Contractor, and without prejudice to any of the rights of the Owner or Contractor. Such use or occupancy shall not, in and of itself, be construed as a final acceptance of any work or materials.

26. Safety and Security of the Premises

- 26.1 The Contractor shall designate, and make known to the Consultant and the Owner, a safety officer whose duty is the prevention of accidents on the site.
- 26.2 The Contractor shall continuously maintain security on the premises and protect from unreasonable occasion of injury all people authorized to be on the job site. The Contractor shall also effectively protect the property and adjacent properties from damage or loss.
- 26.3 The Contractor shall take all necessary precautions to ensure the safety of workers and others on and adjacent to the site, abiding by applicable local, state and federal safety regulations. The Contractor shall erect and continuously maintain safeguards for the protection of workers and others, and shall post signs and other warnings regarding hazards associated with the construction process, such as protruding fasteners, moving equipment, trenches and holes, scaffolding, window, door or stair openings, and falling materials.

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- 26.4 The Contractor shall restore the premises to conditions that existed prior to the start of the project at areas not intended to be altered according to the Contract Documents.
- 26.5 The Contractor shall protect existing utilities and exercise care working in the vicinity of utilities shown in the Drawings and Specifications or otherwise located by the Contractor.
- 26.6 The Contractor shall protect from damage existing trees and other significant plantings and landscape features of the site which will remain a permanent part of the site. If necessary or indicated in the Contract Documents, tree trunks shall be boxed and barriers erected to prevent damage to tree branches or roots.
- 26.7 The Contractor shall repair or replace damage to the Work caused by the Contractor's or Subcontractor's forces, including that which is reasonably protected, at the expense of the responsible party.
- 26.8 The Contractor shall not load, or allow to be loaded, any part of the Project with a force which imperils personal or structural safety. The Consultant may consult with the Contractor on such means and methods of construction, however, the ultimate responsibility lies with the Contractor.
- 26.9 The Contractor shall not jeopardize any work in place with subsequent construction activities such as blasting, drilling, excavating, cutting, patching or altering work. The Consultant must approve altering any structural components of the project. The Contractor shall supervise all construction activities carried out by others on site to ensure that the work is neatly done and in a manner that will not endanger the structure or the component parts.
- 26.10 The Contractor may act with their sole discretion in emergency situations that potentially effect health, life or serious damage to the premises or adjacent properties, to prevent such potential loss or injury. The Contractor may negotiate with the Owner for compensation for expenses due to such emergency work.
- 26.11 The Contractor and Subcontractors shall have no responsibility for the identification, discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials in any form at the project site. The Contractor shall avoid disruption of any hazardous materials or toxic substances at the project site and promptly notify the Owner in writing on the occasion of such a discovery.
- 26.12 The Contractor shall keep the premises free of any unsafe accumulation of waste materials caused by the work. The Contractor shall regularly keep the spaces "broom clean". See the Close-out of the Work provisions of this section regarding cleaning at the completion of the project.

27. Changes in the Work

- 27.1 The Contractor shall not proceed with extra work without an approved Change Order or Construction Change Directive. A Change Order which has been properly signed by all parties shall become a part of the contract.
- 27.2 A Change Order is the usual document for directing changes in the Work. In certain circumstances, however, the Owner may utilize a Construction Change Directive to direct the

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Contractor to perform changes in the Work that are generally consistent with the scope of the project. The Owner shall use a Construction Change Directive only when the normal process for approving changes to the Work has failed to the detriment of the Project, or when agreement on the terms of a Change Order cannot be met, or when an urgent situation requires, in the Owner's judgment, prompt action by the Contractor.

- 27.3 The Consultant shall prepare the Construction Change Directive representing a complete scope of work, with proposed Contract Price and Contract Time revisions, if any, clearly stated.
- 27.4 The Contractor shall promptly carry out a Construction Change Directive which has been signed by the Owner and the Consultant. Work thus completed by the Contractor constitutes the basis for a Change Order. Changes in the Contract Price and Contract Time shall be as defined in the Construction Change Directive unless subsequently negotiated with some other terms.
- 27.5 The method of determining the dollar value of extra work shall be by:
 - .1 an estimate of the Contractor accepted by Owner as a lump sum, or
 - .2 unit prices named in the contract or subsequently agreed upon, or
 - .3 cost plus a designated percentage, or
 - .4 cost plus a fixed fee.
- 27.6 The Contractor shall determine the dollar value of the extra work for both the lump sum and cost plus designated percentage methods so as not to exceed the following rates. The rates include all overhead and profit expenses.
 - .1 Contractor for any work performed by the Contractor's own forces, up to 20% of the cost;
 - .2 Subcontractor for work performed by Subcontractor's own forces, up to 20% of the cost;
 - .3 Contractor for work performed by Contractor's Subcontractor, up to 10% of the amount due the Subcontractor.
- 27.7 The Contractor shall keep and provide records as needed or directed for the cost plus designated percentage method. The Consultant shall review and certify the appropriate amount which includes the Contractor's overhead and profit. The Owner shall make payments based on the Consultant's certificate.
- 27.8 Cost reflected in Change Orders shall be limited to the following: cost of materials, cost of delivery, cost of labor (including Social Security, pension, Workers' Compensation insurance, and unemployment insurance), and cost of rental of power tools and equipment. Labor cost may include a pro-ratio share of a foreman's time only in the case of an extension of contract time granted due to the Change Order.
- Overhead reflected in Change Orders shall be limited to the following: bond premium, supervision, wages of clerks, time keepers, and watchmen, small tools, incidental expenses, general office expenses, and all other overhead expenses directly related to the Change Order.
- 27.10 The Contractor shall provide credit to the Owner for labor, materials, equipment and other costs but not overhead and profit expenses for those Change Order items that result in a net value of credit to the contract.
- 27.11 The Owner may change the scope of work of the Project without invalidating the contract. The Owner shall notify the Contractor of a change of the scope of work for the Owner's Contractors,

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- which may affect the work of this Contractor, without invalidating the contract. Change Orders for extension of the time caused by such changes shall be developed at the time of directing the change in scope of work.
- 27.12 The Consultant may order minor changes in the Work, not involving extra cost, which is consistent with the intent of the design or project.
- 27.13 The Contractor shall immediately give written notification to the Consultant of latent conditions discovered at the site which materially differ from those represented in the Drawings or Specifications, and which may eventually result in a change in the scope of work. The Contractor shall suspend work until receiving direction from the Consultant. The Consultant shall promptly investigate the conditions and respond to the Contractor's notice with direction that avoids any unnecessary delay of the Work. The Consultant shall determine if the discovered conditions warrant a Change Order.
- 27.14 The Contractor shall, within ten calendar days of receipt of the information, give written notification to the Consultant if the Contractor claims that instructions by the Consultant will constitute extra cost not accounted for by Change Order or otherwise under the contract. The Consultant shall promptly respond to the Contractor's notice with direction that avoids any unnecessary delay of the Work. The Consultant shall determine if the Contractor's claim warrants a Change Order.

28. Correction of the Work

- 28.1 The Contractor shall promptly remove from the premises all work the Consultant declares is non-conforming to the contract. The Contractor shall replace the work properly at no expense to the Owner. The Contractor is also responsible for the expenses of others whose work was damaged or destroyed by such remedial work.
- 28.2 The Owner may elect to remove non-conforming work if it is not removed by the Contractor within a reasonable time, that time defined in a written notice from the Consultant. The Owner may elect to store removed non-conforming work not removed by the Contractor at the Contractor's expense. The Owner may, with ten days written notice, dispose of materials which the Contractor does not remove. The Owner may sell the materials and apply the net proceeds, after deducting all expenses, to the costs that should have been borne by the Contractor.
- 28.3 The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any related damage to other work which appears within a period of one year from the date of substantial completion, and in accord with the terms of any guarantees provided in the contract. The Owner shall promptly give notice of observed defects to the Contractor and Consultant. The Consultant shall determine the status of all claimed defects.
- 28.4 The Consultant may authorize, after a reasonable notification to the Contractor, an equitable deduction from the contract amount in lieu of the Contractor correcting non-conforming or defective work.

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29. Owner's Right to do Work

- 29.1 The Owner may, using other contractors, correct deficiencies attributable to the Contractor, or complete unfinished work. Such action shall take place only after giving the Contractor three days written notice, and provided the Consultant approves of the proposed course of action as an appropriate remedy. The Owner may then deduct the cost of the remedial work from the amount due the Contractor.
- 29.2 The Owner may act with their sole discretion when the Contractor is unable to take action in emergency situations that potentially effect health, life or serious damage to the premises or adjacent properties, to prevent such potential loss or injury. The Owner shall inform the Contractor of the emergency work performed, particularly where it may affect the work of the Contractor.

30. Termination of Contract and Stop Work Action

- 30.1 The Owner may, owing to a certificate of the Consultant indicating that sufficient cause exists to justify such action, without prejudice to any other right or remedy and after giving the Contractor and the Contractor's surety seven days written notice, terminate the employment of the Contractor. At that time the Owner may take possession of the premises and of all materials, tools and appliances on the premises and finish the work by whatever method the Owner may deem expedient. Cause for such action by the Owner includes:
 - .1 the contractor is adjudged bankrupt, or makes a general assignment for the benefit of its creditors, or
 - .2 a receiver is appointed due to the Contractor's insolvency, or
 - .3 the Contractor persistently or repeatedly refuses or fails to provide enough properly skilled workers or proper materials, or
 - .4 the Contractor fails to make prompt payment to Subcontractors or suppliers of materials or labor, or
 - .5 the Contractor persistently disregards laws, ordinances or the instructions of the Consultant, or is otherwise found guilty of a substantial violation of a provision of the Contract Documents.
- 30.2 The Contractor is not entitled, as a consequence of the termination of the employment of the Contractor as described above, to receive any further payment until the Work is finished. If the unpaid balance of the contract amount exceeds the expense of finishing the Work, including compensation for additional architectural, managerial and administrative services, such balance shall be paid to the Contractor. If the expense of finishing the Work exceeds the unpaid balance, the Contractor shall pay the difference to the Owner. The Consultant shall certify the expense incurred by the Contractor's default. This obligation for payment shall continue to exist after termination of the contract.
- 30.3 The Contractor may, if the Work is stopped by order of any court or other public authority for a period of thirty consecutive days, and through no act or fault of the Contractor or of anyone employed by the Contractor, with seven days written notice to the Owner and the Consultant, terminate this contract. The Contractor may then recover from the Owner payment for all work executed, any proven loss and reasonable profit and damage.
- The Contractor may, if the Consultant fails to issue a certificate for payment within seven days after the Contractor's formal request for payment, through no fault of the Contractor, or if the

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Owner fails to pay to the Contractor within 30 days after submission of any sum certified by the Consultant, with seven days written notice to the Owner and the Consultant, stop the Work or terminate this Contract.

31. Delays and Extension of Time

- 31.1 The completion date of the contract shall be extended if the work is delayed by changes ordered in the work which have approved time extensions, or by an act or neglect of the Owner, the Consultant, or the Owner's Contractor, or by strikes, lockouts, fire, flooding, unusual delay in transportation, unavoidable casualties, or by other causes beyond the Contractor's control. The Consultant shall determine the status of all claimed causes.
- The contract shall not be extended for delay occurring more than seven calendar days before the Contractor's claim made in writing to the Consultant. In case of a continuing cause of delay, only one claim is necessary.
- 31.3 The contract shall not be extended due to failure of the Consultant to furnish drawings if no schedule or agreement is made between the Contractor and the Consultant indicating the dates which drawings shall be furnished and fourteen calendar days has passed after said date for such drawings.
- This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Document.

32. Payments to the Contractor

- 32.1 As noted under *Preconstruction Conference* in this section, the Contractor shall submit a Schedule of Values form, before the first application for payment, for approval by the Owner and Consultant. The Consultant may direct the Contractor to provide evidence that supports the correctness of the form. The approved Schedule of Values shall be used as a basis for payments.
- 32.2 The Contractor shall submit an application for each payment ("Requisition for Payment") on a form approved by the Owner and Consultant. The Consultant may require receipts or other documents showing the Contractor's payments for materials and labor, including payments to Subcontractors.
- 32.3 The Contractor shall submit Requisitions for Payment as the work progresses not more frequently than once each month, unless the Owner approves a more frequent interval due to unusual circumstances. The Requisition for Payment is based on the proportionate quantities of the various classes of work completed or incorporated in the Work, in agreement with the actual progress of the Work and the dollar value indicated in the Schedule of Values.
- 32.4 The Consultant shall verify and certify each Requisition for Payment which appears to be complete and correct prior to payment being made by the Owner. The Consultant may certify an appropriate amount for materials not incorporated in the Work which have been delivered and suitably stored at the site. The Contractor shall submit bills of sale, insurance certificates, or other such documents that will adequately protect the Owner's interests prior to payments being certified.

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- 32.5 In the event any materials delivered but not yet incorporated in the Work have been included in a certified Requisition for Payment with payment made, and said materials thereafter are damaged, deteriorated or destroyed, or for any reason whatsoever become unsuitable or unavailable for use in the Work, the full amount previously allowed shall be deducted from subsequent payments unless the Contractor satisfactorily replaces said material.
- 32.6 The Contractor may request certification of an appropriate dollar amount for materials not incorporated in the Work which have been delivered and suitably stored away from the site. The Contractor shall submit bills of sale, insurance certificates, right-of-entry documents or other such documents that will adequately protect the Owner's interests. The Consultant shall determine if the Contractor's documentation for the materials is complete and specifically designated for the Project. The Owner may allow certification of such payments.
- 32.7 Subcontractors may request, and shall receive from the Consultant, copies of approved Requisitions for Payment showing the amounts certified in the Schedule of Values.
- 32.8 Certified Requisitions for Payment, payments made to the Contractor, or partial or entire occupancy of the project by the Owner shall not constitute an acceptance of any work that does not conform to the Contract Documents. The making and acceptance of the final payment constitutes a waiver of all claims by the Owner, other than those arising from unsettled liens, from faulty work or materials appearing within one year from final payment or from requirements of the Drawings and Specifications, and of all claims by the Contractor, except those previously made and still unsettled.

33. Payments Withheld

- 33.1 The Owner shall retain five percent of each payment due the Contractor as part security for the fulfillment of the contract by the Contractor. The Owner may make payment of a portion of this "retainage" to the Contractor temporarily or permanently during the progress of the Work. The Owner may thereafter withhold further payments until the full amount of the five percent is reestablished. The Contractor may deposit with the Maine State Treasurer certain securities in place of retainage amounts due according to Maine Statute (5 M.R.S. §1746).
- 33.2 The Consultant may withhold or nullify the whole or a portion of any Requisitions for Payment submitted by the Contractor in the amount that may be necessary, in his reasonable opinion, to protect the Owner from loss due to any of the following:
 - .1 defective work not remedied;
 - .2 claims filed or reasonable evidence indicating probable filing of claims;
 - .3 failure to make payments properly to Subcontractors or suppliers;
 - .4 a reasonable doubt that the contract can be completed for the balance then unpaid;
 - .5 liability for damage to another contractor.

The Owner shall make payment to the Contractor, in the amount withheld, when the above circumstances are removed.

34. Liens

34.1 The Contractor shall deliver to the Owner a complete release of all liens arising out of this contract before the final payment or any part of the retainage payment is released. The

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Contractor shall provide with the release of liens an affidavit asserting each release includes all labor and materials for which a lien could be filed. Alternately, the Contractor, in the event any Subcontractor or supplier refuses to furnish a release of lien in full, may furnish a bond satisfactory to the Owner, to indemnify the Owner against any lien.

34.2 In the event any lien remains unsatisfied after all payments to the Contractor are made by the Owner, the Contractor shall refund to the Owner all money that the latter may be compelled to pay in discharging such lien, including all cost and reasonable attorney's fees.

35. Workmanship

- 35.1 The Contractor shall provide materials, equipment, and installed work equal to or better than the quality specified in the Contract Documents and approved in submittal and sample. The installation methods shall be of the highest standards, and the best obtainable from the respective trades. The Consultant's decision on the quality of work shall be final.
- 35.2 The Contractor shall know local labor conditions for skilled and unskilled labor in order to apply the labor appropriately to the Work. All labor shall be performed by individuals well skilled in their respective trades.
- 35.3 The Contractor shall perform all cutting, fitting, patching and placing of work in such a manner to allow subsequent work to fit properly, whether that be by the Contractor, the Owner's Contractors or others. The Owner and Consultant may advise the Contractor regarding such subsequent work. Notwithstanding the notification or knowledge of such subsequent work, the Contractor may be directed to comply with this standard of compatible construction by the Consultant at the Contractor's expense.
- 35.4 The Contractor shall request clarification or revision of any design work by the Consultant, prior to commencing that work, in a circumstance where the Contractor believes the work cannot feasibly be completed at the highest quality, or as indicated in the Contract Documents. The Consultant shall respond to such requests in a timely way, providing clarifying information, a feasible revision, or instruction allowing a reduced quality of work. The Contractor shall follow the direction of the Consultant regarding the required request for information.
- 35.5 The Contractor shall guarantee the Work against any defects in workmanship and materials for a period of one year commencing with the date of the Certificate of Substantial Completion, unless specified otherwise for specific elements of the project. The Work may also be subdivided in mutually agreed upon components, each defined by a Certificate of Substantial Completion.

36. Close-out of the Work

- 36.1 The Contractor shall remove from the premises all waste materials caused by the work. The Contractor shall make the spaces "broom clean" unless a more exactly cleaning is specified. The Contractor shall wash all windows and glass immediately prior to the final inspection, unless otherwise directed.
- The Owner may conduct the cleaning of the premises where the Contractor, duly notified by the Consultant, fails to adequately complete the task. The expense of this cleaning may be deducted from the sum due to the Contractor.

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- 36.3 The Contractor shall participate in all final inspections and acknowledge the documentation of unsatisfactory work, generally called the "punch list", to be corrected by the Contractor. The Consultant shall document the successful completion of the Work in a dated Certificate of Substantial Completion, to be signed by Owner, Consultant, and Contractor.
- 36.4 The Contractor shall not call for final inspection of any portion of the Work that is not complete and permanent installed. The Contractor may be found liable for the expenses of individuals called to final inspection meetings prematurely.
- The Contractor and all major Subcontractors shall participate in the end-of-warranty-period conference, typically scheduled close to one year after the Substantial Completion date.

