CITY OF BANGOR

Hammond/Central Street Sidewalk Improvements

Request for Bid

June 21, 2024

CITY OF BANGOR, MAINE
ENGINEERING DEPARTMENT

JOHN M. THERIAULT, PE, PTOE
CITY ENGINEER

DEBORAH A. LAURIE
CITY MANAGER

CITY OF BANGOR

Request for Proposals
Hammond/Central Sidewalk Improvements
Proposal No. P24-56

Purchasing Department
262 Harlow Street
Bangor, ME 04401
207-992-4282

Issue Date: June 21, 2024

I. Introduction

The City of Bangor (City) is soliciting sealed construction proposals from qualified Proposers to complete sidewalk, curb, landscaping improvements, and all associated work.

II. General Information

Available at the following web address: www.bangormaine.gov/proposals on the City's website. By submitting a response to this solicitation, the Proposer accepts the responsibility for downloading, reading, and bidding by the terms and conditions set forth in the City's "General Information for Vendors".

In your proposal, please specify whether you currently have or are in the process of developing a domestic violence policy. If you do not have such a policy, let us know if you would like to receive a copy of the City of Bangor's policy as a reference.

III. Submission

For consideration, submit the proposal Bid Form in an envelope marked "**Proposal No. P24-56: Hammond/Central Sidewalk Improvements**" by 2:00 P.M. on Wednesday, July 24, 2024. Proposers must submit one (1) original hard copy or an electronic copy via email or flash drive. The subject line should reference "**P24-56 Hammond/Central Sidewalk Improvements**".

Submission of documents can be completed by:

A. **Emailing** to bids@bangormaine.gov ; or
B. **Hand Deliver** to Purchasing Department, 262 Harlow Street, Bangor, ME (back entrance of building at City of Bangor entrance); or
C. **US Post Office** addressed to City of Bangor-Purchasing Department, 73 Harlow Street, Bangor, ME 04401; or

D. **All Other Delivery Services** addressed to City of Bangor-Purchasing Department, 262 Harlow Street, Bangor, ME 04401.

All submissions should reference "**Proposal No. P24-56: Hammond/Central Sidewalk Improvements"**. Proposals will be publicly opened at the time stated above in the temporary Council Chambers, 262 Harlow Street, Bangor, Maine (**see Appendix A - Meeting Location Map**).

A tabulation of all received proposals will be posted on the City's website by 4:30 P.M. on the opening date. Visit www.bangormaine.gov/bidtabs for results.

IV. Questions

Any questions must be directed in writing to bids@bangormaine.gov no later than 4:30 P.M., Friday, July 5, 2024.

The City will provide a response by 4:30 P.M. on Friday, July 12, 2024. This response will be in the form of an addendum, accessible on the City's website. Notifications will be sent to the Registered Vendor List when new addenda are released. To receive these updates, the City strongly encourages all potential bidders to register as vendors at www.bangormaine.gov/vendorregistration.

V. Project Review Meeting

A non-mandatory pre-bid meeting will be held at 11:00 A.M. on Thursday, June 27, 2024 at the project site on the corner of Hammond and Central Street, to review the scope of the project.

VI. Late Proposals

It is the responsibility of the Proposer(s) to see that their proposals have sufficient time to be received by the Purchasing Department before the submittal deadline. Any proposal, portion of a proposal, or requested proposal revision received at the City Purchasing Department after the time and date specified, will be returned to the Proposer unopened.

VII. Withdrawal of Proposals

No Proposer may withdraw their proposal for a period of ninety (90) days from the date of opening. All proposals shall be subject to acceptance by the City during this period.

To withdraw a proposal prior to the opening, the Proposer shall request the withdrawal in writing. All costs associated with the withdrawal (i.e. mailing fees) will be borne by the Proposer.

VIII. Rejection

The City reserves the right to reject any proposals, waive any informalities or defects in proposals, or accept a higher cost proposal if it is deemed to be in the best interest of the City. The City also reserves the right to request clarification, of any details, from the successful Proposer.

IX. Information for Proposers

A. All Federal and State taxes must be excluded from the proposal price. Upon request, a tax exemption certificate for the City of Bangor shall be furnished to the successful Proposer.
B. The Bid Form, included with this request must be completed and returned for a proposal to be considered.
C. Proposers are required to maintain the following insurance policies throughout the life of the project and name the City of Bangor as an ***additional insured*** where applicable:

1. Worker's Compensation Insurance	Statutory
2. Employer's Liability Insurance	$500,000 each accident $500,000 disease – policy unit $500,000 disease – each employee
3. Comprehensive Automobile Liability	$1,000,000 combined, single limit per accident
4. Commercial & General Liability	$1,000,000 combined single limit $2,000,000 aggregate

D. Warranty - all work shall be guaranteed by the Proposer for a period of one (1) year from the date the work reaches substantial completion as determined by the City Engineer.

X. Scope of Services

The Bid Form is attached as **Appendix B**. Specifications (General and Technical) are attached as **Appendix C**. Plans and Details are attached as **Appendix D**.

The scope of services includes, but is not limited to, the following:

A. Provide a designated project manager.
B. Provide adequate erosion control measures to protect adjacent natural resources in accordance with all State and local regulations.
C. Obtain all necessary permits.
D. Confirm the location of all existing utilities in the field.
E. Provide and install all improvements as shown on **Appendix D**, as well as all other associated work.
F. All work must be completed by October 31, 2024.