37. Date of Completion and Liquidated Damages

- 37.1 The Contractor may make a written request to the Owner for an extension or reduction of time, if necessary. The request shall include the reasons the Contractor believes justifies the proposed completion date. The Owner may grant the revision of the contract completion date if the Work was delayed due to conditions beyond the control and the responsibility of the Contractor. The Contractor shall not conduct unauthorized accelerated work or file delay claims to recover alleged damages for unauthorized early completion.
- 37.2 The Contractor shall vigorously pursue the completion of the Work and notify the Owner of any factors that have, may, or will affect the approved Schedule of the Work. The Contractor may be found responsible for expenses of the Owner or Consultant if the Contractor fails to make notification of project delays.
- 37.3 The Project is planned to be done in an orderly fashion which allows for an iterative submittal review process, construction administration including minor changes in the Work and some bad weather. The Contractor shall not file delay claims to recover alleged damages on work the Consultant determines has followed the expected rate of progress.
- 37.4 The Consultant shall prepare the Certificate of Substantial Completion which, when signed by the Owner and the Contractor, documents the date of Substantial Completion of the Work or a designated portion of the Work. The Owner shall not consider the issuance of a Certificate of Occupancy by an outside authority a prerequisite for Substantial Completion if the Certificate of Occupancy cannot be obtained due to factors beyond the Contractor's control.
- 37.5 Liquidated Damages may be deducted from the sum due to the Contractor for each calendar day that the Work remains uncompleted after the completion date specified in the Contract or an approved amended completion date. The dollar amount per day shall be calculated using the Schedule of Liquidated Damages table shown below.

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If the original contract amount is:	The per day Liquidated Damages shall be:
Less than \$100,000	\$250
\$100,000 to less than \$2,000,000	\$750
\$2,000,000 to less than \$10,000,000	\$1,500
\$10,000,000 and greater	\$1,500 plus \$250 for
	each \$2,000,000 over \$10,000,000

- 38. Dispute Resolution
- 38.1 Mediation
- 38.1.1 A dispute between the parties which arises under this Contract which cannot be resolved through informal negotiation, shall be submitted to a neutral mediator jointly selected by the parties.
- 38.1.2 Either party may file suit before or during mediation if the party, in good faith, deems it to be necessary to avoid losing the right to sue due to a statute of limitations. If suit is filed before good faith mediation efforts are completed, the party filing suit shall agree to stay all proceedings in the lawsuit pending completion of the mediation process, provided such stay is without prejudice.
- 38.1.3 In any mediation between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.
- 38.2 Arbitration
- 38.2.1 If the dispute is not resolved through mediation, the dispute shall be settled by arbitration. The arbitration shall be conducted before a panel of three arbitrators. Each party shall select one arbitrator; the third arbitrator shall be appointed by the arbitrators selected by the parties. The arbitration shall be conducted in accordance with the Maine Uniform Arbitration Act (MUAA), except as otherwise provided in this section.
- 38.2.2 The decision of the arbitrators shall be final and binding upon all parties. The decision may be entered in court as provided in the MUAA.
- 38.2.3 The costs of the arbitration, including the arbitrators' fees shall be borne equally by the parties to the arbitration, unless the arbitrator orders otherwise.
- 38.2.4 In any arbitration between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.

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00 73 46 Wage Determination Schedule

PART 1- GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.

1.2 Summary

A. This Section includes the wage determination requirements for Contractors as issued by the State of Maine Department of Labor Bureau of Labor Standards or the United States Department of Labor.

1.3 Requirements

A. Conform to the wage determination schedule for this project which is shown on the following page.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

	Minimum Minimum				Minimum Minimum		
Occupation Title	<u>Wage</u>	<u>Benefit</u>	<u>Total</u>	Occupation Title	<u>Wage</u>	<u>Benefit</u>	<u>Total</u>
Asbestos/Lead Removal Worker	\$13.25	\$0.82	\$14.07	Ironworker - Structural	\$22.50	\$3.00	\$25.50
Backhoe Loader Operator	\$22.00	\$5.08	\$27.08	Laborers (Incl.Helpers & Tenders)	\$16.00	\$1.04	\$17.04
Boilermaker	\$24.00	\$9.00	\$33.00	Laborer - Skilled	\$18.05	\$2.79	\$20.84
Bricklayer	\$24.25	\$2.04	\$26.29	Loader Operator - Front-End	\$19.00	\$3.00	\$22.00
Bulldozer Operator	\$20.00	\$3.71	\$23.71	Mechanic- Maintenance	\$25.00	\$3.94	\$28.94
Carpenter	\$21.50	\$3.79	\$25.29	Mechanic- Refrigeration	\$26.00	\$5.16	\$31.16
Carpenter - Acoustical	\$19.50	\$2.03	\$21.53	Millwright	\$29.47	\$10.77	\$40.24
Carpenter - Rough	\$20.00	\$1.03	\$21.03	Oil/Fuel Burner Serv & Installer	\$23.00	\$3.51	\$26.51
Cement Mason/Finisher	\$19.50	\$2.11	\$21.61	Painter	\$16.50	\$0.00	\$16.50
Communication Equip Installer	\$22.20	\$3.67	\$25.87	Pipe/Steam/Sprinkler Fitter	\$25.25	\$5.95	\$31.20
Concrete Mixing Plant Operator	\$22.11	\$4.92	\$27.03	Plumber (Licensed)	\$25.00	\$4.04	\$29.04
Crane Operator =>15 Tons)	\$28.00	\$8.45	\$36.45	Plumber Helper/Trainee	\$21.00	\$3.37	\$24.37
Dry-Wall Applicator	\$22.00	\$0.00	\$22.00	Propane /Natural Gas Serv & Inst	\$26.00	\$4.03	\$30.03
Dry-Wall Taper & Finisher	\$22.91	\$1.08	\$23.99	Pump Installer	\$16.13	\$3.14	\$19.27
Electrician - Licensed	\$27.00	\$4.53	\$31.53	Rigger	\$22.25	\$6.60	\$28.85
Electrician Helper/Cable Puller	\$17.00	\$1.24	\$18.24	Roofer	\$15.00	\$2.79	\$17.79
Excavator Operator	\$20.50	\$2.91	\$23.41	Sheet Metal Worker	\$19.52	\$3.12	\$22.64
Fence Setter	\$15.00	\$2.00	\$17.00	Sider	\$16.75	\$1.38	\$18.13
Flagger	\$13.00	\$0.00	\$13.00	Stone Mason	\$21.00	\$0.95	\$21.95
Floor Layer	\$20.00	\$3.06	\$23.06	Truck Driver - Light	\$17.00	\$1.17	\$18.17
Glazier	\$17.25	\$0.89	\$18.14	Truck Driver - Medium	\$19.00	\$3.37	\$22.37
HVAC	\$24.88	\$2.71	\$27.59	Truck Driver - Heavy	\$17.00	\$1.09	\$18.09
Insulation Installer	\$20.25	\$2.88	\$23.13	Truck Driver - Tractor Trailer	\$17.15	\$1.08	\$18.23
Ironworker - Reinforcing	\$16.00	\$2.79	\$18.79	Truck Driver - Mixer (Cement)	\$17.88	\$3.15	\$21.03

IMPORTANT INFORMATION: This Rate Sheet is published for reference only. A formal project specific determination is issued to the agency soliciting bids.

The Prevailing Wage rates are set for all 16 counties with 4 categories coded as follows:

B1 = One or two family homes

B2 = Other than one or two family homes

 ${
m HI} = {
m Highway} \; {
m and} \; {
m Earthwork}$

HB = Heavy Construction and Bridge

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION:

A. Work to be performed as part of the 15 Columbia Street and 19 Union Street Parking Lot Rehabilitation project includes full depth reconstruction of the parking lot surrounding 19 Union Street (Base Bid), the parking lot adjacent to the athletic fields (Bid Alternate 1) and the parking lot surrounding 15 Columbia Street (Bid Alternate 2), as shown on the design drawings.

B. Work Included:

<u>Base Bid</u> – The work to be performed as part of the Base Bid includes portions of the parking areas on 19 Union Street within the limits shown on the design drawings. Included with this work is parking lot reconstruction, guardrail installation, sidewalk reconstruction, granite curb installation, mill and overlay of the entrance on the west side of the building, pavement markings and all appurtenances as shown on the design drawings.

<u>Bid Alternate 1</u> - The work to be performed as part of Bid Alternate 1 includes the portion of the parking area that is adjacent to the athletic fields as indicated on the design drawings. Included with this work is parking lot reconstruction, guardrail installation, sidewalk reconstruction, granite curb installation, pavement markings and all appurtenances as shown on the design drawings.

<u>Bid Alternate 2</u> - The work to be performed as part of Bid Alternate 2 includes the parking lot surrounding 15 Columbia Street within the limits shown on the plans. Included with this work is parking lot reconstruction, installation of concrete dumpster pads, resetting of catch basins and manholes frames/covers to grade and all appurtenances as shown on the design drawings.

<u>Bid Alternate 3</u> – The work to be performed as part of bid alternate 3 includes the replacement of all bituminous curbing in kind, rather than replacement with granite curb.

C. Schedule Limitations:

Contractor work hours will be limited to 7:00AM to 7:00PM, Monday through Friday. Any work outside these hours will require permission of the Owner and adequate notice.

END OF SECTION

SECTION 01050

COORDINATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.
- B. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or his subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

1.2 COORDINATION WITH OTHERS

A. City of Augusta:

- 1. Contractor shall coordinate access, egress, detours and traffic control, if required, at each site with the Augusta Police Department. The Contractor shall notify Augusta Police, Fire Department and Rescue Squad at least 24 hours in advance of any street closings or detours.
- 2. The Contractor shall be responsible for coordinating and maintaining public services to all public and private properties.

B. Greater Augusta Utilities District (GAUD)

1. Contractor shall be responsible for coordinating all work in the vicinity of water lines with the GAUD. Contractor shall bear all costs for the district's inspection requirements, temporary facilities, water main adjustments and other requirements.

C. Central Maine Power Company (CMP):

1. The Contractor shall be responsible for coordinating all work around CMP facilities with CMP and shall bear all costs of inspection requirements, temporary facilities relocation and other requirements.

D. Fairpoint Communications:

1. The Contractor shall be responsible for coordinating and providing telephone service to all construction sites, both temporary and permanent. The Contractor shall also be responsible for coordinating all work around Fairpoint facilities with Fairpoint and shall bear all costs of inspection requirements, temporary facilities relocation and all other requirements.

E. Summit Natural Gas:

1. Contractor shall be responsible for coordinating all work in the vicinity of gas lines owned by Summit Natural Gas. Contractor shall bear all costs for SNG's inspection requirements, temporary facilities, gas main adjustments and other requirements.

F. Maine Natural Gas:

1. Contractor shall be responsible for coordinating all work in the vicinity of gas lines owned by Maine Natural Gas. Contractor shall bear all costs for the MNG's inspection requirements, temporary facilities, gas main adjustments and other requirements.

1.3 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall have use of the premises within the limits shown on the Drawings and as defined in the General Conditions for the performance of the Work.
- B. Contractor work hours will be limited to 7:00AM to 7:00PM, Monday through Friday. Any work outside these hours will require permission of the Owner and adequate notice.
- C. Contractor shall maintain access and utilities to the Department of Labor building, Bureau of General Services Building and all other adjacent facilities at all times.
- D. Contractor shall coordinate delivery schedules, site access, and other constructionrelated activities with any other contractors that may be hired by the Owner during the course of construction.
- E. Contractor shall assume full responsibility for security of all of their, and their subcontractors, materials and equipment stored on the site.

END OF SECTION

SECTION 01070

ABBREVIATIONS & SYMBOLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Where any of the following abbreviations are used in these Specifications, they shall have the meaning set forth opposite each.

AASHTO American Association of State Highway and Transportation

Officials

AC Alternating Current

ACI American Concrete Institute
ACP Asbestos Cement Pipe
AGA American Gas Association
AIC Ampere Interrupting Capacity

AGMA American Gear Manufacturers Association

AIEE(IEEE) American Institute of Electrical Engineers (Institute of Electrical

and Electronics Engineers, Inc.)

AISC American Institute of Steel Construction

amp Ampere 125-16

Amer. Std. American Standard for Cast Iron Pipe Flanges and Flanged

Fittings, Class 125 (ASA Bl6 11960)

ANSI American National Standards Institute

API American Petroleum Institute
ASA American Standards Association
ASCE American Society of Civil Engineers

ASHRAE American Society of Heating, Refrigerating and Air

Conditioning Engineers

ASME American Society of Mechanical Engineers
ASTM American Society for Testing and Materials
AWG American or Brown and Sharpe Wire Gage

AWWA American Water Works Association

BOD Biochemical Oxygen Demand

c.f. Cubic Foot

c.f.m. Cubic Foot Per Minute c.f.s. Cubic Foot Per Second

CI Cast Iron

CIPRA Cast Iron Pipe Research Association
CSI Construction Specifications Institute

c.y. Cubic Yards DC Direct Current

DEP Department of Environmental Protection

DI Ductile Iron

DOT Department of Transportation EDR Equivalent Directional Radiation EPA U.S. Environmental Protection Agency

fps Feet Per Second

ft. Feet gal. Gallons

gpd Gallons Per Day gpm Gallons Per Minute

HP Horsepower

IBR Institute of Boiler and Radiator Manufacturers

in. Inches inter. Interlock

ISA Instrument Society of America

kva Kilovolt-ampere

kw Kilowatt lb. Pound max. Maximum

MCB Master Car Builders MGD Million Gallons Per Day

Min. Minimum

NBS National Bureau of Standards

NEC National Electrical Code, Latest Edition
NEMA National Electrical Manufacturers Association
NEWWA New England Water Works Association

NPT National Pipe Thread
OS&Y Outside Screw and Yoke
PCA Portland Cement Association

ppm Parts Per Million

% Percent

psi Pounds Per Square Inch psig Pounds Per Square Inch Gage

PVC Polyvinyl Chloride rpm Revolutions Per Minute RUS Rural Utility Service

s.f. Square Foot

STL. W.G. U.S. Steel Wire, Washburn and Moen, American Steel and Wire

Cos., or Roebling Gage

s.y. Square yard

TDH Total Dynamic Head

USAS Standards of the United States of America Standards Institute

(formerly American Standards Association)

USS GAGE United States Standard Gage

VC Vitrified Clay

WSP Working Steam Pressure

Fed. Spec. Federal Specifications issued by the Federal Supply Service of the

General Service Administration, Washington, D.C.

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. For lump sum items, payment shall be made to the contractor in accordance with an accepted progress schedule and schedule of values on the basis of actual work completed.
- B. For unit-price items, payment shall be based on the actual amount of work accepted and for the actual amount of materials in place, as shown by final measurements.
 - 1. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.
 - 2. At the end of each day's work, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of unit price work accomplished and/or completed during the work day.
 - 3. The Resident Project Representative will then prepare two "Daily Progress Reports" which shall be signed by both the Resident Project Representative and Contractor's Representative.
 - 4. Once each month the Resident Project Representative will prepare two "Monthly Progress Summation" forms from the month's accumulation of "Daily Progress Reports" which shall also be signed by both the Resident Project Representative and Contractor's Representative.
 - 5. These completed forms will provide the basis of the Engineer's monthly quantity estimate upon which payment will be made. Items not appearing on both the Daily Progress Reports and Monthly Progress Summation will not be included for payment. Items appearing on forms not properly signed by the Contractor will not be included for payment.
 - 6. After the work is completed and before final payment is made, the Engineer will make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 SCOPE OF PAYMENT

- A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Proposal Form, the Contract Unit Prices will still prevail.
- B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract; also for all loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work and until its final acceptance by the Engineer, and

- for all risks of every description connected with the prosecution of the work, except as provided herein, also for all expenses incurred in consequence of the suspension of the Work as herein authorized.
- C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.3 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

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

1.4 OMITTED ITEMS

A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.5 PARTIAL PAYMENTS

A. Partial payments shall be made monthly as the work progresses. Partial payments shall be made subject to the provisions of the Supplemental and General Conditions.

1.6 PAYMENT FOR MATERIAL DELIVERED

- A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used and have been delivered to the construction site, or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplemental Conditions.
- B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures of any kind which are not a permanent part of the Contract.

1.7 FINAL PAYMENT

A. After final measurements are made by the Engineer, the Contractor will prepare a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to provisions of the General and Supplemental Conditions.

1.8 INCIDENTAL WORK

- A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
 - 1. Pre-Construction photographs or videos.
 - 2. Project Record Documents

- 3. Traffic control plan and traffic regulation.
- 4. Signs
- 5. Clean-up and restoration of property.
- 6. Restoration of fences and other structures.
- 7. Cooperation and coordination with other Contractors and utility companies including related inspection costs and other costs (Refer to Section 01050).
- 8. Utility crossings and relocations, unless otherwise paid for.
- 9. Minor Items--such as relocation of sign posts, guard rails, rock wall, mail boxes, curbs, traffic loop detectors, pavement markings, etc., damaged as a result of construction activities.
- 10. Trench boxes, steel and/or wood sheeting as required, including that left in place.
- 11. Dewatering as necessary.
- 12. Dust control.
- 13. Loam, seeding, grading, liming, fertilization, mulching, and watering.
- 14. Routine flagman services.
- 15. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.
- 16. Temporary construction necessary for construction sequencing and other facilities not permanently incorporated into the work.
- 17. Weather protection.
- 18. Permits not otherwise paid for or provided by the Owner.
- 19. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
- 20. All excavation except the test pits specifically shown or ordered by the Engineer.
- 21. Contract administration and insurance.
- 22. Test pits to establish in place field soils density, groundwater conditions, or requirements for dewatering.
- 23. Earthwork (Except Ledge)
- 24. Test Pits for the Contractor's Benefit
- 25. Temporary resetting or replacement of existing street and traffic signs and temporary traffic signals where necessary.
- 26. Horizontal adjustment of existing frames, covers and grates to match final grades and curb faces.
- 27. Removing and resetting of existing steps, guard rails, fences, walls and non-paved brick or paver walkways disturbed during construction, other than those identified on the Drawings to be replaced.
- 28. Protection of existing block and stone retaining walls unless otherwise identified to be removed, relocated or modified in the Drawings.
- 29. Installing temporary pavement markings on binder course that will not be surfaced within 14 days of installation.
- 30. Removal and subsequent delivery of replaced or obsolete frames, covers, grates, hydrants curbstones and signs to a location within the City limits designated by the Owner.

- 31. Removal of temporary or permanent pavement markings, prior to paving. This includes removing markings that are applied on the winter binder layer, prior to installation of the wearing course.
- 32. Removal of existing fencing.
- 33. Removal and resetting of signs.
- 34. Removal and resetting of boulders.

1.9 DESCRIPTION OF PAY ITEMS

- A. The following sections describe the measurement of and payment for the work to be done under the respective items listed in the Bid Form.
- B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

(01), (17) and (32) – Mobilization/Demobilization

- A. Method of Measurement: Mobilization/Demobilization shall be paid for at the Lump Sum unit price as stated in the Bid Schedule. Total of bid item shall not exceed 10% of Total Amount of the Bid.
- B. Basis of Payment: Payment for mobilization/demobilization shall constitute full compensation for initiating and ending the contract. Seventy-Five percent (75%) of the lump sum will be payable when the Contractor is operational on the site and the remaining 25% of the lump sum will be payable when the Contractor leaves the site following the completion of all contract work. For purposes of payment on this item, "Operational" shall mean the Contractor has provided all required and properly executed bonds and insurance certificates and the owner has approved the following: Construction Schedule, Erosion Control Plan, Traffic Control Plan, Temporary Facilities (including Engineer's Trailer), and Pre-Construction photographs/videos. Only one lump sum payment divided into the two partial payments described herein shall be made to cover all mobilization/demobilization costs throughout the entire contract.

(02), (18) and (33) – Erosion and Sediment Control

- A. Method of Measurement: Erosion and sediment control will be paid for at the Lump Sum unit price as stated in the Bid Schedule.
- B. Basis of Payment: Payment for erosion and sediment control shall constitute full compensation for all erosion and sediment control measures installed and maintained throughout construction, including all labor, materials, tools, and equipment required to ensure sediment and pollutants are controlled and excessive amounts of sediment are not discharged from the construction site into the existing storm drain system or onto adjacent streets. Street sweeping, and dust control are included in this item. The lump sum shall be paid in partial payments over the course of the project, where the percentage paid is equal to the percentage of completion of the entire Contract.

(03), (19) and (34) – Excavation / Demolition

A. Method of Measurement: Excavation/demolition to be paid for under this item shall be the number of cubic yards of material removed within the limits shown on the plans.

Basis of Payment: Payment for excavation/demolition shall be paid for at the unit price per cubic yard stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, equipment, and tools necessary for the excavation, demolition and removal from site of all existing pavement, aggregates and all else proposed for demolition on the plans.

(04), (20) and (35) – Excavation (Hazardous Materials) *

A. Method of Measurement: Excavation of hazardous materials to be paid for under this item shall be the number of cubic yards of material removed and replaced with materials from off-site as authorized by the Engineer. The payment limit for this item shall be between vertical planes that are a distance apart equal to a maximum of 6-feet extending from the top of the initial backfill layer to the bottom of the aggregate subbase layer as called out in the contract drawings for the length of the excavation as directed by the Engineer.

B. Basis of Payment:

- 1. Excavated unsuitable materials shall be paid for at the unit price per cubic yard stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, equipment, and tools necessary for the excavation of unsuitable material including the disposal of materials; furnishing installing and compacting replacement suitable backfill, and for all other work and expenses incidental thereto for which payment is not provided under other items.
- 2. Material excavated that could have, in the opinion of the Engineer, remained in place through the use of adequate dewatering efforts shall be replaced by the Contractor at no additional cost to the Owner.
- 3. Excess backfill material may be available during the Contract. This item shall be used to pay for excavation of unsuitable materials above the initial backfill layer only if no suitable backfill material previously excavated under this Contract is available.

(05), (21) and (36) – Woven Geotextile Fabric

- A. Method of Measurement: Woven geotextile fabric will be paid for per square yard at the unit price as stated in the Bid Schedule.
- B. Basis of Payment: Payment for installing woven geotextile fabric shall constitute full compensation for all labor, materials, tools and equipment necessary to complete this work including any incidental items which are needed to complete furnishing and installation of woven geotextile fabric per the requirements of the Contract Documents.

(06), (07), (22), (23), (37) and (38) – Aggregate Subbase (Type D) and Aggregate Base (Type B)

A. Method of Measurement: Aggregate subbase and base materials measured for payment shall be the number of cubic yards placed for paved parking areas and travel ways measured and calculated within the limits indicated on the plans, complete and

in place.

B. Basis for Payment: Payment for placement of aggregate subbase and aggregate base shall constitute full compensation for all materials, labor and equipment necessary to complete this work including excavation, saw cutting, milling and grinding of existing pavement, transportation of existing bituminous pavement and existing base material to approved stockpiling sites, furnishing and transporting aggregate subbase and base materials to the project site, preparing subgrade, placing, grading, compaction, dust control and all else incidental thereto for which payment is not provided under other items.

(08), (09), (24), (25), (39) and (40) – HMA Binder Course (19mm) and HMA Wearing Course (12.5mm)

A. Method of Measurement:

- 1. Bituminous concrete pavement to be paid for under this item includes:
 - a. HMA Binder Course The number of tons of binder course pavement placed and removed at the direction of the Engineer, calculated as described below, within the payment limits shown on the Drawings.
 - b. HMA Wearing Course The number of tons of wearing course pavement placed at the direction of the Engineer, calculated as described below, within the payment limits shown on the Drawings.
- 2. Actual widths will be used in computing area wherever the width of pavement removed and replaced is less than the limits indicated on the Drawings.
- 3. The conversion factor to change volume of bituminous concrete pavement measured in place to tons will be 0.055 tons per square yard per inch of thickness.
- B. Basis of Payment: Pavement shall be paid for at the Contract unit price per ton stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment and tools necessary for the placement and removal of pavement, preparation of base material, application of tack coat, placement and grading of gravel shoulder material to back up overlay pavement, and installation of pavement markings. No additional payment will be made to the contractor for repair work done by him in maintaining bituminous concrete pavement.

(10), (26) and (41) – Tapered Shiplap Pavement Joint

- A. Method of Measurement: Tapered shiplap pavement joints to be paid for under this item shall consist of the square feet of tapered shiplap joints installed within the payment limits shown on the Drawings.
- B. Basis of Payment: Tapered shiplap pavement joints shall be paid for at the contract unit price per square foot as stated in the bid schedule. Payment shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including furnishing new HMA, grinding existing pavement and disposal of existing roadway materials at a site as designated by the Owner, tack coating surfaces, placing and rolling the mix, broom cleaning existing grinded surfaces prior to paving, and all else incidental thereto for which payment is not provided under other items.

(11), (27) and (42) – Reset Catch Basin and Manhole Frames and Covers

- A. Method of Measurement: Catch Basin and Manhole rims adjusted measured for payment shall be for the actual the actual number of manhole frames and covers raised or lowered as directed by the Engineer.
- B. Basis of Payment: The unit price per each shall be full compensation for all labor, materials and equipment necessary to complete the work including excavation, removal of existing covers and frames, cleaning of castings and bedding surface on existing structures, furnishing and setting precast concrete risers or brickwork and mortar to meet final elevation, setting castings, backfill, compaction, pavement and lawn restoration, and all else incidental thereto for which payment is not provided under other items.

(12) and (43) – Concrete Dumpster Pad

- A. Method of Measurement: Concrete dumpster pads accepted for payment shall consist of the number of square yards of dumpster pad installed within the limits as shown on the plans.
- B. Basis of Payment: The contract unit price per square yard shall be full compensation for furnishing all materials, labor, equipment and tools necessary for furnishing, placement, finishing and curing of aggregate base materials, rigid insulation, concrete, rebar, and all else incidental thereto for which payment is not provided under other items.

(13) and (29) – Vertical Granite Curb

- A. Method of Measurement: Vertical granite curb measured for payment shall be the actual linear footage of vertical granite curb installed and accepted complete and in place.
- C. Basis of Payment: The Contract unit price per linear foot for vertical granite curb shall constitute full compensation for all labor, equipment and materials necessary to complete this work including furnishing and installing curb, subgrade preparation, placement of concrete fill and removal and resetting of existing brick pavers, fences, flagstones and handrails backfill and all labor and appurtenances incidental thereto for which payment is not provided under other items.

(14) and (31) – Pavement Striping including Pavement Milling

A. Method of Measurement. Crosswalk stripes shall be measured as the actual number of linear feet of 12-inch wide Crosswalk stripes installed. Installation includes milling recesses into the pavement for the installation of the material. Speed Table Striping shall be measured as the actual number of linear feet of Speed Table Stripes installed. Installation includes milling recesses into the pavement for the installation of the material. Stop bars shall be measured as the actual number of linear feet of 18-inch wide stop bars installed. Installation includes milling recesses into the pavement for the installation of the material. The quantity of 4-inch wide pavement stripes and parking lot stall lines and 4" wide hatch marks to be paid for under this item shall consist of the actual number of linear feet of 4" single width markings placed at the direction of the Engineer within the payment limits shown on the Drawings.

Installation includes milling recesses into the pavement for the installation of the material. Temporary pavement marking is incidental.

B. Basis of Payment:

- 1. Payment for crosswalk stripes, speed table stripes, stop bars and 4-inch wide stripes, stalls and hatch marks shall be paid for at the Contract Unit Prices per linear feet stated in the Bid Schedule.
- 2. Said unit price shall be full compensation for furnishing all materials, labor, equipment and tools necessary for milling of pavement, furnishing and placement of striping, crosswalks and stop bars and for furnishing all materials, labor, equipment and tools necessary for cutting of all milled recesses as directed by the Engineer.

(15) – Remove and Reset Vertical Granite Curb

- A. Method of Measurement: Reset granite curb accepted for payment shall consist of the actual number of linear feet of granite curb removed, reset, and accepted complete in place measured along the face of the curb.
- B. Basis of Payment: The contract unit price per linear foot shall be full compensation for all labor, equipment and materials necessary to complete this work including removal and protection of existing granite curb, laying out and placing curb, aggregate base material, flowable fill (as needed), and all else incidental thereto for which payment is not provided under other items.

(16) – Grind and Overlay with 12.5MM HMA Wearing Course

- A. Method of Measurement: Overlay wearing course pavement accepted for payment shall be the total square yards of roadway wearing course construction <u>only</u>.
- B. Basis of Payment: The contract unit price per square yard for roadway grind and overlay wearing course shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including furnishing, grinding existing pavement to a depth of 1 ½ inches and disposal of existing roadway materials at a site as designated by the Owner, tack coating surfaces, placing and rolling the mix, broom cleaning existing surfaces prior to paving, and all else incidental thereto for which payment is not provided under other items.

(28) – Paved Sidewalk Construction

- A. Method of Measurement: Sidewalk construction shall be paid for per square yard of full-depth construction as measured at the sidewalk pavement surface within the limits as approved by the engineer and measured complete and in place and to the nearest square yard.
- B. Basis for Payment: Sidewalk construction shall be full compensation for all labor and equipment necessary to complete this work including: excavation, saw cutting existing pavement, furnishing, installing and compacting aggregate base material, placement of geotextile fabric behind curb joints, tack coat, furnishing, installing and rolling sidewalk pavement, dust control and all else incidental thereto for which payment is not provided under other items. All materials shall be installed as specified in the contract documents and to the dimensions indicated unless otherwise approved by the Owner.

(30) – Guardrail

- A. Method of Measurement: Guardrail accepted for payment shall be the actual linear feet of guardrail installed and accepted complete in place as directed by the Engineer.
- B. Basis of Payment: The contract unit price per linear foot for guardrail shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including supply and handling of material, excavation, foundations, anchors, backfill, compaction and all else incidental thereto for which payment is not provided under other items.

(44) – Shed Demolition

- A. Method of Measurement: Shed demolition accepted for payment shall consist of the actual number of sheds demolished and removed from the project site.
- B. Basis of Payment: The contract unit price per each shall be full compensation for furnishing all materials, labor, equipment and tools necessary for demolition and removal of the shed from the project site and all else incidental thereto for which payment is not provided under other items.

(45) - Bituminous Curb Installation

- A. Method of Measurement: The quantity of replacement of bituminous curb to be paid for under this item shall be the linear feet of curb removed and replaced within the payment limits defined in the Documents and directed by the Engineer. Curb removed for the convenience of, or damaged by the Contractor is not covered by this bid item.
- B. Basis of Payment: Replacement of bituminous curb shall be paid for at the unit price per linear foot stated in the Bid Schedule. Said unit price shall be full compensation for all labor, materials, equipment and tools required for the removal and placement of bituminous curb including excavation and backfill, disposal of curb that is removed, placement of new curb, repair of loam and seed behind curb, and for all other work and expenses incidental thereto for which payment is not provided under other items.

PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work described elsewhere: The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 <u>SUBM</u>ITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.
- B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as he wishes.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

A. To the maximum extent practicable, meetings will be held at the job site.

3.3 PRECONSTRUCTION MEETING

- A. Preconstruction meeting will be scheduled within twenty days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.
- B. Minimum agenda: Distribute data on, and discuss:

- 1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
- 2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
- 3. Channels and procedures for communications.
- 4. Construction schedule, including sequence of critical work.
- 5. Easements, permits.
- 6. Contract Documents, including distribution of required copies of original documents and revisions.
- 7. Processing of Shop Drawings and other data submitted to the Engineer for review.
- 8. Processing of field decisions and Change Orders.
- 9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
- 10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 PROJECT MEETINGS

- A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.
- B. Minimum agenda:
 - 1. Review, revise as necessary, and approved minutes of previous meeting.
 - 2. Review progress of the Work since last meeting, including status of submittals for approval.
 - 3. Review schedule of work to be accomplished prior to next meeting.
 - 4. Discuss monthly partial payment request.
 - 5. Review status of change order requests and Work Directive Changes.
 - 6. Identify problems which impede planned progress.
 - 7. Develop corrective measures and procedures to regain planned schedule.
 - 8. Complete other current business.

CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.
- B. Form of Schedules:
 - 1. Narrative: Completely describe the construction methods to be employed.
 - 2. Bar Chart:
 - a. Show start and finish dates for the various tasks involved.
- C. Content of Schedules:
 - 1. Provide complete sequence of construction by activity:
 - a. Shop Drawings, Project Data and Samples:
 - i. Submittal dates.
 - ii. Dates reviewed copies will be required.
 - b. Decision dates for:
 - i. Products specified by allowances.
 - ii. Selection of finishes.
 - c. Estimated product procurement and delivery dates.
 - d. Dates for beginning and completion of each element of construction.
 - 2. Identify work of separate phases and logically grouped activities.
 - 3. Show the projected percentage of completion for each item of work as of the first day of each month.
 - 4. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.

D. Updating:

- 1. Show all changes occurring since previous submission.
- 2. Indicate progress of each activity, show completion dates.
- 3. Include:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.
 - c. Revised projections due to changes.
 - d. Other identifiable changes.
- 4. Provide narrative report, including:
 - a. Discussion of problem areas, including current and anticipated delay factors.
 - b. Corrective action taken, or proposed.
 - c. Description of revisions that may affect schedules.

1.2 SUBMITTALS

- A. Submit updated schedules with each progress payment request.
- B. Submit 4 copies of initial and updated schedules to the Engineer.

SAFETY AND HEALTH PLAN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

- 1. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work, as outlined herein and in the General and Special Conditions of the Contract Documents. Within 10 days after the effective date of the Agreement between Owner and Contractor, submit to the Engineer a Safety and Health Plan as specified herein. Refer to submittals section below.
- 2. Contractor shall comply with all applicable Laws and Regulations related to the safety of persons or property, or for the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- 3. Contractor shall designate a qualified and experienced safety representative (OSHA defined "Competent Person") at the site whose duties and responsibilities shall be the prevention of accidents and maintaining and supervising of safety precautions and programs, including a "Job Hazards Analysis".
- 4. The Contractor shall be solely responsible to provide all labor, equipment, and utilities sufficient to ensure no construction noise, particulates, or odors, are allowed to accumulate to levels which adversely affect health or work in, or near the construction area.

B. Content of Safety and Health Plan:

- 1. Prepare complete safety and health plan in accordance with the requirements of CFR Title 29 Part 1926 Safety and Health Regulations for Construction.
 - a. Provide documentation that Contractor's hazardous communication program is up to date.
 - b. Provide documentation that Contractor's safety training is up to date.
 - c. Prepare a project specific Safety and Health Plan addressing construction safety issues, including but not limited to excavations, fall protection and egress, as well as provisions for construction in hazardous environmental conditions at the wastewater treatment facility. The hazardous environmental conditions at the wastewater treatment facility include, but are not limited to, confined space entry, electrically-classified spaces, and chemical storage and handling areas, to name a few.
- 2. Safety provisions for confined space entry shall follow General Industry Standard CFR Title 29 Part 1910.146 and will be incorporated into the Safety and Health Plan.

C. Updating:

1. Contractor shall be responsible for updating the Safety and Health Plan as appropriate throughout the course of the construction period.

1.2 SUBMITTALS

- A. Contractor shall be responsible for all aspects of construction site safety. Provide 3 copies of the Contractor's site specific Safety and Health Plan to the Engineer. The Safety and Health Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific safety program requirements. The Contractor will overview the plan with the Owner (and staff), Engineer (and Resident Project Representative) at the beginning of the project, and subsequently when/if the safety plan is updated.
- B. Provide updated Safety and Health Plans as necessary during the course of the project.
- C. Contractor's most current Safety and Health Plan shall be available at the construction site throughout the construction project.

1.3 ON-SITE COORDINATION MEETINGS

- A. Contractor shall review key aspects of Safety and Health Plan at the Pre-Construction Meeting, and subsequent on-site safety informational meeting.
- B. Contractor shall report to Engineer and Owner at each progress meeting concerning compliance with the Safety and Health Plan for the most recent construction period and new considerations and requirements for the upcoming period.
- C. Contractor shall hold weekly on-site coordination meetings with Resident Project Representative and Owner to ensure that Owner's staff is aware of key Safety and Health Plan requirements of the current phase of construction.

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Submit to the Engineer, Shop Drawings, Operation and Maintenance Manuals, Manufacturers' Certificates, Project Data, and Samples required by the Specification Sections.
- B. Related Work Specified Elsewhere:
 - 1. Construction Schedules: Section 01310

1.2 SHOP DRAWINGS

- A. Shop Drawings are required for each and every element of the work. Each shop drawing shall be assigned a sequential number for purposes of easy identification, and shall retain its assigned number, with appropriate subscript, on required resubmissions.
- B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.
- C. The Contractor shall submit to the Engineer a minimum of 6 copies of Shop Drawings and approved data and 1 electronic copy. The Engineer will retain 3 copies (for Owner's, Engineer's and Field Representative's files) and return 3 copies to the Contractor for distribution to subcontractors, suppliers and manufacturers. If the Contractor requires more than 3 then the number of copies submitted shall be adjusted accordingly. All shop drawing comments will be summarized on the Submittal Review Form.
- D. The Contractor shall provide a copy of the completed Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of each shop drawing. Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.
- E. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement, such as submitting miscellaneous metals grouped by structure, shall be requested in writing prior to any associated submittal.
- F. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence

- of such drawings.
- G. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.
- H. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.
- I. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. Shop drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.
- J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.
- K. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in his letter of transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.
- L. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.
- M. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be

required by the Engineer in an accurate, complete, and timely fashion. Resubmittals for the sole purpose of providing written responses to review comments will not be considered a resubmittal counting towards the two submission limit.

1.3 SAMPLES

A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available.

1.6 <u>SUBMISSION REQUIREMENTS</u>

- A. Accompany submittals with transmittal letter, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. The number of each Shop Drawing, Project Data and Sample submitted.
 - 5. Notification of deviations from Contract Documents.
 - 6. Other pertinent data.
- B. A completed Submittal Certification Form shall be attached to each copy of each shop drawing and must include:
 - 1. Identification of deviations from Contract Documents.
 - 2. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
 - 3. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
 - 4. Where specified, manufacturer's guarantee.
- C. Requirements for Electronic Submittals:
 - L. Each individual shop drawing or O&M submittal shall be contained in one PDF.
 - 2. The first page of the PDF shall be the Submittal Certification Form, which clearly identifies the submittal, specification section and shop drawing number. File names shall also identify the submittal contained in the PDF. Example file name: 02444-(Shop Drawing No.).pdf
 - 3. The electronic copy in PDF form shall be **exactly** as submitted in the hard copy. Electronic copies in PDF form shall be submitted on a CD or DVD and shall accompany the hard copies.
 - 4. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
 - 5. Electronic submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.