XI. Proposal Organization

The proposal shall include a work schedule and a brief description of the methods and resources the Proposer will employ to accomplish the proposed work.

The following items must be provided:

A. The Proposer shall furnish a performance bond and a payment bond, each in an amount at least equal to the contract price, as security for the faithful performance and payment of all of the Proposer's obligations under the contract.
B. The Proposer shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the project is located to issue bonds in the required amounts.
C. Each Proposer must submit with their proposal a certified check, bid bond, or cash in the amount of 5% of the total proposal price as a guarantee that the Proposer will enter into the contract, if awarded. Said check, bid bond, or cash will be returned to Proposers once a contract has been awarded. If the contract has not been awarded within thirty (30) days of the opening of proposals, the surety will be returned at any time thereafter to any Proposer who so requests, so long as they have not been notified of the acceptance of their proposal.

XII. Selection

The evaluation of proposals and determination of the award will be at the discretion of the City, and its judgment shall be final and without right of recourse by any Proposer.

Each proposal will be evaluated according to the following criteria:

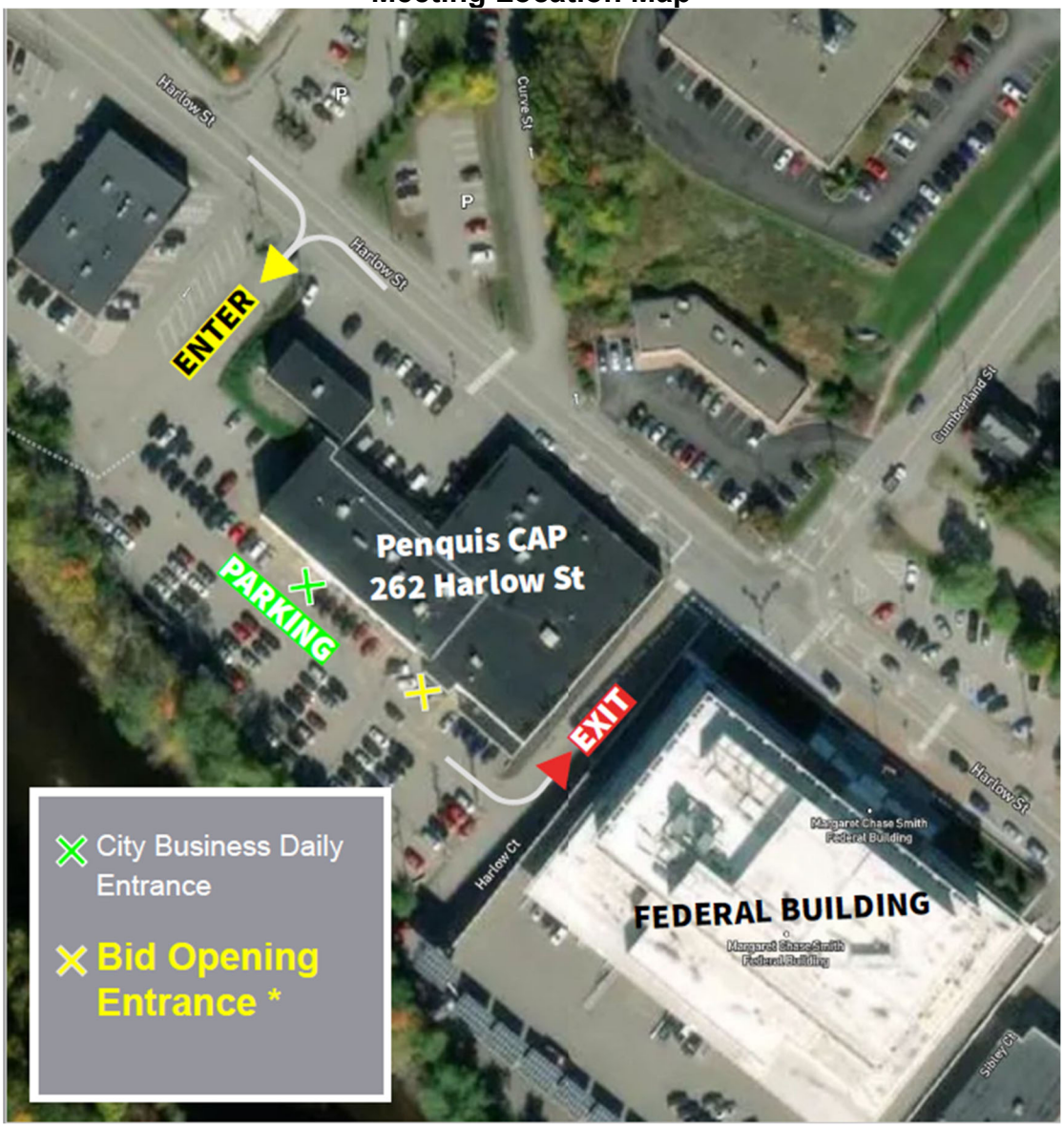
A. The qualifications and experience of the individual(s) who will perform the work.
B. The availability and capacity of the Proposer to perform the services required.
C. The ability to meet the schedule.
D. The cost of the services offered.