1.7 RESUBMISSION REQUIREMENTS

- A. Revise initial drawings as required and resubmit as specified for initial submittal.
- B. Indicate on drawings any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer.

1.8 ENGINEER'S REVIEW

- A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
- B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
 - 1. **No Exceptions Taken (Status 0 on shop drawing log)**. The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
 - 2. **Make Corrections Indicated (Status 1 on shop drawing log)**. The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Resubmittal is not required unless it is specifically called for; however, Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.
 - 3. Conditional to Remarks (Status 2 on shop drawing log). The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed.
 - 4. **Revise and Resubmit (Status 3 on shop drawing log)**. The shop drawing <u>does not comply with the Contract Document requirement as submitted</u>, but may with changes indicated and/or submission of additional information. The <u>entire package</u> must be resubmitted with the necessary information and a cover letter which indicates how each review comment has been addressed and where to find the information in the resubmittal.
 - 5. **Rejected (Status 4 on shop drawing log)**. The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
 - 6. **In Review (Status 5 on shop drawing log)**. The shop drawing is currently under review.
 - 7. **For Information Only (Status 6 on shop drawing log)**. The shop drawing review was informational only. No comments are provided.

SUBMITTAL CERTIFICATION FORM

PROJECT:	CONTRACTOR'S PROJ. NO:
CONTRACTOR:	ENGINEER'S PROJ. NO:
ENGINEER:	
TRANSMITTAL NUMBER:	SHOP DRAWING NUMBER:
SPECIFICATION SECTION OR D	RAWING NO:
DESCRIPTION:	
MANUFACTURER:	
☐ NO DEVIAT	or exceeds the project specification requirements with GONS E LIST OF DEVIATIONS AS FOLLOWS ^a :
By:Contractor ^b	By: Manufacturer ^C
	Date:
a Any deviations not brought to the responsibility of the Contractor to corre b Required on all submittals c When required by specifications	attention of the Engineer for review and concurrence shall be the ct, if so directed. Page of General Contractor's Stamp

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Pre-Construction Record: Contractor shall utilize digital photographs and video to obtain a visual record of the project area; copies of same shall be given to the Engineer and Owner.

1.2 QUALITY

A. Pre-Construction Record: Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, etc. can be readily determined.

1.3 SUBMITTAL OF PRINTS

A. Pre-Construction Record: Submit hard copy prints and electronic files on CD ROM, and video electronic files on DVD to the Engineer and Owner prior to any construction work.

QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. General Quality Control.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturer's Field Services.
- F. Testing Laboratory Services.

1.2 RELATED REQUIREMENTS

- A. Section 00700 General Conditions: Inspection and testing required by governing authorities.
- B. Section 01340 Submittals: Submittal of Manufacturer's Instructions.
- C. Section 02200 Earthwork.
- D. Section 03300 Cast-in-Place Concrete.

1.3 OUALITY CONTROL

A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 MANUFACTURERS' CERTIFICATES

A. When required by individual Specifications Section, submit manufacturer's certificate that products meet or exceed specified requirements.

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to Engineer listing observations and

recommendations.

1.8 TESTING LABORATORY SERVICES

- A. Owner will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services wherever an Independent Testing Laboratory is required by individual specification sections listed in paragraph 1.2 above, unless otherwise indicated.
- B. Services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be mailed within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or FAX results to Engineer, Resident Project Representative and Contractor within 24 hours.
- D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
- E. Contractor shall coordinate all testing work and shall notify Engineer and Independent Testing Laboratory at least 24 hours prior to performing work requiring testing services. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced by Owner to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.
- F. Payment for Independent Testing Laboratory services shall be as follows:
 - 1. General: Where testing is the Owner's responsibility, payment will be made as stated below unless other requirements are given in Specification Sections. Testing which is the responsibility of the Contractor will be considered an incidental item unless otherwise indicated in Section 01150, Measurement and Payment.
 - 2. Initial Testing: Owner will pay for initial tests.
 - 3. Retesting: Costs of retesting due to non-compliance will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.
 - 4. Contractor's Convenience Testing: Inspections and tests performed for Contractor's convenience will be paid for by Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION Not Used

DUST CONTROL

PART 1 - GENERAL

1.1 DESCRIPTIONS

- A. Work Included:
 - 1. Furnish and apply water or calcium chloride on the road surfaces within the construction site, when required to control dust and when directed by the Engineer.
 - 2. When dust control is not included as a separate item in the Contract, the work shall be considered incidental to the appropriate items of the Contract.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Water for Sprinkling:
- B. Clean, free of salt, oil, and other injurious matter.
- C. Calcium Chloride:
 - 1. Meet the requirements of AASHTO M144.

PART 3 - EXECUTION

3.1 <u>APPLICATION</u>

- A. Water:
 - 1. Apply water by methods approved by the Engineer.
 - 2. Use approved equipment including a tank with gauge equipped pump and spray bar.
- B. Calcium Chloride:
 - 1. Apply at a rate sufficient to maintain a damp surface but low enough to assure non-contamination of water courses.
 - 2. Apply water prior to calcium chloride addition.

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.
 - 2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.
 - 3. Do not close roads or streets to passage of the public without the permission of the proper authorities.
- B. The local police department and/or the Maine Department of Transportation will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If the Authority furnishes an inspector on the job as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the Authority (State Highways).
- C. Minimize the length of delays or traffic stoppage to the extent practicable. Maximum traffic stoppage time shall be 10 minutes.
- D. Develop a project specific traffic control plan that meets the requirements of Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. Proposed Traffic Control Plan shall indicate signs/locations to be used. Traffic Control Plan submittal to the Engineer will be for general information only.
- E. The Contractor's designated traffic control representative shall respond to all traffic safety complaints and be available to direct traffic control subcontractors the entire time work is occurring on site. If the designated representative is not on site for a period of time, another on site representative shall be designated by the Contractor for that period.

1.2 SCHEDULING WORK

- A. During the Project Pre-Construction Meeting one Contractor representative will be designated as the coordinator between the Police Department and subcontracted traffic control.
- B. Variable Message Signs notifying the public of pending road closure and/or construction must be in place seven days prior to road closure or as required by the Maine Department of Transportation.
- C. Schedule all work so that two adjacent parallel streets are not closed to passage by the public at any one time, if at all possible.
- D. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.
- E. Do not start work in any new location without the permission of the Engineer.
- F. Notify all police and fire departments of all scheduled detours and when streets are reopened.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

- A. Traffic control (plans, methods and devices) shall be as outlined in <u>Manual on Uniform Traffic Control Devices for Streets and Highways</u> (MUTCD) as published by U. S. Department of Transportation, and any local and state requirements.
- B. Provide adequate warning signs, barricades, signal lights, flaggers/uniformed police officers, and take other necessary precautions for the safety of the public.
- C. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.
- D. Provide barricades of substantial construction and painted with a finish that increases visibility at night, as outlined in the MUTCD.
- E. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.
- F. Maintain all necessary signs, barricades, lights, watchmen and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.
- G. Contractor shall make periodic inspection throughout the day of the traffic control patterns, methods, signs and other devices to ensure that they are properly placed.

2.2 FLAG PERSON

- A. A flag person is a trained and certified individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.
- B. Flag persons shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 DETOURS

- A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.
- B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

- A. Whenever a traveled way is closed, perform the Work in such a manner that local travel, residents and businesses in the vicinity of the Work will be inconvenienced as little as possible.
- B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

- A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.
- B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Keep accurate record documents for all additions, demolition, changes of material or equipment (from that shown on the Drawings), variations in work, and any other additions or revisions to the Contract (via Change Order, Work Change Directive, Field Order or Clarification).
- B. Related Work Specified Elsewhere:
 - 1. Shop Drawings, Project Data, and Samples are specified in "General Conditions" and Section 01340, Submittals.

1.2 MAINTENANCE OF DOCUMENTS

- A. Maintain at job site, one copy of:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Reviewed Shop Drawings
 - 5. Change Orders
 - 6. Any other modifications to the Contract
 - 7. Field Test Reports
- B. Store documents in files and racks specifically identified for Record Drawing use, that are apart from documents used for construction.
- C. File documents in a logical manner indexed for easy reference.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by the Engineer and Owner, and by the end of the project, transmit these documents to the Engineer.
- G. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests.

1.3 RECORDING

- A. Label each document "PROJECT RECORD" in large high printed letters.
- B. Keep record documents current and do not permanently conceal any work until required information has been recorded.
- C. General Field Recording Issues:
 - 1. All ties shall be taken from existing, permanent features such as utility poles, corners of buildings and hydrants. Porches, sheds or other house additions shall be avoided as they could be torn down. A minimum of two ties shall be taken.
 - 2. Stations shall be recorded to the nearest foot.
 - 3. Inverts shall be recorded to the nearest hundredth of a foot.
 - 4. Elevations shall be recorded to the nearest hundredth of a foot.

- D. Project Record Drawings Legibly mark Contract Drawings to record existing utilities and actual construction of all work, including but not limited to the following (where applicable):
 - 1. Existing Utilities
 - a. Water mains and services, water main gate valves, sewer mains and services, storm drains, culverts, steam lines, gas lines, tanks and other existing utilities encountered during construction must be accurately located and shown on the Drawings. In congested areas supplemental drawings or enlargements may be required.
 - b. Show any existing utilities encountered in plan and profile and properly labeled showing size, material and type of utility. Ties shall be shown on plan. Utility shall be drawn to scale in section (horizontally and vertically) and an elevation shall be called out to the nearest hundredth of a foot.
 - c. When existing utility lines are broken and repaired, ties shall be taken to these locations.
 - d. If existing water lines are replaced or relocated, document the area involved and pipe materials, size, etc. in a note, and with ties.
 - 2. Manholes, Catch Basins, Valve Pits and other structures.
 - a. Renumber structure stationing to reflect changes.
 - b. Show ties to center of structure covers or hatches.
 - c. In general, show inverts at center of structures. However, for manholes with drop structures, or steep channels (greater than 0.2' change on slope), show inverts at face of manhole.
 - d. Show inverts for other structures at the face of the structure.
 - e. Draw any new structures that are added on plan and profile.
 - f. Show any field or office redesigns.
 - g. Redraw plan if the structure's location is moved more than 5 feet in any direction. Note: It is important to show existing utilities, as outlined in Paragraph 1 above, especially if they were one reason for relocating the sewer, manholes and other structures.
 - h. Redraw profile if inverts changed by more than 6 inches.
 - 3. Gravity Sewer Line
 - a. Change sewer line slopes indicated on Drawings if inverts are changed.
 - b. Draw any new gravity lines that are added on plan and profile.
 - c. Show any field or office redesigns.
 - d. Redraw the sewer line profile if manhole inverts are redrawn.
 - e. Redraw the sewer line on plan corresponding to relocated manholes.
 - 4. Water Mains and Force Mains
 - a. Show ties to the location of all valves, bends (horizontal and vertical), tees and other fittings. The use of thrust blocks shall be recorded.
 - b. Revise elevations indicated on the Drawings to reflect actual construction.
 - 5. Ledge
 - a. Ledge profiles shall be shown. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
 - 6. Roads
 - a. Show centerline road profile and level spot elevations.

- b. Show pavement widths.
- c. On road cross sections, show the pavement cross slope.
- d. Show any deviations from the design plans.

7. Utilities

- a. When encountered, additional utilities (e.g., gas, cable, telephone, fiber optic, etc.) shall be indicated on the Record Drawings.
- E. Specifications and Addenda Legibly mark up each section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Change Order, Field Order, or other method.

1.4 SUBMITTALS

- A. At the completion of the project, and prior to the release of retainage, deliver record documents to the Engineer.
 - 1. Record drawings shall be provided as a bound, red-line paper set.
 - 2. Record drawings shall be provided as a bound, red-line paper set and an electronic file (pdf format) consisting of a full scan of the bound paper set.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date, project title and number.
 - 2. Contractor's name and address.
 - 3. Title and number of each record document with certification that each document is completed and accurate.
 - 4. Signature of Contractor, or his authorized representative.
- C. Failure to supply all information on the Project Record Drawings as specified in Part 1.3 may result in withholding final completion and in non-approval of final payments of the Contract. If Contract Time has elapsed, this shall be grounds for imposing liquidated damages.

1.5 QUALITY ASSURANCE

A. All horizontal and vertical dimensions, swing-ties, and elevations shall be accurate to within one-tenth of a foot, unless greater accuracy is specified elsewhere in the Specifications (e.g., concrete elevations, weir elevations, etc.).

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 MAINTAINING AND PROVIDING RECORDS

- A. Records shall be kept current as the work progresses.
- B. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.
- C. Records shall be kept current as the work progresses. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests. Failure to provide records shall also be grounds for withholding of final payment and, if beyond contract time, shall be grounds for imposing liquidated damages.

3.2 AS-BUILT SURVEY PERFORMANCE

- A. From established survey control, and construction baseline as shown on the drawings, conduct surveys of the project area during construction as needed to obtain information of buried and above ground items. Surveys shall include information outlined in Section 1.3.
- B. Actual road alignments; walls; fence and guardrail; existing, new and relocated utility poles; traffic and warning sign locations; crosswalks, parking space and stop bar locations; retaining walls and foundations drains; all underground and overhead utility poles and lines within the project limits, including those installed on private property; all other new features and appurtenances and those existing features and appurtenances changed as a result of this project shall be included in the survey.

SECTION 02050A

DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

- 1. The Contractor shall furnish all labor, materials, tools, equipment and apparatus necessary and shall do all work required to complete the demolition, removal, and alterations of existing facilities as indicated on the Drawings, as herein specified, and/or as directed by the Owner.
- 2. Demolition and alteration work within occupied areas shall be accomplished with minimum interference to the occupants and to the plant which shall be in continuous operation during construction.
- 3. All equipment, piping, and other materials that are not to be relocated or to be returned to the Owner shall become the property of the Contractor and shall be disposed of by him, away from the site of the work and at his own expense.
- 4. All demolition or removal of existing structures, utilities, equipment, and appurtenances shall be accomplished without damaging the integrity of existing structures, equipment, and appurtenances to remain, to be salvaged for relocation or stored for future use.
- 5. Such items that are damaged shall be either repaired or replaced at the Contractor's expense to a condition at least equal to that which existed prior to the start of his work.
- 6. Unless otherwise indicated, all items labeled to be "removed", "demolished" or "remove/demolished" shall be removed and disposed of off-site in accordance with all Local, State and Federal Regulations.
- B. Related Work Specified Elsewhere: (When Applicable)
 - 1. Earthwork is specified in Section 02200.

1.2 JOB CONDITIONS

- A. Condition of Structures:
 - 1. The Owner assumes no responsibility for the actual condition of structures to be demolished.
 - 2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner as far as practicable. However, variations within the structures may occur due to Owner's removal and salvage operations prior to the start of demolition work (where applicable).

1.3 UTILITIES

- A. Utility Locations:
 - 1. Utility locations shown on the plans are approximate only, based on information supplied by the utility companies.
- B. Coordination with Utilities:

1. The Contractor shall make all necessary arrangements and perform any necessary work to the satisfaction of affected utility companies and governmental divisions involved with the discontinuance or interruption of affected public utilities and services.

1.4 SUBMITTALS

- A. Schedule Demolition:
 - 1. Provide a detailed sequence of demolition and removal work to ensure the uninterrupted progress of the Owner's operations.

1.5 PROTECTIONS

- A. Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities and persons. Erect temporary, covered passageways as required by authorities having jurisdiction.
- B. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

1.6 DAMAGES

A. The Contractor shall promptly repair damages caused by demolition operations to adjacent facilities at no cost to the Owner.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 PERFORMANCE

- A. Remove and dispose of non-salvageable material in accordance with all applicable local and state laws, ordinances and code requirements.
- B. Dispose of material daily as it accumulates.
- C. Carefully remove, store and protect from damage all materials to be salvaged.
- D. Buildings and Adjacent Property:
 - 1. Protect all buildings and property adjacent to equipment to be removed from damage by erecting suitable barriers or by other suitable means.
 - 2. Leave such buildings in a permanently safe and satisfactory condition.
- E. Maintaining Traffic:
 - 1. Ensure minimum interference with roads, streets, driveways, sidewalks and adjacent facilities.
 - 2. Do not close or obstruct streets, sidewalks, alleys or passageways without permission from authorities having jurisdiction.
- F. Salvage:
 - 1. Salvaged items shall be stored on site for the Owner in an acceptable location and manner.

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Work described by this Section consists of all earthwork encountered and necessary for construction of the project as indicated in the Contract Documents, and includes but is not limited to the following:
 - 1. Excavation
 - 2. Backfilling and Filling
 - 3. Compaction
 - 4. Embankment Construction
 - 5. Grading
 - 6. Providing soil material as necessary
 - 7. Disposal of excess suitable material and unsuitable materials
- B. Related Work Specified Elsewhere: (When Applicable)
 - 1. Traffic Regulation is specified in Division 1.
 - 2. Filter Fabric, Temporary Erosion Control, Landscaping, and Paving are specified in the appropriate sections of this Division.
 - 3. Section 01400 Quality Control.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. All work shall be performed and completed in accordance with all local, state and federal regulations.
 - 2. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.
- B. Line and Grade:
 - 1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work.
- C. Testing Methods:
 - 1. Gradation Analysis: Where a gradation is specified the testing shall be in accordance with ASTM C-117-90 and ASTM C-136-93 (or latest revision).
 - 2. Compaction Control:
 - Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D-1557-91 (Modified Proctor), or latest revision, unless otherwise indicated.

- b) The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D 1556-90, (or latest revision) or Nuclear method Designation D2922.
- c) Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D-698-91 (Standard Proctor).
- d) An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.

1.3 SUBMITTALS

- A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor until the materials are approved by the Owner or Engineer.
- B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.
- C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.
- D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.

1.4 TESTS

The Independent Testing Laboratory shall conform to the following procedures and standards:

- A. Submit test results in accordance with the procedure specified in the General Conditions.
- B. All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the Engineer and Contractor at the Owner's expense unless otherwise indicated (see Section 01400 Quality Control).
- C. Field density tests on embankment materials shall be as follows:
 - 1. Tests shall be taken on every 200 cubic yards of embankment material.
- D. Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 2,000 sq. ft. of paved area or building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of overlaying building slab or paved area, but in no case less than 3 tests.
- E. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.
- F. Foundation Wall Backfill: Take at least one (1) field density tests per lift per wall at locations and elevations as designated by the Engineer.
- G. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.