XIII. Consent Decree

All Proposers and sub-contractors are hereby notified that the City of Bangor has entered into a Consent Decree with the United States and the State of Maine. For the purposes of the Consent Decree, Proposers and sub-contractors are deemed agents of the City. Any and all work performed by Proposers and sub- contractors must conform with the terms of the Consent Decree. Proposers must familiarize themselves with the contents of the document and must make the document available to all sub-contractors.

This document is available in hard-copy at the City of Bangor's Engineering Department or electronically at
http://www.bangormaine.gov/filestorage/318/350/7758/ENV_ENFORCEMENT.PDF

APPENDIX A
Meeting Location Map



*** From Harlow Street, drive around to the back of the Penquis building (one-way traffic in parking lot). To the right, enter through glass vestibule door (yellow "X" on map above) and once in there, to the right, there is another glass door marked "Meeting Entrance". Go to the end of that hallway and take a slight left. The room marked "Penobscot Conference Room" is the temporary Council Chambers location where Bid Opening meetings are held.**

"Meeting Entrance" door will be opened 10 minutes prior to the scheduled meeting time.

Sample Contract

CITY OF BANGOR

***Sample* Contract for Professional Services**
between
The City of Bangor
and
Contractor

This AGREEMENT made this _____ day of _____, 2024 by and between City of Bangor, a body politic in the State of Maine (hereinafter the "CITY"), and _____, (hereinafter the "CONTRACTOR").

The parties do hereby agree as follows:

Article 1: Services:

CONTRACTOR agrees to provide the personnel, supplies, equipment, labor, and all incidentals necessary for the following:

Complete the Hammond/Central Sidewalk Improvements in accordance with bid dated June 21, 2024 attached hereto.

Article 2: Contractor's Performance:

CONTRACTOR accepts the relationship of trust and confidence established between itself and the CITY by this AGREEMENT and agrees to perform the services hereunder in the best and most expeditious and economical manner consistent with the interests of the CITY. The CONTRACTOR shall be, and remain, fully responsible to the CITY for the technical completeness, sufficiency and accuracy of all professional services furnished by or under this AGREEMENT and shall, without additional cost or fee to the CITY, correct and revise any errors or deficiencies in its performance including payment of attorney's fees.

Article 3: Performance:

CONTRACTOR agrees to perform in accordance with all reasonable requirements of the CITY. CITY agrees to cooperate in helping to implement any time-frame established. In the event of delay for reasons beyond its control and not its fault, CONTRACTOR may request necessary adjustments to said time-frame. The CITY's representative may approve any adjustments and said approval will not be unreasonably withheld.

Article 4: Quality of Service:

CONTRACTOR shall perform its services with care, skill, and diligence, in accordance with the applicable professional standards currently recognized by such profession, and shall be responsible for the professional quality, technical accuracy, completeness, and coordination of all reports, plans, information, specifications, and other items and services furnished under this AGREEMENT.

CONTRACTOR shall comply with all applicable Federal, State and local laws, ordinances, codes and regulations in performing its services. If CONTRACTOR fails to meet applicable professional standards CONTRACTOR shall without additional compensation, correct or revise any errors or deficiencies in its reports, plans or other services.

Article 5: Project Team; Personnel; Independent Contractor:

CONTRACTOR represents that it has, or will secure at its own expense, all personnel required in performing its services under this AGREEMENT. Such personnel shall not be officers or employees of the CITY, or have any contractual relationship with the CITY.

The CONTRACTOR further agrees that consistent with its status as an Independent CONTRACTOR that its personnel will not hold themselves out to be, or claim to be, officers or employees of the CITY by reason of this AGREEMENT.

Article 6: City Representative:

The CITY shall assign an authorized representative, who shall act as the CITY’s representative in all dealings with the CONTRACTOR for the project. CONTRACTOR's performance hereunder shall be subject to said representative's review and approval.

Article 7: City Responsibility:

CITY agrees to furnish or provide access to CONTRACTOR any information or material in its possession which is relevant to CONTRACTOR 's performance hereunder and CITY's staff will cooperate with CONTRACTOR. CONTRACTOR will not, without the CITY's written consent, disclose, or permit disclosure, by any officer, employee, agent, or subCONTRACTOR of CONTRACTOR, of any information or material furnished or generated under this AGREEMENT.

Article 8: Ownership of Documents:

All reports, memoranda, plans, specifications, and documents or other material to be developed by CONTRACTOR under this AGREEMENT shall be the property of the CITY and be promptly delivered to the CITY upon request. All data, internal reports, memoranda, and notes, calculation estimates and any other internal documents used to prepare the documents and memoranda submitted to the CITY shall be deemed the CONTRACTOR’s "work papers", and as such the "work papers" will remain property of the CONTRACTOR generating that material.

CONTRACTOR shall be responsible for the protection and/or replacement of any work or material in its possession, including materials provided to CONTRACTOR by the CITY. The CONTRACTOR understands and agrees that all documents and materials provided to the CITY hereunder are or may be public documents and as such will be available generally to the public. Reasonable use of any such documents by the CITY or the general public shall not be subject to a claim for infringement of any copyrights claimed by the CONTRACTOR in such documents. CITY has no responsibility for any use which may be made of them by any third party and CITY may use them for any lawful purpose.

CONTRACTOR and sub CONTRACTORs disclaim any liability to any party other than the CITY for any reliance on the documents and further that the CONTRACTOR and Sub CONTRACTORs disclaim any liability to the CITY if the reports and documents are relied upon or used for any purpose for which they are not intended.