- H. Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.
 - 1. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. The cost of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount for retesting will be deducted from the Contract Price. No allowance will be considered for delays in the performance of the work.
 - 2. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

1.5 JOB CONDITIONS

A. Site Information:

- Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data are made available for the convenience of Contractor.
- 2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.
- B. Existing Utilities and Structures:
 - 1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

A. Aggregate Base: Shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. Type B Aggregate for base shall not contain particles of rock that will not pass the 4 inch square mesh sieve. The gradation of the part that passes a 3-inch sieve shall meet the following grading requirements:

Sieve	Percent by Weight
Designation	Passing Square Mesh Sieves
	Type B
	<u>Aggregate</u>
1/2 inch	35-75
1/4 inch	25-60
No. 40	0-25
No. 200	0-5

B. Aggregate Subbase Gravel: Shall be screened or crushed gravel consisting of hard durable particles which are free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the Maine DOT specification 703.06 Type D Aggregate for subbase shall not contain particles of rock that will not pass the 6 inch square mesh sieve. The gradation of the part that passes a 3-inch sieve shall meet the following grading requirements:

Sieve	Percent by Weight
Designation	Passing Square Mesh Sieves
_	Type D
	<u>Aggregate</u>
1/4 inch	25-70
No. 40	0-30
No. 200	0-7

E. Crushed Stone: Shall be a uniform material consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

Sieve	Percent by Weight
Designation	Passing Square Mesh Sieve
1-1/2 inch	100
1 inch	95-100
1/2 inch	25-60
No. 4	0-10

F. Screened Stone: Shall be a well graded stone consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, meeting the following gradation requirements:

Percent by Weight
Passing Square Mesh Sieve
100
90-100
20-55
0-10
0-5

2.2 FILTER FABRIC

A. If filter fabric is required, refer to Section 02260.

PART 3 - EXECUTION

3.1 <u>INSPECTION</u>

A. Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. General:

- 1. Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work.
- 2. The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.
- 3. All excavation shall be classified as either earth or ledge.
 - a) Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders that do not meet the definition of "Ledge" below.
 - b) Ledge Excavation: Shall consist of the removal, hauling, and disposal of all ledge or rock encountered during excavation. "Ledge" and "rock" shall be defined as any natural compound, natural mixture that in the opinion of the Engineer can be removed from its existing position and state only by drilling and blasting, wedging, sledging, boring or breaking up with power operated tools. No boulder, ledge, slab, or other single piece of excavated material less than two cubic yards in total volume shall be considered to be rock unless, in the opinion of the Engineer it must be removed from its existing position by one of the methods mentioned above.
- 4. The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.
- B. Additional Excavation: When excavation has reached required subgrade elevations, notify the Engineer and Resident Project Representative who will observe the conditions.
 - 1. If material unsuitable for the structure or paved area or pipeline (in the opinion of the Engineer) is found at or below the grade to which excavation would

- normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, screened stone, crushed stone, or concrete as directed by the Engineer.
- 2. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.
- C. Unauthorized Excavation: Shall consist of removal of materials beyond indicated subgrade elevations or dimensions without specific authorization of Engineer. Unauthorized excavation, as well as remedial work required by the Engineer shall be at the Contractor's expense. Remedial work required is as follows:
 - 1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation with select fill or screened stone compacted to 95%. Provide 12" minimum select fill or screened stone directly under footings. Concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.
 - 2. If the bottom of a trench is excavated beyond the limits indicated, backfill the resulting void with thoroughly compacted screened stone, unless otherwise indicated.
 - 3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

D. Structural Excavation:

- 1. Shall consist of the removal, hauling, disposal, of all material encountered in the excavation to permit proper installation of structures.
- 2. Excavations for structures shall be carried to the lines and subgrades shown on the Drawings.
- 3. Excavate areas large enough to provide suitable room for building the structures.
- 4. The extent of open excavation shall be controlled by prevailing conditions subject to any limits designated by the Engineer.
- 5. Provide, install, and maintain sheeting and bracing as necessary to support the sides of the excavation and to prevent any movement of earth which could diminish the width of the excavation or otherwise injure the work, adjacent structures, or persons and property in accordance with all state and OSHA safety standards.
- 6. Erect suitable fences around structure excavation and other dangerous locations created by the work, at no additional cost to the Owner.
- 7. Exposed subgrade surfaces shall remain undisturbed, protected, and maintained as uniform, plane areas and shape to receive the foundation components of the structure.
 - a. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
 - b. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade and trim bottoms to required lines and grades to leave solid base to receive the structure.

- c. If a structure is to be constructed within the embankment, the fill shall first be brought to a minimum of 3 feet above the base of the footing. A suitable excavation shall then be made as though the fill were undisturbed earth.
- E. Trench Excavation: Shall consist of removal, hauling and disposal of all material encountered in the excavation to the widths and depths shown on the Drawings to permit proper installation of underground utilities.
 - 1. Excavate trenches to the uniform width shown on the Drawings sufficiently wide to provide sufficient space for installation, backfilling, and compaction. Every effort should be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.
 - 2. Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.
 - 3. Grade bottoms of trenches as indicated for pipe and bedding to establish the indicated slopes and invert elevations, notching under pipe joints to provide solid bearing for the entire body of the pipe, where applicable.
 - 4. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least two feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.
 - 5. Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.
 - 6. Perform excavation for force mains and water mains in a logical sequence.
 - 7. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.
 - 8. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards, as outlined in the appropriate section of this Specification.
- F. Protection of Persons, Property and Utilities:
 - 1. Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.
 - 2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.
 - 3. Rules and regulations governing the respective utilities shall be observed in execution of all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization of the utility owner. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.

4. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility, the property owner, and the Owner.

G. Use of Explosives:

- 1. Do not bring explosives onto site or use in work without prior written permission from authorities having jurisdiction. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.
- 2. All blasting shall be performed in accordance with all pertinent provisions of the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc.

H. Stability of Excavations:

- 1. Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
- 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

I. Material Storage:

- Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.
- 2. Locate and retain soil materials away from edge of excavations.
- 3. Dispose of excess soil material and waste materials as herein specified.

J. Cold Weather Protection:

- 1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F.
- 2. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.

K. Separation of Surface Material:

- 1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work.
- 2. Prior to excavation, existing pavement shall be cut where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
- 3. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.
- 4. From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

L. Dust Control:

1. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust.

2. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the contractor shall furnish and spread the material, as directed.

3.3 BACKFILL AND FILL

A. General:

- 1. Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
- 2. Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.
- 3. The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.
- 4. Backfill excavations as promptly as work permits, but not until completion of the following:
 - a. Inspection, approval, and recording locations of underground utilities.
 - b. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Temporary sheet piling driven below bottom of structures shall be removed in manner to prevent settlement of the structure or utilities, or cut off and left in place if required.
 - c. Removal of trash and debris.
 - d. Density testing having results meeting requirements specified herein.
- 5. In general, and unless otherwise indicated, material used for backfill of trenches and excavations around structures shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the Engineer the backfill and fill shall be placed in layers not to exceed 8 inches in thickness.
- 6. All fill and backfill under structures and pavement, and adjacent to structures, shall be compacted crushed stone or select fill as specified or as indicated on the Drawings. The fill and backfill materials shall be placed in layers not exceeding 8 inches in thickness.
- 7. All structures (including manholes) shall be placed on a 6-inch mat of screened stone unless otherwise indicated.
- 8. Suitable excavated material shall meet the following requirements:
 - a. Free from large clods, silt lumps or balls of clay.
 - b. Free from stones and rock fragments with larger than 12 inch max. dimension.
 - c. Free from organics, peat, etc.
 - d. Free from frozen material.
- 9. If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be select fill or common borrow, unless otherwise indicated, as required and as directed by the Engineer.
- 10. Do not backfill with, or on, frozen materials.
- 11. Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.
- 12. Do not mechanically or hand compact material that is, in the opinion of the Engineer, too wet.

- 13. Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
- 14. The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.
- 15. Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
- 16. Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
- 17. Place material in a manner that will prevent stones and lumps from becoming nested.
- 18. Completely fill all voids between stones with fine material.
- 19. Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
- 20. Deposit backfill and fill material evenly on all sides of structures to avoid unequal soil pressures.
- 21. Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe or structure during backfilling.
- 22. Leave sheeting in place when damage is likely to result from its withdrawal.
- 23. Completely fill voids left by the removal of sheeting with screened stone which is compacted thoroughly.
- B. Pipe Bedding, Initial Backfill and Trench Backfill
 - 1. Place bedding and backfill in layers of uniform thickness specified herein, and as shown on the Drawings.
 - 2. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper.
 - 3. Install pipe bedding and initial backfill in layers of uniform thickness not greater than eight (8) inches.
 - 4. Deposit the remainder of the backfill in uniform layers not greater than eight inches.
 - 5. Provide underground sewer marking tape for the full length of sewer trenches as shown on the Drawings. Marking tape shall be SETON #210 SEW or equivalent.
 - 6. Where soft silt and clay soils are encountered the trench shall be excavated six inches below the normal bedding and backfilled with 6-inches of compacted sand.
 - 7. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footings.
 - 8. The following schedule lists the bedding materials for various types of pipe. Refer to the pipe trench detail for dimensional requirements.

BEDDING REQUIREMENTS

DI or Concrete Pipe screened stone or select fill.

PVC or PE Pipe screened stone.

9. The following schedule lists the initial backfill requirements for various types of pipes. Refer to the pipe trench detail for dimensional requirements.

INITIAL BACKFILL REQUIREMENTS

DI or Concrete, Screened stone or select fill

Pipe

PVC or PE Screened stone

Pipe

- 10. Special bedding and backfill requirements shown on the Drawings supersede requirements of this section.
- 11. Where pipes or structures pass through or under the impervious core of the underdrained soil filter embankments, bedding and backfill material shall consist of the impervious embankment material. Extra care should be given to properly and thoroughly compact the bedding material around the pipe.

C. Improper Backfill:

- 1. When excavation and trenches have been improperly backfilled, and when settlement occurs, reopen the excavation to the depth required, as directed by the Engineer.
- 2. Refill and compact the excavation or trench with suitable material and restore the surface to the required grade and condition.
- 3. Excavation, backfilling, and compacting work performed to correct improper backfilling shall be performed at no additional cost to the Owner.

D. Ground Surface Preparation:

- 1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, scarify or break-up sloped surface steeper than 1 vertical to 4 horizontal.
- 2. When existing ground surface has a density less than that specified under "compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

3.4 <u>COMPACTION</u>

A. General:

- 1. Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.
- B. Percentage of Maximum Density Requirements:
 - 1. Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D1557 as indicated.
 - a. Structures: Compact each layer of backfill or fill material below or adjacent to structures to at least 95% of maximum dry density (ASTM D1557).

- b. Off Traveled Way Areas: Compact each layer of backfill or fill material to at least 90% of maximum dry density (ASTM D1557).
- c. Walkways: Compact each layer of backfill or fill material to at least 93% of maximum dry density (ASTM D1557).
- d. Roadways, Drives and Paved Areas: Compact each layer of fill, subbase material, and base material to at least 95% of maximum dry density (ASTM D1557).
- e. Pipes: Compact bedding material and each layer of backfill to at least 90% maximum dry density (ASTM D1557). Where backfilling with excavated material, compact to native field density.
- f. Embankments: Compact each layer of embankment material to at least 95% of maximum dry density (ASTM D1557).

C. Moisture Control:

- 1. Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.
- 2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
- 3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory level.

D. Embankment Compaction:

- 1. After each embankment layer has been spread to the required maximum 8-inch thickness and its moisture content has been adjusted as necessary, it shall be rolled with a sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Additional passes shall not be made until the previous pass has been completed.
- 2. When any section of an embankment sinks or weaves excessively under the roller or under hauling units and other equipment, it will be evident that the required degree of compaction is not being obtained and that a reduction in the moisture content is required. If at any place or time such sinking and weaving produces surface cracks which, in the judgment of the Engineer are of such character, amount, or extent to indicate an unfavorable condition, he will recommend operations on that part of the embankment to be suspended until such time as it shall have become sufficiently stabilized. The ideal condition of the embankment is that attained when the entire embankment below the surface being rolled is so firm and hard as to show only the slightest weaving and deflection as the roller passes.
- 3. If the moisture content is insufficient to obtain the required compaction, the rolling shall not proceed except with the written approval of the Engineer, and in that event, additional rolling shall be done to obtain the required compaction. If the moisture content is greater than the limit specified, the material of such water content may be removed and stockpiled for later use or

- the rolling shall be delayed until such time as the material has dried sufficiently so that the moisture content is within the specified limits. No adjustment in price will be made on account of any operation of the Contractor in removing and stockpiling, or in drying the materials or on account of delays occasioned thereby.
- 4. If because of insufficient overlap, too much or too little water, or other cause attributable to defective work, the compaction obtained over any area is less than that required, the condition shall be remedied, and if additional rollings are ordered, they will be done at no cost to the Owner. If the material itself is unsatisfactory or if additional rolling or other means fails to produce satisfactory results, the area in question shall be removed down to material of satisfactory density and the removal, replacement, and re-rolling shall be done by the Contractor, without additional compensation.
- 5. Material compaction by hand-operated equipment or power-driven tampers shall be spread in layers not more than 6 inches thick. The degree of compaction obtained by these tamping operations shall be equal in every respect to that secured by the rolling operation.
- E. Compaction Methods: The Contractor may select any method of compaction that is suitable to compact the material to the required density.
 - General: Whatever method of compacting backfill is used, care shall be taken
 that stones and lumps shall not become nested and that all voids between stones
 shall be completely filled with fine material. All voids left by the removal of
 sheeting shall be completely backfilled with suitable materials and thoroughly
 compacted.
 - 2. Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.
- F. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.
- G. Underdrained Soil Filter: The filter media and underdrain bedding material in the underdrained soil filters shall be compacted to between 90 and 92% standard proctor. The bed shall be installed in at least 2 lifts of 9 inches to prevent pockets of loose media.

3.5 GRADING

A. General:

- 1. Grading shall consist of that work necessary to bring all areas to the final grades.
- 2. Uniformly grade areas within limits of work requiring grading, including adjacent transition areas.
- 3. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Grading Outside Building Lines:

- 1. Grade areas adjacent to building to drain away from structures and to prevent ponding.
- 2. Grade surfaces to be free from irregular surface changes, and as follows:
 - a. Lawn or Unpaved Areas: Finish grade areas to receive topsoil to within not more than 1" above or below the required subgrade elevations.
 - b. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.
 - c. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 3/8" above or below the required subgrade elevation.

D. Compaction:

1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

E. Protection of Graded Areas:

- 1. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- 2. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

3.6 BASE COURSE AND LEVELING COURSE

A. General:

1. Base course consists of placing the specified materials in layers to support a leveling course or paved surface, as indicated in the Drawings.

B. Grade Control:

1. During construction, maintain lines and grades including crown and cross-slope of base course and leveling course.

C. Placing:

- 1. Place base course on prepared subbase conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting base materials.
- 2. Place leveling course on prepared base course, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compaction.

D. Shaping and Compacting:

1. All layers of aggregate base course and leveling course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.

- 2. The Contractor shall bear full responsibility for and make all necessary repairs to the base leveling courses and the subgrade until the full depth of the base leveling courses is placed and compacted. Repairs shall be made at no additional cost to the Owner.
- 3. If the top of any layer of the aggregate base or leveling course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

FILTER FABRIC

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Furnish all materials and install filter fabric of the types, dimensions and in the location(s) shown on the Drawings and specified herein.
- B. Related Work Specified Elsewhere:
 - 2. Temporary Erosion Control, Riprap and Stone Ditch Protection, and Gabions and Revet Mattresses are specified in the appropriate sections of this Division.

1.2 QUALITY ASSURANCE

- A. A competent laboratory must be maintained by the manufacturer of the fabric at the point of manufacture to ensure quality control.
- B. During all periods of shipment and storage, the fabric shall be wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, temperatures greater than 140°F, mud, dirt, dust and debris.

1.3 SUBMITTALS

A. Manufacturer shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this Specification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Filter fabric for use in stabilization, drainage, underdrains, landscaping and beneath structures shall be formed in widths of not less than six (6) feet and shall meet the requirements of Table 1. Both woven and non-woven geotextiles are acceptable; however no "slit-tape" woven fabrics will be permitted for drainage, underdrain, and erosion control applications.

	Table 1	
Geotextile		Minimum
Mechanical Property	Test Method	Permissible Value
Grab Tensile Strength (both directions)	ASTM D4595-86	120 pounds
Grab Elongation	ASTM D4632-86	50 percent
Mullen Burst Strength	ASTM D3786-87	210 psi
Puncture Strength	ASTM D3787	60 pounds
Trapezoid Tear Strength	ASTM D4533-85	50 pounds
Water Flow Rate	ASTM D4491-85	120 gal/min/sf
Equivalent Opening Size (EOS)	ASTM D4751	U.S. Std. Sieve #80
Coefficient of Permeability	ASTM D4491-85	0.2 cm/sec

The geotextile shall have property values expressed in "typical" values that meet or exceed the values stated above as determined by the most recent test methods specified above.

B. Filter fabric for use in reinforcement shall meet the requirements of Table 2. Woven and non-woven geotextiles are acceptable.

	Table 2	
Geotextile		Minimum
Mechanical Property	Test Method	Permissible Value
Grab Tensile Strength (both directions)	ASTM 4595-86	195 pounds
Grab Elongation	ASTM D4632-86	20 percent
Mullen Burst Strength	ASTM D3786-87	340 psi
Puncture Strength	ASTM D3787	85 pounds
Trapezoid Tear Strength	ASTM D4533-85	85 pounds
Equivalent Opening Size (EOS)	ASTM D4751	U.S. Std. Sieve
		number(s)
		between #20
		and #100

The geotextile shall meet or exceed the "typical" values stated above as determined by the most recent test methods specified above.

C. For Silt Fence, refer to Section 02270 - Temporary Erosion Control.

PART 3 - EXECUTION

3.1 Install filter fabric as shown on the drawings or as directed in appropriate specifications in this division or in accordance with manufacturer's instructions or as directed by the Owner.

TEMPORARY EROSION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

- 1. The work under this section shall include provision of all labor, equipment, materials and maintenance of temporary erosion control devices, as specified herein, as shown on the Drawings and as directed by the Owner.
- 2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices, or as required to control erosion that occurs during normal construction operations.
- 3. Construction operations shall comply with all federal, state and local regulations pertaining to erosion control.
- 4. After awarding of or after being awarded the Contract, prior to commencement of construction activities, the Contractor will meet with the Owner to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.
- B. Related Work Specified Elsewhere:
 - 1. Site work is specified in appropriate sections of this Division.
- C. Design Criteria:
 - 1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment.
 - 2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices, as may be necessary, until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

A. The Contractor shall furnish the Owner, in writing, his work plan giving proposed locations for storage of topsoil and excavated material, before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of his responsibility for completion of the work as specified.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Baled Hay:
 - 1. At least 14" by 18" by 30" securely tied to form a firm bale, staked as necessary to hold the bale in place.
- B. Sand Bags:
 - 1. Heavy cloth bags of approximately one cubic foot capacity filled with sand or gravel.
- C. Mulches:

- 1. Loose hay, straw, peat moss, wood chips, bark mulch, crushed stone, wood excelsior, or wood fiber cellulose.
- 2. Type and use shall be as specified by the "Maine Erosion and Sedimentation Control Best Management Practices" prepared by the Maine DEP, herein after referred to as the BMP.