Article 9: Sub CONTRACTORs:

If specialists or sub CONTRACTORs are required to complete the services there under, CONTRACTOR shall propose such utilization for review and approval of the CITY. CONTRACTOR is and shall remain fully responsible for performance of all services hereunder.

Article 10: Indemnification:

The CONTRACTOR shall indemnify, defend and hold harmless the CITY from and against all claims and actions, and all expenses incidental to such claims or actions, based upon or arising out of damage to property or injuries to persons or other tortious acts caused or contributed to by the CONTRACTOR or anyone acting under its direction or control or in its behalf in the course of its performance under this AGREEMENT, provided the CONTRACTOR's aforesaid indemnity and hold harmless agreement shall not be applicable to any liability based upon the sole negligence of the CITY.

The CONTRACTOR hereby expressly agrees that it will defend, indemnify and hold the CITY harmless from any and all claims made or asserted by CONTRACTOR's agents, servants or employees arising out of CONTRACTOR's activities under this AGREEMENT. For this purpose, CONTRACTOR hereby expressly waives any and all immunity it may have under Maine's Workers Compensation Act in regard to such claims made or asserted by CONTRACTOR's agents, servants or employees. The indemnification provided under this paragraph shall extend to and include any and all costs incurred by the CITY to answer, investigate, defend and settle all such claims, including but not limited to the CITY's costs for attorney's fees, expert and other witness fees, the cost of investigators, and payment in full of any and all judgments rendered in favor of CONTRACTOR's agents, servants or employees against the CITY in regard to claims made or asserted by such agents, servants or employees.

Article 11: Insurance:

The CONTRACTOR shall arrange insurance for the minimum limits indicated and shall maintain the below listed coverage throughout the period of performance.

		LIMITS
a.	Workers' Compensation Insurance	Statutory
	Employer's Liability Insurance	$100,000 each accident
		$500,000 disease - policy limit
		$100,000 disease - each empl.
b.	Comprehensive General Liability (Public Liability) Insurance including:	
	General Liability	$1,000,000 each occurrence
	Aggregate	$2,000,000
	Products, Completed Operations	$1,000,000 each occurrence
	Aggregate	$2,000,000
	Personal & Advertising Injury	$ 500,000 each occurrence
	Fire Damage	$ 50,000 any one fire
	Medical Expense	$ 5,000 any one person
c.	Automobile Liability Insurance (owned, hired & non-owned):	
	Bodily Injury & Property Damage	$1,000,000 combined single limit

d. The CONTRACTOR shall provide a waiver of any rights of subrogation which the CONTRACTOR may have against the OWNER, its agents or its employees.

e. Before any of the work is started under this CONTRACT, the CONTRACTOR shall file with the Purchasing Department a certificate of insurance containing the following information in respect to all insurance carried:

(1) Name of insurance company, policy number and expiration date;

(2) The coverage required and the limits on each, including the amount of deductible or self-insured retentions (which shall be for the account of the CONTRACTOR);

(3) A statement indicating that the OWNER shall receive thirty (30) days notice of cancellation or significant modification of any of the policies which may affect the OWNER's interest; and

(4) The OWNER as an additional insured (except Workers' Compensation Insurance).

f. If any of the work performed under this CONTRACT includes blasting, excavating, pile driving or caisson work; moving, shoring, underpinning, razing or demolition of any structure or removal or rebuilding of any structural support thereof, or any subsurface or underground work, the Comprehensive General Liability Insurance policy shall include coverage for the explosion, collapse and underground hazards.

Article 12: Termination:

Termination for Convenience: The CITY may terminate this AGREEMENT, in whole or in part, whenever the CITY determines that such termination is in the best interest of the CITY, without showing cause, upon giving 30 days written notice to the CONTRACTOR. The CONTRACTOR will not be reimbursed for any profits that may have been anticipated but have not been earned up to the date of termination.

Termination for Default: When the CONTRACTOR has not performed or has unsatisfactorily performed the AGREEMENT, the CITY may terminate this AGREEMENT for default. Upon termination for default, payment may be withheld at the discretion of the CITY. Failure on the part of a CONTRACTOR to fulfill contractual obligations shall be considered just cause for termination of the AGREEMENT.

Article 13: No Assignment:

CONTRACTOR shall not assign, sublet, sell, transfer or otherwise dispose of its interest in this AGREEMENT without the prior written approval of the CITY which shall not be unreasonably withheld.

This AGREEMENT shall be binding upon and inure to the benefit of the parties hereto, their successors and permitted assigns.

Article 14: Nonwaiver:

Except as expressly provided in this AGREEMENT, the failure or waiver, or successive failures or waivers on the part of either party hereto, in the enforcement of any Condition, Covenant, or Section shall not render the same invalid, nor impair the right of either party hereto, their successors or permitted assigns, to enforce the same in the event of any subsequent breach thereof.

Article 15: Notices:

All notices required or permitted under this AGREEMENT shall be in writing and shall be deemed sufficiently served if sent by First Class Mail addressed as follows, or such other address as they may designate in writing from time to time:

To City:

John Theriault
City Engineer
City of Bangor
73 Harlow Street
Bangor, Me 04401

To CONTRACTOR:

Notice given in any other manner shall be deemed effective only when the written notice is actually received.