D. Mats and Nettings:

- 1. Twisted Craft paper, yarn, jute, excelsior wood fiber mats, glass fiber and plastic film.
- 2. Type and use shall be as specified in the BMP.

E. Permanent Seed:

1. Conservation mix appropriate to the predominant soil conditions as specified in the BMP and subject to approval by the Owner.

F. Temporary Seeding:

1. Use species appropriate for soil conditions and season as specified in the BMP and subject to approval by the Owner.

G. Water:

1. The Contractor shall provide water and equipment to control dust, as directed by the Owner.

H. Silt Fence:

1. Silt Fence shall be one of the commercially available brands, meeting the following requirements:

Geotextile Mechanical Property	Test Method	Minimum Permissible Value
Grab Tensile Strength (both directions)	ASTM D-4632	124 pounds
Puncture Strength	ASTM D-4833	60 pounds
Apparent Opening Size	ASTM D-4751	#30
Flow Rate	ASTM D-4491	8 gal/min/ft ²

2.2 <u>CONSTRUCTION REQUIREMENTS</u>

A. Temporary Erosion Checks:

- 1. Temporary erosion checks shall be constructed in ditches and other locations as necessary.
- 2. Baled hay, sand bags or siltation fence may be used in an arrangement to fit local conditions.

B. Temporary Berms:

1. Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.

C. Temporary Seeding:

Areas to remain exposed for a time exceeding 3 weeks shall receive temporary seeding as indicated below:

<u>Season</u>	<u>Seed</u>	Rate
Summer (5/15 - 8/15)	Sudangrass	40 lbs/acre
Late Summer/Early Fall	Oats	80 lbs/acre
(8/15 - 9/15)	Annual Ryegrass	60 108/acre
Fall (9/15 - 10/1)	Winter Rye	40 lbs/acre
Winter (10/1 - 4/1	Mulch w/Dormant Seed	112 lbs/acre
Spring (4/1 - 7/1)	Oats	80 lbs/acre*
	Annual Ryegrass	80 lbs/acre
		40 lbs/acre

^{*} seed rate only

- D. Silt Fence shall be supported by posts and installed per the manufacturer's recommendations.
- E. Mulch All Areas Receiving Seeding:

Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturer's specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.

F. Erosion control matting for slopes and ditches shall be anchored with pegs and/or staples per manufacturer's recommendations. Contractor shall provide matting along the flowline of all ditches and swales having a longitudinal slope in excess of 0.01 ft/ft, and on all slopes in excess of 3(H) to 1(V).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Temporary Erosion Checks:
 - 1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Owner. The Owner may modify the Contractor's arrangement of silt fences, bales and bags to fit local conditions.
 - 2. Baled hay, silt fences, or sandbags, or some combination, may be used in other areas, as necessary, to inhibit soil erosion.
 - 3. Siltation fence shall be located and installed as shown on plans or as required to comply with all Federal, State and Local Regulations.
 - 4. Sedimentation ponds shall be sited and constructed to the grades and dimensions as shown on the Drawings and will include drainage pipe and an emergency spillway.
- B. Erosion control matting for slopes and ditches shall be installed where indicated on the Drawings and as required to stabilize the soil until permanent vegetative stabilization is established.
- C. Maintenance:

Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life of the construction contract. Maintenance will include periodic inspections by the or Owner for effectiveness of location, installation and condition with corrective action taken by the Contractor, as appropriate.

- D. Removing and Disposing of Materials:
 - 1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of upon approval by Owner.
 - 2. When removed, such devices may be reused in other locations, provided they are in good condition and suitable to perform the erosion control for which they are intended.
 - 3. When dispersed over adjacent areas, the material shall be scattered to the extent that it causes no unsightly conditions nor creates future maintenance problems.
 - 4. Sedimentation basins, if no longer required, will be filled in, the pipe removed, the surface loamed and grass cover shall be established.

GUARD RAIL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work shall consist of the construction of guard rail and guard rail elements in accordance with these Specifications and in reasonably close conformity with the lines and grades shown on the Drawings or established by the Engineer.
- B. The construction of guard rail shall include the assembly and erection of all component parts and materials complete at the locations shown on the Drawings and as specified herein.

1.2 SUBMITTALS

A. The Contractor will submit Shop Drawings of guard rail in accordance with the General Conditions of the Construction Contract.

PART 2 - PRODUCTS

2.1 METAL BEAM RAIL

- A. Guard rail shall be Type 3b beam type guard rail attached by brackets to steel posts, all parts galvanized.
- B. The rail elements including terminal end sections shall be corrugated sheet steel beams conforming to the requirements of AASHTO M180-78, Class A, Type 1.
 - 1. The beams shall be galvanized.

2.2 STEEL GUARD RAIL POSTS

A. Railing posts shall be of steel and shall be of the section and length shown on the Drawings. . Steel shall conform to the requirements of AASHTO M 183M/M 183. The posts shall be galvanized in accordance with the requirements of AASHTO M 111M/M111.

2.3 GUARD RAIL HARDWARE

- A. Splices and end connections shall be of the type and design shown on the Drawings and shall be of such strength as to develop the full design strength of the rail elements.
- B. All fittings, bolts, washers, and other accessories shall be galvanized in accordance with the requirements of AASHTO M 111M/M111 or ASTM A153-73, whichever may apply. All galvanizing shall be done after fabrication.

PART 3 - EXECUTION

3.1 POSTS

A. Posts shall be set plumb in either hand or mechanically dug holes or may be driven if suitable driving caps and driving equipment are used to prevent excessive battering and distorting.

3.2 RAIL ELEMENTS

A. Rail elements shall be erected to result in a smooth, continuous installation. Except for adjustment bolts, bolts shall be of sufficient length to extend beyond the nuts by not more than one half inch. Except for adjustment bolts, all bolts shall be drawn tight.

3.3 MISCELLANEOUS

A. All galvanized surfaces which have been abraded so that the base metal is exposed, and threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

LOAMING & SEEDING

PART 1 – GENERAL

The Owner, as used in this section, is the actual Owner or his designated representative.

1.1 DESCRIPTION

- A. Work Included: Furnish, place, and test topsoil, seed, lime, and fertilizer where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Owner.
- B. Related Work Specified Elsewhere (When Applicable): Earthwork, excavation, backfill, compaction, site grading and temporary erosion control are specified in the appropriate Sections of this Division.

1.2 <u>SUBMITTALS AND TESTING</u>

A. Seed:

- 1. Furnish the Owner with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.
- 2. This certification shall appear in, or with, all copies of invoices for the seed.
- 3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.
- 4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Owner, in accordance with the latest rules and regulations under the Federal Seed Act.

B. Topsoil:

- 1. Inform the Owner, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.
- 2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.
- 3. Have soil samples tested by an independent soils testing laboratory, approved by the Owner, at the Contractor's expense.
- 4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.
- 5. Approval, by the Owner, to use topsoil for the work will be dependent upon the results of the soils tests.

C. Lime & Fertilizer:

1. Furnish the Owner with duplicate copies of invoices for all lime and fertilizer used on the project showing the total minimum carbonates and minimum percentages of the material furnished that pass the 90 and 20 mesh sieves and the grade furnished.

- 2. Each lot of lime and fertilizer shall be subject to sampling and testing at the discretion of the Owner.
- 3. Sampling and testing shall be in accordance with the official methods of the Association of Official Agricultural Chemists.
- 4. Upon completion of the project, a final check may be made comparing the total quantities of fertilizer and lime used to the total area seeded. If the minimum rates of application have not been met, the Owner may require the Contractor to distribute additional quantities of these materials to meet the minimum rates.

1.3 <u>DELIVERY, STORAGE & HANDLING</u>

A. Seed:

- 1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Owner.
- 2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.

B. Fertilizer:

- 1. Furnish all fertilizer in unopened original containers.
- 2. Containers shall be labeled with the manufacturer's statement of analysis.

1.4 JOB CONDITIONS

A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Owner, to the proposed planting or to proper grading.

B. Seeding:

- 1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.
- 2. Weather Conditions:
 - a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.
 - b. Stop the seeding work when, in the opinion of the Owner, weather conditions are not favorable.
 - c. Resume the work only when, in the opinion of the Owner, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seed:

- 1. Provide the grass seed mixture approved by the Owner, having the following composition:
 - a. Park Mixture:
 - 50 percent Creeping Red Fesque

30 percent Kentucky Bluegrass

20 percent Annual Ryegrass

2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.

B. Topsoil:

- 1. Fertile, friable, natural topsoil typical of the locality, without admixture of subsoil, refuse or other foreign materials and obtained from a well-drained site. Mixture of sand, silt, and clay particles in equal proportions.
- 2. Free of stumps, roots, heavy of stiff clay, stones larger than 1-inch in diameter, lumps, coarse sand, weeds, sticks, brush or other deleterious matter.
- 3. Not less than 4 percent nor more than 20 percent organic matter.
- 4. Topsoil depth shall be 4-inches, unless otherwise indicated.

C. Lime:

- 1. Provide lime which is ground limestone containing not less than 85% of total carbonate and of such fineness that 90% will pass a No. 20 sieve and 50% will pass a No. 100 sieve.
- 2. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing a No. 100 sieve. No additional payment will be made to the Contractor for the increased quantity.

D. Fertilizer:

- 1. Provide a commercial fertilizer approved by the Owner.
- 2. Provide fertilizer containing the following minimum percentage of nutrients by weight:

10% Available phosphoric acid

10% Available potash

10% Available nitrogen (75% of the nitrogen shall be organic)

PART 3 - EXECUTION

3.1 PREPARATION

A. Equipment:

- 1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.
- 2. Demonstrate to the Owner that the equipment will apply materials at the specified rates.
- B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.
 - 1. Scarify the subgrade to a depth of 2 inches to allow the bonding of the topsoil with the subsoil.
 - 2. Apply topsoil to a depth of 4 inches or as directed on areas to be seeded.
 - 3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.
 - 4. Remove all objectionable material and form a finely pulverized seed bed.

3.2 PERFORMANCE

A. Grading:

- 1. Grade the areas to be seeded as shown on the Drawings or as directed by the Owner.
- 2. Leave all surfaces in even and properly compacted condition.
- 3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.

B. Placing Topsoil:

- 1. Uniformly distribute and evenly spread topsoil on the designated areas.
- 2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.
- 3. Correct any irregularities in the surface resulting from top soiling or other operations to prevent the formation of depressions where water may stand.
- 4. Thoroughly till the topsoil to a depth of at least 3 inches by plowing, harrowing, or other approved method until the condition of the soil is acceptable to the Owner. The surface shall be cleared of all debris and or stones one inch or more in diameter.

C. Placing Fertilizer:

- 1. Distribute fertilizer uniformly at a rate determined by the soils test over the areas to be seeded.
- 2. Incorporate fertilizer into the soil to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Owner.
- 3. The incorporation of fertilizer may be a part of the tillage operation specified above.
- 4. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will be acceptable.

D. Placing Lime:

- 1. Uniformly distribute lime immediately following or simultaneously with the incorporation of fertilizer.
- 2. Distribute lime at a rate determined from the pH test, to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Owner.

E. Seeding:

1. Fine rake and level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.

2. Hydroseeding:

- a. Hydroseeding may be performed where approved and with equipment approved by the Owner.
- b. Sow the seed over designated areas at a minimum rate of 5 pounds per 1000 square feet.
- c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.
- d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.

3. Drill Seeding:

a. Drill seeding may be performed with approved equipment having drills not more than 2 inches apart.

b. Sow the seed uniformly over the designated areas to a depth of 1/2 inch and at a rate of 5 pounds per 1,000 square feet.

4. Broadcast Seeding:

- a. Broadcast seeding may be performed by equipment approved by the Owner.
- b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per 1,000 square feet.
- c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.
- d. Cover the seed to an average depth of 1/2 inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.
- e. Do not perform broadcast seeding work during windy weather.

F. Compacting:

- 1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.
- 2. Compact the entire area immediately after the seeding operations have been completed.
- 3. Compact by means of a cultipacker, roller, or other equipment approved by the Owner weighing 60 to 90 pounds per linear foot of roller.
- 4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.
- 5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

3.3 PROTECTION & MAINTENANCE

A. Protection:

- 1. Protect the seeded area against traffic or other use.
- 2. Erect barricades and place warning signs as needed.

B. Maintenance:

- 1. At the time of the first cutting, set mower blades two inches high. All lawns shall receive at least two mowings before acceptance. Coordinate schedule for mowing with Owner.
- 2. Maintenance shall also include all temporary protection fences, barriers and signs and all other work incidental to proper maintenance.
- 3. Maintain grass areas until a full stand of grass is indicated, which will be a minimum of 45 days after all seeding work is completed, and shall not necessarily related to Substantial Completion of the General Contract.
- 4. Protection and maintenance of grass areas shall consist of watering, weeding, cutting, repair of any erosion and reseeding as necessary to establish a uniform stand for the specified grasses, and shall continue until Acceptance by the Owner of the work of this section. It shall also include the furnishing and applying of such pesticides as are necessary to keep grass areas free of insects and disease. All pesticides shall be approved by Owner prior to use.

3.4 ACCEPTANCE

A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

SECTION 02513A

BITUMINOUS CONCRETE PAVING

PART 1 - GENERAL

The Owner, as used in this section, is the actual Owner or his designated representative.

1.1 DESCRIPTION

A. Work Included:

- 1. Furnish all plant, labor, equipment and materials required to install bituminous concrete pavement courses, including sidewalks, driveways, temporary and permanent trench paving and restoration of pavement markings as shown on the Drawings and as specified herein.
- 2. Remove bituminous asphaltic and/or Portland cement pavement, and replace bituminous asphaltic pavement, base, binder courses and surface courses, including temporary pavement, within the area(s) shown on the Drawings and as directed by the Owner.
- 3. Keep pavement removal to a minimum width suitable for the required construction.
- 4. Apply pavement markings to the permanent paving as specified.
- B. Work Not Included: Removal and replacement of paving for the convenience of the Contractor will not be considered for payment.
- C. Related Work Specified Elsewhere (When Applicable):
 - 1. Excavation, backfill, aggregate base and subbase.

1.2 QUALITY ASSURANCE

- A. Materials: Use only materials furnished by a bulk bituminous concrete producer regularly engaged in the production of hot mixed, hot laid bituminous concrete.
- B. Equipment: Provide, maintain and operate pavers, dump trucks, tandem, 3-wheel and pneumatic tired rollers well suited to the mixtures being placed. Provide, maintain and operate hand equipment as required. When applicable, provide, maintain and operate trimming equipment and materials.
- C. Mix Requirements, Method of Placement and Compaction: All mixes shall conform to the State of Maine Department of Transportation's SUPERPAVE mix standards.

1.3 SUBMITTALS

- A. A Job Mix Formula approved by the State of Maine Department of Transportation's Central Laboratory in Bangor shall be submitted for each mixture to be supplied at least 15 calendar days prior to production.
- B. Delivery slips shall be furnished with each load of mix delivered to the project. Information shall include:
 - 1. Vehicle identification.
 - 2. Date.
 - 3. Project.
 - 4. Identification of material.
 - 5. Gross, tare and net weights.
 - 6. Signed by the bituminous concrete producer.
 - 7. Stamped by a licensed public weighmaster.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hot Bituminous Paving Mix:
 - 1. Binder Course Maine D.O.T. Type 19.0 mm Superpave Mix
 - 2. Surface Course Maine D.O.T. Type 12.5 mm Superpave Mix
 - 3. Sidewalks and Drives Maine D.O.T. Type 9.5 mm Superpave Mix
- B. Composition of Mixtures Control Points

	GRADING					
SIEVE SIZE	TYPE 19 mm TYPE 12.5 mm		TYPE 9.5 mm			
	PERCENT BY WEIGHT PASSING - COMBINED AGGREGATE					
37.5 mm						
25 mm		100				
19 mm		90-100	100			
12.5 mm		-90	90-100	100		
9.5 mm		-	-90	90-100		
4.75 mm		-	-	-90		
2.36 mm		23-49	28-58	32-67		
1.18 mm		-	-	-		
0.60 mm		-	-	-		
0.30 mm		-	-	-		
0.075 mm		2-8	2-10	2-10		

C. Tack Coat:

- 1. Emulsified type, Grade RS-1, CRS-1, HFMS-1, CSS-1, 1h
- D. Pavement markings shall conform to AASHTO Designation M248-74 for readymixed white and yellow traffic paints, Type I.

PART 3 - EXECUTION

3.1 GENERAL

- A. Grade Control:
 - 1. The Contractor shall establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.
- B. Trench areas shall receive initial paving as the work progresses where trenches are in paved streets. Not more than 300 linear feet of backfill trench shall be left unpaved.
- C. Reset all existing manholes and catch basins to finished grade as required at no additional cost to the Owner.

3.2 PAVEMENT REMOVAL

- A. General:
 - 1. Exercise extreme care in the removal of pavement so that pavement will not be unnecessarily disturbed or destroyed.

- 2. Mechanically cut pavement to be removed to a straight line, unless otherwise directed by the Owner.
- 3. All pavement removed shall become the property of the Contractor and disposed of at locations acceptable to or designated by the Owner at no additional cost to the Owner.

3.3 SURFACE PREPARATION

- A. Tack coats shall conform to Section 410 of the Maine D.O.T. Standard Specifications.
- B. Tack Coat:
 - 1. Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gallons per square yard of surface.

3.4 <u>WEATHER AND SEASONAL LIMITATIONS</u>

- A. The State is divided into 2 paving zones as follows:
 - 1. Zone 1 Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
 - 2. Zone 2 Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.
- B. The Contractor may place Hot Mix Asphalt Pavement for use other than a traveled way wearing course in either Zone between the dates of April 15th and November 15th, provided that the air temperature as determined by an approved thermometer (placed in the shade at the paving location) is 2°C or higher and the area to be paved is not frozen. The Contractor may place Hot Mix Asphalt Pavement as traveled way wearing course in Zone 1 between the dates of May 1st and the Saturday following October 1st and in Zone 2 between the dates of April 15th and the Saturday following October 15th, provided the air temperature determined as above is 10°C or higher. For the purpose of this Subsection, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.
- C. Hot Mix Asphalt Pavement used for curb, driveways, sidewalks, islands, or other incidentals is not subject to seasonal limitations, except that conditions shall be satisfactory for proper handling and finishing of the mixture. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface, and the air temperature shall be 2°C or higher.

3.5 PLACING THE MIX

A. General:

1. Place asphalt concrete mixture on prepared surface. Minimum allowable temperature for placing is 225°F. Maximum shall be 325°F. Place in areas inaccessible to paving machine and small areas by hand. Place each course to required grade, cross-slope and compacted thickness.

B. Protection:

1. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened to the extent that the pavement will not be damaged.