Article 16: Disputes:

Any disputes arising out of or in the course of this AGREEMENT which are not settled by mutual agreement of the parties must be settled by mediation or submitted to arbitration in accordance with the rules of the American Arbitration Association. This AGREEMENT shall be governed by and construed in accordance with the laws of the State of Maine.

Article 17: Compliance with Law:

CONTRACTOR shall comply with all applicable Federal, State and local statutes, ordinances and regulations in its performance hereunder. CONTRACTOR agrees to amend this AGREEMENT, if necessary, to comply with such law or regulations.

Article 18: Extent of Agreement:

This AGREEMENT, with its Exhibits, represents the entire and integrated AGREEMENT between the CITY and CONTRACTOR and supersedes and replaces all terms and conditions of any prior AGREEMENTS, arrangements, negotiations, or representatives, written or oral with respect to this AGREEMENT. This AGREEMENT may only be modified by written agreement of both parties.

Article 19: Changes:

The CITY may order changes in writing in the specifications within the general scope of the Order. If the changes involve an increase or decrease in the cost of or time required for performing the work, the CONTRACTOR shall so advise the CITY in writing and an equitable adjustment in costs or schedule will be negotiated. As a condition to any increase in the cost of the work, the CONTRACTOR shall submit in writing adequately documented costs incurred for any authorized change for review, evaluation and approval by the CITY.

Article 20: Cost Records and Accounting for Additional Services:

CONTRACTOR shall keep accounts, books and other records of all its billable charges incurred in performing services to the CITY and shall itemize and submit its billings to the CITY in such a manner as the CITY may reasonably direct.

If no such direction is given, CONTRACTOR shall maintain books and accounts of chargeable costs in accordance with generally accepted accounting practices consistently applied, and in such a manner as to permit verification of all entries made. For three years from final payment under this AGREEMENT, CONTRACTOR shall preserve all such books and records, and shall upon three day's written notice make such records available to the CITY for purposes of verifying the costs chargeable under the AGREEMENT.

Article 21: Compensation:

The CONTRACTOR will submit invoices for payment after work is performed. Payment for services will be due within thirty (30) days of the billing date and will be made in accordance with the CITY's normal invoice payment. All work will be billed at the amount listed in the CONTRACTOR's proposal form, as referenced in Article 1.

Article 22: Liquidated Damages

In case the CONTRACTOR fails to satisfactorily complete the entire work, or any phase of the work, contemplated and provided for under this AGREEMENT on or before the date of completion determined as described elsewhere herein, the City shall deduct from the payments otherwise due the CONTRACTOR each month the sum of five hundred dollars ($500.00) for each calendar day, excluding only Sundays and legal holidays, of delay, which sum is agreed upon not as penalty but as fixed and liquidated damages for each day of such delay to be paid in full and subject to no deduction. If the payments otherwise due the CONTRACTOR are less than the amount of such liquidated damages, said damages shall be deducted from any other moneys due or to become due the CONTRACTOR, and in case such damages shall exceed the amount of all moneys due or become due the CONTRACTOR, then the CONTRACTOR or his/her surety shall pay the balance to the CITY as appropriate.

Article 23: Authority to Execute:

This AGREEMENT contains all the terms, conditions and provisions pertaining to the work, there being no other understandings, agreements, warranties either express or implied, relative to the AGREEMENT that are not fully expressed herein.

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed on the day and year first above written.

Witness: City of Bangor (CITY)

_____ _____

David Little, Finance Director

Witness: CONTRACTOR (CONTRACTOR)

_____ _____

APPENDIX B

BID FORM

Request for Bids
Hammond/Central Street Sidewalk Improvements

BID FORM

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
1.	**1** LS	Mobilization (not to exceed 3% of total project bid) the lump sum price of _____Dollars per lump sum ($_____)/LS	**$_____**
2.	**1** LS	Traffic Control the lump sum price of _____Dollars per lump sum ($_____)/LS	**$_____**
3.	**1** LS	Site Demolition / Preparation the Lump Sum Price of _____Dollars per lump sum ($_____)/LS	**$_____**
4.	5 CY	3/4" Crushed Stone Unit Price per cubic yard of _____Dollars per cubic yard ($_____)/CY	**$_____**

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
5.	**24** SF	Detectable Warning Field Unit Price per square foot of _____Dollars per square foot ($_____)/SF	**$**_____
6.	**550** SF	Hanover Traditional Prest Concrete Unit Pavers on Bit. Base Unit Price per square foot of _____Dollars per square foot ($_____)/SF	**$**_____
7.	**1,900** SF	6" Concrete Sidewalk Unit Price per square foot of _____Dollars per square foot ($_____)/SF	**$**_____
8.	**205** LF	Remove & Reset Granite Curb Unit Price per linear foot of _____Dollars per linear foot ($_____)/LF	**$**_____
9.	**140** LF	New Granite Curb Unit Price per linear foot of _____Dollars per linear foot ($_____)/LF	**$**_____

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
10.	**10** TON	9.5 MM H.M.A. Pavement Unit Price per Ton of _____Dollars per Ton ($_____)/TON	**$**_____
11.	**20** TON	12.5 H.M.A. Pavement Unit Price per Ton of _____Dollars per Ton ($_____)/TON	**$**_____
12.	**6** CY	Loam Unit Price per Cubic Yard of _____Dollars per Cubic Yard ($_____)/Cubic Yard	**$**_____
13.	**3** CY	Landscaping Bark Mulch Unit Price per Cubic Yard of _____Dollars per Cubic Yard ($_____)/Cubic Yard	**$**_____
14.	**1** LS	Plantings the Lump Sum Price of _____Dollars per Lump Sum ($_____)/Lump Sum	**$**_____

TOTAL PROJECT BID

_____

Dollars and

_____

Cents

_____

($)

The foregoing prices shall include all labor, materials, equipment, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

_____
Business Name

_____
Street Address

_____
City, State, Zip Code Telephone

By:_____
Name (Printed or typed) Title

_____
Residence Address

_____
Signature Date

APPENDIX C

GENERAL SPECIFICATIONS

SUBMITTALS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Product Data.