3.6 PAVEMENT MARKINGS

- A. Material, approved by the Owner, is to be furnished and applied after the installation of permanent paving.
- B. Apply pavement markings in accordance with MUTCD. Materials and methods used for pavement markings shall comply with the Maine Department of Transportation's standard specifications for Highways and Bridges.

GRANITE CURBS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: This work shall consist of furnishing and installing curb or edging, or removing and relaying existing curbing or edging in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the Drawings or established by the Engineer. The types of curbs are designated as follows:
 - Type 1 Vertical granite curb
 - Type 5 Sloped granite edging
 - Bituminous Concrete Curb
- B. Related Work Specified Elsewhere: Excavation and Embankment, Aggregate Base and Subbase, Bituminous Concrete Paving and Landscaping are specified in the appropriate Sections of this Division.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. The stone for curbing and edging shall be hard, durable, quarried granite.
 - 2. It shall be gray in color, free from seams, cracks or other structural defects and shall be of smooth splitting character.
 - 3. The curb may contain natural color variations that are characteristic of the granite source.
 - 4. The dimensions, shape and other details shall be as shown on the Drawings.

B. Source:

- 1. The Contractor shall submit for approval the name of the quarry which is the proposed source of the granite for curb materials.
- 2. Samples shall be submitted for acceptance by the Engineer when requested.
- C. Finish and Surface Dimensions:
 - 1. Vertical Curb, Type 1:
 - a. The individual curb stones shall conform to the dimensions indicated on the Drawings.
 - b. Individual stones shall be furnished in minimum lengths of 6 feet, unless otherwise specified.
 - c. The exposed face of the stone curb shall be free from indications of drill holes. Half drill holes not larger than 3/4 inches diameter will be permitted in the arris line in the plane of the back.
 - d. The top surface shall be sawed or dressed to an approximately true plane with no depression or projection on that surface of over 1/8 inch.
 - e. The top front arris line shall be pitched straight and true with no variations from a straight line greater than 1/4 inch.

- f. The top back arris line shall meet the same requirement as the top front arris except that indentations of a maximum of 3/8 inch will be allowed.
- g. There shall be no projection or depression on the back face which would exceed a batter of 1 horizontal on 3 vertical for a distance from the top of 3 inches.
- h. The front face shall be at right angles to the top and shall be smooth split and have no projections greater than one inch or depressions greater than 1/2 inches, measured from the vertical plane of the face through the top arris line, for a distance down from the top of 8 inches. The remainder of the face shall have no projections or depressions greater than one inch measured in the same manner.
- i. The ends of the curb shall be approximately square with the planes of the top, back and face and so finished that when the sections are placed end to end with the required minimum spacing of 1/4 inch no more than 5/8 inch space shall show in the joint for the full width of the top surface and for the entire exposed front face. The remainder of the end may extend back no more than 8 inches from the plane of the joint.
- j. The bottom surface may be sawn or split.
- k. Drill holes through the curb will be allowed providing they are at least 9 inches below the top and are mortared full with portland cement mortar before placing the stone.
- 2. When curbing is specified on the Drawings with a radius of 60 feet or less, it shall be cut on the specified radius.
- 3. Sloped Edging, Type 5:
 - a. The individual edging stones shall conform to the dimensions indicated on the Drawings.
 - b. Individual stones shall be furnished in minimum lengths of two (2) feet, unless otherwise specified.
 - c. The exposed face shall be smooth split to an approximate true plane having no projections or depressions which will allow over one (1) inch to show between a two (2) foot straightedge and the face when the straightedge is placed as closely as possible on any part of the face.
 - d. Half drill holes not more than three (3) inches in length and 3/4 inch in diameter will be permitted along the bottom.
 - e. The arris line, top front shall be straight and true with no variation from a straight line greater than 1/8 inch.
 - f. The arris lines at the bottom of the face shall be straight and true so that not over one (1) inch shall show between the stone and a straightedge for the full length of the stone.
 - g. The ends shall be square to the length at the face and so finished that when the stones are placed end to end, no space more than 1 1/2 inches will show in the joint for the width of the face.
 - h. When sloped edging is specified on the Drawings with a radius of thirty (30) feet or less, it shall be cut on the specified radius.
- 4. Terminal curb, Type 1: Shall meet the requirements of Vertical Curb, Type 1 as contained herein.

D. Joint Mortar:

- 1. Shall consist of one (1) part portland cement and two (2) parts sand and mixed with sufficient water to form a plastic composition.
- 2. The portland cement shall conform to AASHTO M85, Type II-A.
- 3. The sand shall consist of the following gradation:

100% Passing the No. 8 sieve
15-40% Passing the No. 50 sieve
0-10% Passing the No. 100 sieve
0-5% Passing the No. 200 sieve

PART 3 - EXECUTION

3.1 <u>REMOVAL OF CURBING</u>

- A. The Contractor shall carefully remove, store and clean curb specified on the Drawings or designated for resetting.
- B. Curbing damaged or destroyed, as a result of the Contractor's operations or because of his failure to store and protect it in a manner that would prevent loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

3.2 EXCAVATION

- A. Excavation shall be made to the required depth and base material upon which the curb is to be set shall be compacted to a firm, even surface.
- B. All soft and unsuitable material shall be removed and replaced with suitable material which shall be thoroughly compacted.

3.3 INSTALLATION

- A. The curb and sloped edging shall be set so that the front top arris line is in close conformity to the line and grade required.
- B. All space beneath the curbing shall be filled and thoroughly tamped with material meeting the requirements of the bed course material.

3.4 JOINTS

- A. The required spacing between stones shall be a minimum of 1/4 inch and a maximum of 5/8 inch for Type 1 curb.
- B. The required spacing between stones shall be a maximum of 1/2 inch for Type 5 curb.
- C. A 1 ft length by 1 ft height piece of filter fabric shall be placed on-center behind all joints.
- D. Joints between stones shall be carefully filled with mortar along the back portion of the joint to prevent loss of backfill material.

3.5 BACKFILLING

A. After the joints have set, any remaining excavated areas shall be filled and tamped with approved material placed in eight (8) inch layers.

BITUMINOUS CONCRETE CURBS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. This work shall consist of constructing a hot-mixed, hot-laid bituminous concrete curb on a completed bituminous surface in accordance with these Specifications and within reasonable close conformity to the lines and grades shown on the Drawings or established by the Engineer.
- B. Related Work Specified Elsewhere:
 - 1. SECTION 02513, Bituminous Concrete Paving.

1.2 QUALITY ASSURANCE

A. Use only materials which are furnished by a bulk bituminous concrete producer which is regularly engaged in production of hot-mix, hot laid bituminous concrete and approved for use by the MDOT.

1.3 SUBMITTALS

- A. Certificates:
 - 1. Provide certificates in lieu of laboratory test reports.
 - 2. Certify that materials comply with Specification requirements.
 - 3. Signed by bituminous concrete producer and Contractor.

1.4 JOB CONDITIONS

- A. Weather Limitations:
 - 1. Bituminous concrete curbs shall not be placed on a wet surface.
 - 2. Construct between the dates of May 1 and November 22, and then only when the air temperature in the shade is 40° F or above.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials for bituminous concrete curbing shall be as required in Section 609 of the State of Maine Department of Transportation's "Standard Specifications for Highways and Bridges," latest version.

PART 3 - EXECUTION

3.1 <u>PERFORMANCE</u>

- A. Conditioning of the Existing Surface:
 - 1. Thoroughly clean of all objectionable material.
 - 2. Apply a light tack coat of 0.08 to 0.20 gallons per fifteen linear feet of curb area.
- B. Equipment:

1. The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Engineer may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.

C. Placing:

- 1. Place mix at temperature between 275 325°F.
- 2. Where conditions necessitate joints in curb, they shall be constructed to ensure bond between old and new sections of the curb. Prior to placing the new curb material, the old joint shall be tack coated.

D. Curing:

1. Protect from traffic until the heat of the mix has dissipated and the mix has obtained the proper hardness.

E. Backfilling:

1. Backfill as soon as possible after mix has obtained the proper degree of hardness.

PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. This work shall consist of providing final reflective pavement lines and markings during paving operations as shown on the plans. It shall consist of providing temporary pavement markings during construction.

PART 2 - PRODUCTS

2.1 MATERIALS - TAPE

A. Performed Plastic:

- I. General Reflectorized pavement marking tape and marking sheeting, performed into rolls or ribbons of various lengths, pliability, and widths suitable for use as reflective markings on Portland cement concrete or bituminous pavement shall consist of a mixture of high quality polymeric materials, pigments, or glass beads that are uniformly distributed throughout, with a reflective layer of beads bonded to the top. The edges of the performed material shall be clean cut and true. It may be supplied with a precoated, factory applied adhesive for immediate pavement application without the use of heat, solvent or other types of adhesive operations, or it may be furnished with separate adhesives as recommended by the manufacturer. The affixed material shall be capable of molding itself to the pavement contoured by the action of traffic and maintain its original dimensions and placement under normal traffic conditions at the pavement temperatures, which could occur within Maine.
- 2. Physical Requirements Color Pigments shall be selected and blended to conform to standard highway colors throughout the expected life of the material. When tested by Federal Test Method Standard 141 Method 4232, the white shall be no darker than Color Number 37778 of Federal Standard number 595 and the yellow shall conform to Color Number 33538 of Federal Standard Number 595 (Highway yellow Color PR#1).
- 3. Retro-Reflectivity The retro-reflective performed film shall have a layer of reflective spheres bonded to the top surface. The white and yellow film shall have the following initial minimum retroreflectance values at 0.2° and 0.5° observation angles and 86° entrance angle as measured in accordance with the photometric testing procedures of ASTM D4061. Retroreflectance values shall be expressed as specific luminance in millicandelas per square meter per lux (medm ²lx ¹) [millicandelas per square foot/foot candle (med ft ²fc ¹)]

	W	'hite	Yellow		
Observation Angle	0.2°	0.5°	0.2°	0.5°	
SL[medm ² lx ¹] [med ft ² fc ¹]	550	380	410	250	

The test distance shall be 15 m [50 feet] and the sample size a 600 mm by 750 mm [3 feet by 2.5 feet] rectangle. The angular aperture of both the photoreceptor and light projector shall be 10 minutes of arc. The reference center of the sample and the reference axis shall be taken perpendicular to the test sample.

- 4. Bead Retention When tested with a 50 mm by 150 mm [2 in by 6 in] sample bent over a 13 mm [½ in] diameter mandrel with the 50 mm [2 in] dimension perpendicular to the mandrel axis, microscopic examination of the arc on the mandrel shall show no more than 10% of the beads are entrapped in the binder and less than 40% of the surface of the bead.
- 5. Application The preformed plastic material shall be capable of application to non-defective pavement surfaces that are dry and free from dirt or other foreign matter. For normal application, the pavement temperature should be at least 15°C [60°F] and rising.
- 6. Special Instructions Special instructions should be supplied by the vendor for application to be made at pavement temperatures below 15°C [60°F]. Application shall be according to manufacturer's recommended procedures. Plastic pavement marking materials shall only be applied to surfaces with temperatures within the range specified by the manufacturer for optimum adhesion.
- 7. Adhesive, Activators or Special Coatings Adhesive, activators or special coatings for various types of pavement surfaces shall be provided with the preformed plastic material. Detailed information must be supplied with the material outlining required application procedures for such adhesives, activators, or special coating.
- 8. Preformed Plastics Performed plastics shall be capable of being applied to new asphalt pavement immediately prior to the final rolling of the new surface and of being rolled into place with conventional pavement and highway rollers. The plastic material and adhesives used in such applications shall be of the type that water used on the roller to prevent asphalt pickup shall not be harmful to the successful application of the plastic.
- 9. Special Equipment Special equipment necessary for the successful installation of any preformed plastic material shall be available from the manufacturer of the plastic material on a lease, loan, or purchase basis. These materials following application shall be immediately ready for traffic without any damage to the material surface or injuries to passing vehicles. The retro reflective pavement marking tapes are intended for use as longitudinal lines such as lane lines, edge lines, channelization lines, gore markings or stop bars and crosswalk lines, and shall be inlaid into new asphaltic concrete by using a steel pavement roller while the pavement is at temperatures between 130°F. and 150°F.

2.2 MATERIALS -PAINT

A. Pavement Marking Paint for final and temporary pavement marking shall meet the requirements of Federal Specification TT-P-1952D. Either Type N, regular dry traffic paint or Type F, fast dry traffic paint may be used.

PART 3 - EXECUTION

3.1 GENERAL

- A. All pavement lines and markings shall be applied in accordance with the Manual on Uniform Traffic Control Devices. Longitudinal lines placed on tangent roadway segments shall be straight and true. Longitudinal lines placed on curves shall be continuous smoothly curved lines consistent with the roadway alignment. All pavement markings placed shall meet the tolerance limits shown on the plans.
- B. Broken lines shall consist of alternate 3 m [10 ft] painted line segments and 9m [30 ft] gaps. Temporary pavement marking lines, will be applied as many times as necessary to properly delineate traffic lanes for the safe passage of traffic. Bidirectional delineators may be used in place of temporary lines. Delineators will be applied at 12 m [40 ft] intervals.
- C. In overnight lane closure areas that are not to be overlaid, temporary plastic lines or raised pavement markers shall be used through the length of the taper.
- D. The plastic final pavement lines and markings shall be applied in accordance with the manufacturer's recommendations by the inlay method of application.

3.2 ESTABLISHMENT PERIOD

- A. Inlaid plastic pavement lines and marking material furnished and installed under this contract for final pavement markings shall still be subject to a six-month period of establishment.
- B. The period of establishment shall commence as soon as the plastic pavement lines and markings are complete and in place and shall continue for six months. At the end of the establishment period, a minimum of 95% of the plastic pavement lines and markings shall still be in place to be acceptable.
- C. If less than 95% of the plastic pavement lines and markings are in place after six months, the Contractor shall replace all unsatisfactory plastic pavement lines and markings on the project without additional payment. Plastic pavement lines and markings designated for replacement shall be installed according to these specifications, unless otherwise directed. Plastic pavement lines and markings replaced at the end of the six month establishment period will not be subject to a further establishment period.

3.3 PAVEMENT MARKING TAPE MATERIAL REPLACEMENT PROVISION (GUARANTEE)

- A. The Contractor shall supply the Owner with a written guarantee for a minimum of two years for all materials contained in these specifications.
- B. The period of guarantee shall begin from the date of application to the road.

3.4 PREPARATION OF SURFACE FOR PAINT

A. Immediately before applying the pavement marking paint to the pavement or curb, the surface shall be dry and entirely free from dirt, grease, oil, or other foreign matter. Surface preparation for application of plastic markings shall conform to the manufacturer's recommendations.

3.5 APPLICATION OF PAINT

- A. Prior to applying paint for final pavement lines, the Contractor shall perform a test for paint thickness by furnishing and placing a piece of smooth, clean metal with an area of at least 0.1 m² [144 in²] in the path of the striping truck. The striping truck shall be passed over the piece of metal, painting the surface as it passes, without applying beads. The result of this test will be used to determine the pressure setting and speed of the truck when applying paint to obtain the specified thickness. Additional paint thickness testing may be required on the final paint markings. The wet thickness of paint without beads on final pavement lines shall be a minimum of 0.400 mm [16 mils].
- B. On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be in two uniform covering coats, each at least 0.25 mm [10 mils] thick. Before the second coat of paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.
- C. Glass beads shall be applied to the final and temporary pavement lines, marking and curb at the rate of 0.72 kg/L [4.5 lb/gal] of paint and in sufficient quantity to assure complete and uniform coverage of hand painted surfaces.
- D. Temporary painted lines and markings shall be applied as specified for permanent painted lines, except that the thickness shall be a minimum of 0.400 mm [16 mils].
- E. Temporary pliant polymer marking material shall be used for temporary markings on the final pavement and on pavements not to be resurfaced when such pavement markings do not conform to the final pavement markings pattern.
- F. Newly painted lines, markings and curb shall be protected from traffic by the use of cones, stationary vehicles or other approved methods until the paint is dry.

3.6 REMOVING LINES AND MARKINGS

A. When it is necessary to remove pavement lines and markings, it shall be done by grinding, high temperature flame, sand blasting, solvent or other acceptable means. The method chosen must be capable of completely eradicating the existing line or marking without damage to the pavement. Burning and grinding to remove temporary markings from final pavement or from existing pavement not to be resurfaced will not be permitted.

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cast-In-Place Concrete
- B. Formwork
- C. Concrete reinforcement and accessories
- D. Modifications and/or Repairs to concrete
- E. Concrete curing
- F. Concrete finishing
- G. Concrete repairs
- H. Concrete testing
- I. Non-Shrink Grout

1.2 <u>RELATED SECTIONS</u>

A. Section 02200 - Earthwork

1.3 REFERENCES

A. This section contains references that are applicable to this Specification Section. The applicable edition of the indicated references shall be the version that was the most current at the time of the Advertisement of Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued, or replaced.

В.	ACI 211.1-91	Standard Practice for Selecting Proportions for
		Normal, Heavyweight, and Mass Concrete
C.	ACI 301-05	Standard Specifications for Structural Concrete
D.	ACI 302.1R-04	Guide for Concrete Floor and Slab Construction
E.	ACI 304.2R-96	Placing Concrete by Pumping Methods
F.	ACI 305R-99	Hot Weather Concreting
G.	ACI 306.1-90	Standard Specification for Cold Weather Concreting
H.	ACI 308R-01	Guide to Curing Concrete
I.	ACI 308.1-98	Standard Specification for Curing Concrete
J.	ACI 309R-05	Guide for Consolidation of Concrete
K.	ACI 318-05/318R-05	Building Code Requirements for Structural Concrete
		and Commentary
L.	ACI 347R-03	Guide to Formwork for Concrete
M.	ACI 350/350R-01	Code Requirements for Environmental Engineering
		Concrete Structures and Commentary
N.	ACI 350.1-01	Tightness Testing of Environmental Engineering

Concrete Structures

O.	ASTM A82-02	Specification for Steel Wire, Plain, for Concrete
ъ	A CITED & A 10 5 00	Reinforcement
P.	ASTM A185-02	Specification for Steel Welded Wire Fabric, Plain for
		Concrete Reinforcement
Q.	ASTM A615/	Specification for Deformed and Plain Billet - Steel Bars
		A615M-03 for Concrete Reinforcement
R.	ASTM A775/	Specification For Epoxy-Coated Reinforcing Steel
		A775M-01 Bars
S.	ASTM C31/C31M-03a	Standard Practice for Making and Curing Concrete
		Test Specimens in the Field
T.	ASTM C33-03	Specification for Concrete Aggregates
U.	ASTM C39/C39M-04a	Standard Test Method for Compressive Strength
		of Cylindrical Concrete Specimens
V.	ASTM C42/C42M-03	Standard Test Method of Obtaining and Testing
		Drilled Cores and Sawed Beams of Concrete
W.	ASTM C94/C94M-04a	Specification for Ready Mixed Concrete
X.	ASTM C150-02a	Specification for Portland Cement
Y.	ASTM C172-99	Practice for Sampling Freshly Mixed Concrete
Z.	ASTM C231-04	Test Method for Air Content of Freshly Mixed
		Concrete by the Pressure Method
AA.	ASTM C260-01	Specification for Air Entraining Admixtures for Concrete
	ASTM C309R-98a	Guide for Consolidation of Concrete
	ASTM C494/	
	C494M-99a	Specification for Chemical Admixtures for Concrete
	ACI 350.1-01	Tightness Testing of Environmental Engineering
	110100011 01	Concrete Structures
FF.	ASTM C1107	Specification for Packaged Dry, Hydraulic-Cement Grout
		(Nonshrink)
GG	ASTM E 329-02	Specification for Agencies Engaged in the Testing
00.	7101W1 L 32) 02	and/or Inspection of Materials Used in Construction
нн	ASTM F1554-02	Standard Specifications for Anchor Bolts, Steel, 36, 55 and
1111.	110111111111111111111111111111111111111	105-KSI yield strength
II.	Concrete Reinforcing S	teel Institute - Manual of Standard Practice
11.	Concide Kennording S	icoi montato - ivianuai di otanualu I facile

II. Concrete Reinforcing Steel Institute - Manual of Standard Practice

JJ. Concrete Reinforcing Steel Institute - Placing Reinforcing Bars

1.4 **QUALITY ASSURANCE**

- A. Perform work in accordance with ACI 301, ACI 318 and ACI 350R as modified herein.
- B. Maintain copies of ACI 301, ACI 318, and ACI 350R on site.