D. Shop Drawings.

E. Design data.

F. Test reports.

G. Certificates.

H. Manufacturer's instructions.

I. Erection drawings.

1.2 RELATED SECTIONS

A. Section - Quality Control: Manufacturers' field services and reports.

B. Section - Contract Closeout: Contract warranties, manufacturers' certificates, and closeout submittals.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with Engineer accepted form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project, and deliver to Engineer at business address. Coordinate submission of related items.

F. For each submittal for review, allow 14 days excluding delivery time to and from the contractor.

G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Engineer review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedule in duplicate within 14 days after date of Owner-Contractor Agreement.

B. Revise and resubmit as required.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.

E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.

1.5 PRODUCT DATA

A. Product Data For Review:

1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

2. After review, provide copies and distribute in accordance with this Section and for record documents purposes described in Section - Contract Closeout.

B. Product Data For Information:

1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.

C. Product Data For Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

D. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Engineer.

E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

F. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

G. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Contract Closeout.

1.6 SHOP DRAWINGS

A. Shop Drawings For Review:

1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

2. After review, produce copies and distribute in accordance with Submittal Procedures article above and for record documents purposes described in Section - Contract Closeout.

B. Shop Drawings For Information:

1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.

C. Shop Drawings For Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

D. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Engineer.

1.9 DESIGN DATA

A. Submit for the Engineer's knowledge as contract administrator or for the Owner.

B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.10 TEST REPORTS

A. Submit for the Engineer's knowledge as contract administrator or for the Owner.

B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.11 CERTIFICATES

A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

D. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.12 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to owner in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

C. Refer to Section - Quality Control, Manufacturers' Field Services article.

1.13 ERECTION DRAWINGS

A. Submit drawings for the Engineer's benefit as contract administrator or for the Owner.

B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SPECIAL PROVISIONS

Customer, Driveway, and Street Access

The Contractor shall maintain customer access to adjacent property at all times. The Contractor shall make every effort to plan his work so that adjacent property owners shall have door/driveway access to their properties at all times during non-working hours, and as much as possible during working hours. The Contractor shall use every effort to cooperate with adjacent property owners on their need to access their property. The Contractor shall notify the Bangor Police and Fire Departments at least four hours in advance of any necessary cutting off of access by emergency vehicles. Every effort shall be made to keep streets open to emergency vehicles at all times.

Working Hours

Normal working hours shall be from 7:00 A.M. until sunset. The Contractor shall cease all activity within 1/2 hour of sunset unless otherwise directed. It is intended that the Contractor stop work promptly at sunset; however, it is recognized that occasionally work may proceed a few minutes after sunset. If work proceeds later than 1/2 hour after sunset without permission of the Resident Engineer, then the Contractor shall be notified in writing that any additional violation of the working hours provision of the Contract shall be grounds for dismissing the Contractor and / or revoking his privilege to bid future projects.

Traffic Control

The Contractor shall provide all traffic control signs, lights, etc. in conformance of the latest edition of the Manual on "Uniform Traffic Control Devices" by the U. S. Department of Transportation and Federal Highway Administration.

Time and Material Payment

If, at any time during the construction of the project, a situation occurs where payment for work performed cannot be paid for under pay items in the Contract, then the Contractor may request payment on a time and materials basis. All labor and equipment rates, crew sizes, equipment and materials used, and other factors affecting the work shall be approved by the Resident Engineer before work commences. The Contractor and Engineer shall agree to and record hours worked, crew and equipment used, and all materials used at the end of each working day. Requests for time and materials payment after the fact may not be considered for payment if the Resident Engineer was not properly notified.

Notification of Property Owners

Every effort shall be made to keep adjacent property owners fully informed of pending interruptions to access or service. The Contractor shall be responsible for notifying the Resident Engineer in advance of any pending operations which may affect adjacent property, including but not limited to the cutting off of driveway access, the disconnection of sewer service laterals, or blasting operations. It will be the Resident Engineer's responsibility to communicate with the property owner or tenants; if such interruptions are to take place during the absence of the Resident Engineer, then the Contractor shall communicate directly with the property owner.

Housekeeping

At the conclusion of each working day, the contractor shall take necessary measures to leave the site in suitable condition, including but not limited to, sweeping, dust control, and removal of equipment or large construction debris that block normal access ways.

Trees to Remain

Existing trees that are to remain, as shown on the plans. The contractor shall make every effort to protect existing trees that are to remain, as shown on the plans, from damage during construction activities. Trees that have been damaged to the point where they will not survive will be replaced with a tree of similar species, size, and branching habit at no cost to the Owner.

As-Built Drawings

The Contractor shall keep a set of “As-Built” drawings on the job site for the Resident Inspector’s review that shall show all work up to one week prior to the date of inspection. The Resident Inspector may examine the drawings on a weekly or monthly basis at his own discretion. Final “As Built” drawings shall be submitted to the City one substantial completion has occurred.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Scope: This section describes the measurement and payment for the work to be completed under each bid item in the Proposal. The descriptions may not reference all of the associated Work. Work specified, but not specifically designated as a bid item, is considered incidental to all bid items.

B. Payment procedures are described in the Agreement, General Conditions, and related documents.

C. Work Covered: The total price for the Contract shall cover all work shown on the Contract Drawings and required by the Specifications and other Contract Documents. All costs in connection with the Work, including furnishing all materials, equipment, supplies and appurtenances; providing all construction, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the lump sum price bid or the unit prices specified on the bid sheets. No item that is required for the proper and successful completion of the Work will be paid for outside of, or in addition to, the prices submitted in the bid. All Work not specifically identified within this section shall be considered incidental to the project and a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT

A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

3.02 SCHEDULE OF PAYMENT ITEMS

I. Bid Items

1. Mobilization

a. Payment: Lump sum price as stated in the Proposal.
b. Measurement: Lump sum upon completion of first full thirty-day pay period of work.
c. Includes: The cost of initiating the Contract, general contract administration costs, procuring insurance and bonds, moving equipment, supplies, and materials to the site, and all other incidental start-up costs.

d. Explanation: Payment for Mobilization will be made on the first payment requisition covering a full thirty-day pay period. Payment for mobilization will not be made prior to the completion of the first full thirty-day pay period of work performed by the Contractor.

2. Traffic Control:

a. Payment: Lump sum price as stated in the Proposal.
b. Measurement: Paid in proportion to percentage of work completed at time of requisition.
c. Includes all costs associated with traffic control including labor, equipment, any and all materials, signage, police detail if required, and incidentals.

3. Site Demolition

a. Payment: Lump sum price as stated in the Proposal.
b. Measurement: Paid in proportion to the percentage of work complete at time of requisition.
c. Includes: All supervision, labor, equipment, disposal costs, and incidentals to provide demolition and excavation work including, but not limited to, removal of surface material sub-base material, concrete, unit pavers, precast structures, and miscellaneous site features.

4. 3/4" Crushed Stone

a. Payment: Unit price per each cubic yard as stated in Proposal.
b. Measurement: Per unit completed
c. Includes: All supervision, labor, materials, tools, and equipment necessary to place material as necessary to install new work within the project limits, and all incidentals.

5. Detectable Warning Field

a. Payment: Unit price per square foot as stated in the Proposal.
b. Measurement: Square feet as measured in place.
c. Includes: all supervision, labor, materials, and equipment necessary, including excavation, grading, compaction, furnishing and installing the aggregate base and subbase materials, concrete base, setting bed, truncated dome panel, sealant, finishing, and other incidentals as shown on the Drawings or as required to provide complete installation.

6. Hanover Traditional Prest Concrete Unit Pavers on Bit. Base

a. Payment: Unit price per square foot as stated in the Proposal.
b. Measurement: Square feet as measured in place.

c. Includes: all supervision, labor, materials, and equipment necessary, including excavation, grading, compaction, setting bed, pavers, sealant, metal edging, and other incidentals as shown on the Drawings or as required to provide complete installation.

7. 6" Concrete Sidewalk

a. Payment: Unit price per square foot as stated in the Proposal.
b. Measurement: Per square foot completed.
c. Includes: all supervision, labor, materials, and equipment necessary, including excavation, grading, compaction, furnishing and installing the aggregate base, reinforcement and concrete, construction and isolation joints, sealant, finishing, and other incidentals as shown on the Drawings or as required to provide complete installation.

8. Remove & Reset Granite Curb

a. Payment: Unit price per linear foot as stated in the Proposal.
b. Measurement: Linear feet as measured along the horizontal projection of the centerline of the curb between each connection point.
d. Includes: all supervision, labor, materials, and equipment necessary, including removal and stockpiling of granite curb during demolition, providing concrete bed and base gravel, and reinstallation during surface restoration and other incidentals as shown on the Drawings or as required to provide complete installation.

9. New Granite Curb

a. Payment: Unit price per linear foot as stated in the Proposal.
b. Measurement: Linear feet as measured along the horizontal projection of the centerline of the curb between each connection point.
c. Includes: all supervision, labor, materials, and equipment necessary, including purchasing and delivering of granite curb, providing concrete bed and base gravel, and installation during surface restoration and other incidentals as shown on the Drawings or as required to provide complete installation.

10. 9.5 MM H.M.A. Pavement

a. Payment: Unit price per ton of pavement as stated in the Proposal.
b. Measurement: As measured in place within the pay limits and to the thickness shown on the Drawings and as directed by the Engineer.
c. Includes: preparation and placement of specified thickness of binder and final surface course pavement in trench areas including shimming prior to pavement as necessary and saw cutting all edges before paving as noted on the Drawings and as directed by the Engineer, bituminous tack coat, and cutting in butt joints as required to match into existing pavement.

11. 12.5 MM H.M.A. Pavement

    a. Payment: Unit price per ton of pavement as stated in the Proposal.
    b. Measurement: As measured in place within the pay limits and to the thickness shown on the Drawings and as directed by the Engineer.
    c. Includes: preparation and placement of specified thickness of binder and final surface course pavement in trench areas including shimming prior to pavement as necessary and saw cutting all edges before paving as noted on the Drawings and as directed by the Engineer, bituminous tack coat, and cutting in butt joints as required to match into existing pavement.