1.5 QUALIFICATIONS OF INDEPENDENT TESTING LABORATORY

- A. Independent Testing Laboratory shall conform to concrete testing requirements of ASTM C1077 and ASTM E329.
- B. Key personnel must be qualified and experienced in concrete quality assurance.
- C. Perform concrete field quality control testing with personnel certified as an ACI Concrete Field Testing Technician, Grade 1 according to the American Concrete Institute (ACI).

1.6 SUBMITTALS

- A. Submit layout drawings showing the location and extent of all joint waterstops, the type and size of all waterstops to be used and splice locations for each joint. Submit these layout drawings for review prior to the submittal of the reinforcing shop drawings and the start of concrete work.
- B. Submit shop drawings for concrete reinforcement prior to fabrication, showing bar bends, details and placement.
- C. Submit Concrete Mix designs including past field performance test results.
- D. Submit sieve analysis and soundness tests for fine and coarse aggregates taken within the last three (3) months.
- E. Submit Cement Manufacturer's Certificates of conformance with ASTM C150 taken during the last 3 months.
- F. Submit sample concrete mix delivery slip.
- G. Submit product data for concrete curing, sealing and hardening compounds.
- H. Independent Testing Laboratory will submit one copy each of all test reports to each of the following: Owner, Resident Project Representative, Contractor and Concrete Supplier.
- I. Independent Testing Laboratory will submit reports within 5 days of testing or inspection.
- J. Independent Testing Laboratory will telephone the Owner within 24 hours if tests indicate deficiencies.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Plywood: APA, B-B Plyform Class I exterior.
- B. Lumber: Southern pine, No. 2 grade or equal.
- C. Steel: Minimum 16 ga. sheet, well matched, tight fitting, stiffened to resist loads without excess deflection.
- D. Form Liner: Plywood conforming to PS-1, Grade B-B exterior (concrete form) not less than 1/4 inch thick.
- E. Form Ties: Factory fabricated assembly providing at least 1.5 inch break back dimension with at least a 1 inch diameter conical wood or plastic cones to leave a uniform hole for patching. Single rod ties require a tightly fitted waterstop washer at the mid point. Multi rod ties do not require washers.
- F. Form release agent: non-staining colorless, compatible with finishes. CRETE-LEASE 727 Release Agent by Cresset Chemical Co., Super-X Emulsive by A.H. Harris & Sons, Inc. or equivalent.
- G. Conform to ACI 301 and ACI 347

2.2 REINFORCING STEEL

- A. Bars: ASTM A615 Grade 60; deformed new materials.
- B. Welded wire fabric: ASTM A185
- C. Tie wire: ASTM A82, annealed.
- D. Bolsters, chairs and supports: plastic coated, stainless steel, or epoxy coated.
- E. Conform to CRSI Code of Standard Practice-Fabrication.

2.3 CAST-IN-PLACE CONCRETE

A. Concrete Materials

- 1. Portland cement: ASTM C150; Type II. Tricalcium Aluminate (C3A) content in cement less than 8%.
- 2. Aggregates:
 - a. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM Specification C-33.
 - b. Coarse aggregate shall consist of a well graded crushed stone or a washed gravel conforming to the requirements of ASTM Specification C-33.
- 3. Water: potable from municipal water supply or equal.
- 4. Admixtures: All from one common manufacturer.

B. Admixtures

- Low Range Water Reducer: Pozzolith 122-N by Master Builders; WRDA with HYCOL by Grace Construction Products Division; or equivalent meeting ASTM C494 Type A
- 2. High Range Water Reducer (superplasticiser): Rheobuild 1000 by Master Builders; Daracem 100 by W.R. Grace; or equivalent meeting ASTM C494 Type F.
- 3. Air entraining agent: Micro-Air by Master Builders, DAREX 11 AEA by Grace Construction Products; or equivalent meeting ASTM C260.
- 4. Non-corrosive non-chloride accelerator: Pozzutec 20 by Master Builders; or equivalent meeting ASTM C494 type C or E.
- 5. Not permitted: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions.

C. Concrete

- 1. Concrete Class
 - a. Reinforced concrete sections: Class A
 - b. Concrete fill: Class B
- 2. Concrete proportioning shall conform to ACI 318, Chapter 5 except as modified below:

	Minimum						High
	Compressive	Coarse		Min	Min		Range
	Strength	Aggregate	% Air	Max.	Max.	Max.	Water
Class	<u>(fc)</u>	Size	$\pm (1.5\%)$	Slump	Cem.Fac.	W/C	Reducer
	_						
A	4000 PSI	No. 67 (3/4")	6	1-3	564-620	0.42	Yes
В	3000 PSI	No. 8 (3/8")) 6	2-5	517-564	0.50	No

- 3. The maximum slump as indicated in the above table will be as measured at the batch plant.
- 4. Pumped Concrete: Conform to Chapter 4 ACI 304.2
- 5. High range water reducer shall be added on site to obtain 4" 8" slump.
- 6. No water shall to be added on site.
- 7. Concrete shall be furnished from one source during the project.

D. Selection of Concrete Proportions

1. The Concrete producer shall select the concrete mix proportions on the basis of past field performance or the use of trial mixes in accordance with ACI 318 Sections 5.2, 5.3 and 5.4.

2.4 ACCESSORIES

- A. Joint filler and slab perimeters: J-Joint polyethylene foam with tear off strip for sealant or approved equal; joint filler to be slab thickness in depth less 0.5 inch for sealant.
- B. Expansion joint filler: Self expanding cork by W.R. Meadows or W.R. Grace or equal, size as indicated on the Drawings.
- C. Structural inserts: of type and size shown on the drawings; Richmond Screw Anchor or Heckman Building Products, Hohman and Barnard, Dayton Sure-Grip or equal.
- D. Sand Cement Slurry: specified concrete mix Class A without coarse aggregate.
- E. Bond Breaker: Thompson's Water Seal or equivalent, or form oil.
- F. Concrete Anchorage Fasteners:
 - 1. Expansion Anchors Stainless steel AISI Type 316. Kwik-Bolt by Hilti Fastening Systems or Tru Bolt by Ramset Fastening System or equivalent.
 - 2. Anchor Rods ASTM F1554 Grade 55.
 - 3. Adhesive Anchors. Non-expanding chemical type, 6" minimum projection and nut; Parabond Capsule Anchor by Molly Fastener or HVA Adhesive Anchor by Hilti Fastening Systems or equivalent.
- G. Cast-iron detectable warning devices as specified in section 02509

2.5 NON-SHRINK GROUT

- A. Conform to ASTM C1107.
- B. Install in accordance with manufacturer's recommendations, using appropriate grout for intended use.

2.6 LIQUID CURING COMPOUND MATERIALS

- A. Curing and Sealing Compound; ASTM C309 Type 1 Class B. Super Kurseal by A.H. Harris & Sons, Inc. Emulsion Kurseal 309 by A.H. Harris & Sons, Inc. or equivalent.
- B. Dissipating Resin Curing Compound: ASTM C309 type 1; Film must break down in two to four weeks. Kurez-DR by Euclid Chemical Company, Emulsion Super KonKure 309 clear by A.H. Harris & Sons, Inc., or equivalent.
- C. Curing/Hardening Compound: Sodium Silicate Type. Eucosil by Euclid Chemical Company, Super KurHard 309 by A.H. Harris & Sons, Inc., or equivalent.
- D. Liquid Curing, Sealing and Hardening Compound: Ashford Formula by Curecrete Distribution distributed by the Righter Group.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Conform to ACI 301 and ACI 347
- B. Erect plumb and straight. Maintain rigid. Brace sufficiently.

- C. Allow no concrete leakage. Provide continuous, straight, smooth exposed surfaces.
- D. Treat forms with form release agent. Protect reinforcing from contact with form release agent.
- E. Earth forms not permitted.
- F. Chamfer all exposed outside corners and edges 0.75 inch unless otherwise noted.
- G. Clean out inside of forms of all foreign materials prior to concrete placement.
- H. Maintain forms and shores supporting the cast concrete for at least 24 hours.
- I. Form pressures increase with the use of concrete with High Range Water Reducers. Design forms accordingly.
- J. All concrete formwork, including reinforcing steel and embedment items, shall have a temperature greater than or equal to 35°F at the time of concrete placement.

3.2 REINFORCEMENT

- A. Conform to the CRSI Code of Standard Practice Field Erection for surface condition, bending, spacing and placement tolerance.
- B. Splicing reinforcement: conform to ACI 318; welded wire fabric to be lapped 1½ courses or 12 inches; tie fabric at 24 inches on center maximum spacing.
- C. Provide bar supports: on grade use concrete brick; elsewhere use manufactured wire supports.
- D. Do not bend reinforcing partially embedded in the concrete.

3.3 EMBEDDED ITEMS

A. Coordinate installation of embedded items per manufacturer's specifications.

3.4 PLACING CONCRETE

- A. Notify Owner and Independent Testing Laboratory 24 hours minimum prior to each placement.
- B. Place <u>no</u> concrete on frozen ground.
- C. Place concrete within 90 minutes of batching.
- D. Freefall: 4 feet maximum.
- E. Do not place partially hardened concrete.
- F. Consolidate concrete by vibrating. Conform to ACI 309.
- G. Conform to ACI 306R for cold weather concreting.
- H. Conform to ACI 305R for Hot Weather Concreting. Temperature of concrete placed shall not exceed 90°F.
- I. Provide concrete <u>Delivery Slip</u> prepared at batch plant with each truck load of concrete showing ticket number, date, truck number, mix strength, maximum stone size, weight of coarse aggregate, weight of fine aggregate, cement weight, volume of concrete, gallons of water added at plant, time water added at plant, quantities of all admixtures used and gallons of water withheld at the plant.
- J. Thoroughly moisten subgrade materials prior to placing slabs on grade.
- L. Thoroughly clean the surface of the concrete at construction and control joints and remove laitance prior to placing adjoining concrete. Do not place concrete against the hardened side of a joint for at least 48 hours.

3.6 TESTING CAST-IN-PLACE CONCRETE

- A. An Independent Testing Laboratory, selected and paid for by the Owner, shall test and sample concrete for strength, slump and air content as follows:
- B. Obtain 5 standard test cylinder samples (6" x 12") of each 100 cubic yards or less of each class of concrete placed in any one day.
- C. Test 2 cylinders at 7 days; 2 cylinders at 28 days. Hold one cylinder for later testing.
- D. Perform slump tests and air entrainment tests on each truck and at each sampling. Perform slump and air entrainment tests before addition of High Range Water Reducer and after addition of High Range Water Reducer.
- E. Sample concrete for testing of air and slump at the discharge end of the truck. When concrete is pumped, concrete taken for test cylinders shall be at the discharge end of the pump hose.
- F. Perform strength, slump and air entrainment tests at other times when directed by the Owner.
- G. Additional testing and sampling required as a result of deficient results or improper curing shall be paid for by Owner. The cost of resampling and retesting will be determined by Owner, and Owner will invoice Contractor for this cost. If unpaid after 60 days, this invoice amount will be deducted from the Contract Price.
- H. Contractor shall provide and maintain an insulated, heated concrete cylinder curing box, 4 foot square minimum, with a min.-max thermometer and maintain the temperature between 60°F and 80°F. Contractor to coordinate location with Owner and Independent Testing Laboratory.

3.7 ADDITIONAL CONCRETE TESTS

- A. Independent Testing Laboratory shall provide additional testing of in-place concrete as directed by Owner due to non-compliance or considered substandard. Additional tests may consist of non-destructive testing, cores drilled from the area in question or load tests. Costs of additional testing will be paid by Owner. The cost of the additional testing will be determined by Owner and Owner will invoice Contractor for that cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.
- B. When the concrete strength is substandard as defined in Specification 03300 Section 3.12 paragraph A, concrete core specimens shall be obtained and tested from the affected area.
 - 1. Three (3) cores shall be taken for each sample in which the strength requirements were not met. The drilled cores shall be obtained and tested in conformance with ASTM C 42 "Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete."
- C. Field cured cylinders may be cast and tested by the Independent Testing Laboratory at the request of the Contractor. The costs of these tests shall be borne by the Contractor. If the field cured cylinders are cast and tested prior to 28-days to determine the in-place concrete strength in order to facilitate an accelerated schedule for subsequent concrete placements, backfilling or leakage testing, the following criteria must be met:
 - 1. The Contractor shall notify the Owner and Independent Testing Laboratory 48 hours in advance of the concrete placement. The Owner will determine at that point if the results of the field cured cylinders may be used to determine the in-

- place concrete strength. The Contractor shall notify the Owner as to when the field cured cylinders will be tested and for what purpose.
- 2. A minimum of 2 cylinders shall be cast for each separate test the Contractor requests. A test consisting of at least two cylinders will be required to be considered valid.
- 3. The field cured cylinders shall be left in the field and located such that they are exposed to the identical environmental conditions as the concrete structure. The cylinders shall remain at this location a minimum of 14 days prior to testing.
- 4. The Owner shall determine if the strengths indicated by the field cured cylinder tests are adequate for their intended purpose.

3.10 <u>CURING</u>

- A. Curing shall begin immediately following the initial set of concrete or after slab surface finishing has been completed and shall continue after form removal. All concrete shall be cured to attain strength and durability by one of the following methods for a minimum of seven days after placement regardless of the ambient air temperature:
 - 1. Ponding or <u>continuous</u> sprinkling. Intermittent wetting and drying is <u>not</u> an acceptable curing method.
 - 2. Application of absorptive mats of fabric kept continuously wet.
 - 3. Application of concrete curing compounds. If applying slab sealing compounds, use dissipating resin curing compound. Allow dissipating resin curing compound to chemically break-down, and remove residuals and other foreign material, prior to applying slab sealing compound.
- B. Moisture loss from surfaces placed against wooden or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed. After form removal, the concrete shall be cured by one of the methods described above, for the balance of time remaining as specified above.
- C. Schedule of Finishes and Curing Requirements:
 - 1. Provide finishes on concrete surfaces according to the following schedule:

<u>Location</u>	<u>Finish</u>	Curing Requirements
Detectable Warning Devices	LBF	Moist cure and apply two coats of slab sealer

- NOTE: 1. Coordinate compatibility of curing compounds with dampproofing and waterproofing compounds.
 - 2. When two (2) coats of materials are required as indicated above, second coat shall be applied perpendicular to the first coat.

D. Cold Weather:

- 1. Conform to ACI 306R
- 2. Maintain concrete temperature between 50°F and 70°F for a minimum of seven days after placement, enclose and heat, insulate as required.
- 3. Reapply curing compounds every two days during heating period.

- 4. The maximum allowable temperature drop of the concrete surfaces during the first 24 hours after the end of the curing period shall not exceed 5°F in any 1 hour and shall not exceed a total of a 40°F drop in the first 24 hours.
- E. Hot Weather: Conform to ACI 305R Concrete temperature shall not be greater than 90°F. Protect from loss of slump, flash set, plastic cracking and rapid evaporation of water.

3.15 FAILURE TO MEET STRENGTH REQUIREMENTS

- A. The strength of the concrete in place will be considered substandard if any one of the following results occur:
 - 1. The arithmetic average of 28-day cylinder tests for any three (3) consecutive test results are less than the specified strength (f'c).
 - 2. More than 10 percent of the 28-day cylinder tests have strengths less than the specified strength (f'c).
 - 3. An individual compressive strength test result falls below the specified strength (f'c) by more than 500 psi.
- B. Concrete which fails to meet the strength requirements as outlined above will be reviewed by the Owner. The Owner will determine whether the substandard concrete will be accepted, rejected or additional tests performed.
- C. When Substandard concrete as defined in Parts A.1 and A.2 occurs, the Owner will require corrective measures to be taken immediately in order to increase the average of subsequent strength tests. When substandard concrete as defined in part A.3 occurs, non-destructive testing shall be performed on the substandard concrete. The testing shall be performed by an independent firm elected by the Owner and paid for by the contractor at no additional cost to the Owner.

3.16 DEFECTIVE CONCRETE

- A. Defective concrete is defined as concrete in place which does not conform to strength, shapes, alignments, appearances and/or elevation as shown on the drawings and/or presents faulty surface areas.
- A. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the Drawings will be considered defective.
- C. Concrete which differs from the required dimensions or locations in such a manner as to reduce the strength will be considered defective.
- D. Concrete surfaces not finished or cured in accordance with this Section shall be classified as defective concrete.
- E. Formed surfaces larger or smaller than dimensional tolerances specified in this Division may be rejected. If the Owner permits the Contractor to correct the error, such correction shall be as directed and in such a manner as to maintain the strength, function and appearance of the structure.
- F. Concrete members cast in the wrong location may be rejected and shall be removed at no additional cost to the Owner if the strength, appearance or function of the structure is adversely affected.
- G. Inaccurately formed surfaces exposed to view may be rejected and shall be repaired or removed and replaced at no additional cost to the Owner.
- H. Concrete exposed to view with defects which adversely affect the appearance of the specified finish shall be repaired. If, in the opinion of the Owner, the defects cannot

be repaired, the concrete may be accepted or rejected in accordance with the decision of the Owner.

3.17 PROTECTION

- A. Protect concrete from high and low temperatures for seven days.
- B. Protect against vibration until concrete has attained 33% of its 28-day strength.
- C. Protect against premature loads until the 28-day strength has been attained.
- D. Concrete structures shall be covered, insulated and heated as required to prevent frost penetration beneath the structures until acceptance by the Owner.