12. Loam

    a. Payment: Unit price per cubic yard as stated in the Proposal.
    b. Measurement: Cubic yard, complete in place to full depth as shown.
    c. Includes: All labor and materials required for furnishing, placing, grading, and all other incidental work.

13. Landscaping Bark Mulch

    a. Payment: Unit price per cubic yard as stated in Proposal.
    b. Measurement: Cubic yard, complete in place to full depth as shown.
    c. Includes: All labor and materials required for furnishing, placing, grading, and all other incidental work.

14. Plantings

    a. Payment: Lump Sum as stated in Proposal.
    b. Measurement: Per percent completed.
    c. Includes: all materials and appurtenances required to furnish and install all planting, including but not limited to, excavation, watering, stakes, wires, wrap, maintenance after installation, and guarantee, and all other incidental work.

BID BOND

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

BIDDER *(Name and Address)*:

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

OWNER *(Name and Address)*:
The City of Bangor
73 Harlow Street
Bangor, ME 04401

BID
Bid Due Date:
Description *(Project Name and Include Location)*:
Hammond/Central Sidewalk Improvements, Bangor, ME

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

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

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

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

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

3. This obligation shall be null and void if:

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

3.2 All Bids are rejected by Owner, or

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

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

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

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

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

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

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

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

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

Notice of Award

Date: _____, 2024

Project: Hammond/Central Sidewalk Improvements	
Owner: The City of Bangor, Maine	Owner's Contract No.:
Contract:	Engineer's Project No.:
Bidder:	
Bidder's Address:	

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

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

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

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

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

1. Deliver to the Owner [4] fully executed counterparts of the Contract Documents.
2. Other conditions precedent:

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

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

City of Bangor, Maine
Owner

By: _____
Authorized Signature

City Manager
Title

Copy to Engineer

Notice to Proceed

Date: _____

Project: Hammond/Central Sidewalk Improvements	
Owner: The City of Bangor	Owner's Contract No.:
Contract:	Engineer's Project No.:
Contractor:	
Contractor's Address:	

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement, the project must be completed on or before **October 31, 2024.**

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

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

_____.

_____ _____

Owner: **City of Bangor**

Given by:

_____ _____

Authorized Signature

_____ City Engineer

Title

_____ _____

Date

Copy to Engineer

Copy to Contractor

PERFORMANCE BOND

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

CONTRACTOR (*Name and Address*):

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

OWNER (*Name and Address*):
City of Bangor
73 Harlow Street
Bangor, Maine 04401

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*): **Hammond/Central Sidewalk Improvements, Bangor, ME**

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

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

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ (Seal)	_____ (Seal)
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

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

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

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

2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
   2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
   2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
   2.3 Owner has agreed to pay the Balance of the Contract Price to:
      1. Surety in accordance with the terms of the Contract; or
      2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.

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

   3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
   3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
   3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
   3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
      1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
      2. Deny liability in whole or in part and notify Owner citing reasons therefor.

4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

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

5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

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

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

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

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

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

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other party*):

PAYMENT BOND

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

CONTRACTOR (*Name and Address*):

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

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:
Amount:
Description *(Name and Location)*: Hammond/Central Sidewalk Improvements

BOND

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

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

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ (Seal)	_____ (Seal)
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

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

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

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

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

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

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

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

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

4.2 Claimants who do not have a direct contract with Contractor:

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

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

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

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

6.2 Pay or arrange for payment of any undisputed amounts.

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

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

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

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

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

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

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

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

15. Definitions

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

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

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

FOR INFORMATION ONLY – (*Name, Address, and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other*):

Certificate of Substantial Completion

Project: **Hammond/Central Sidewalk Improvements**	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:

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

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

_____

_____

_____

_____

_____
Date of Substantial Completion

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

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

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

☐ Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

_____

_____

_____

Contractor's Amended Responsibilities:

_____

_____

_____

_____

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

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

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

TECHNICAL SPECIFICATIONS

SITE PREP

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of GENERAL SPECIFICATIONS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to prepare the site, complete, as indicated on the Contract Documents, as specified, and as follows:

1. Clearing of existing vegetation
2. Protection of existing structures and utilities
3. Removal and disposal of pavement
4. Removal and resetting of granite curb
5. Removal of manholes and catch basins
6. Adjustment of gas valves and other utilities
7. Abandonment of utilities
8. Salvage and stockpile onsite materials
9. Salvage materials and stockpile off site
10. Removal and disposal of materials

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. EARTHWORK
2. PLANTING SOILS
3. SANITARY PRECAST STRUCTURES
4. STORM PRECAST STRUCTURES
5. ELECTRICAL – GENERAL

1.04 REFERENCES

A. The following standards shall apply to the work of this Section:

1. State of Maine Department of Transportation (MDOT)

1.05 SUBMITTALS

A. The following shall be submitted:

1. Permit for transport and legal disposal of debris
2. Location plan of staging areas and schedule for moving staging equipment into those areas shall be submitted for Engineer's approval prior to mobilization and related site preparation operations.

1.06 PROTECTION

A. Do not interfere with use of adjacent buildings or facilities. Maintain free and safe passage to and from adjacent buildings and facilities or both and between them and the public way.

B. Cease operations and notify owner immediately if safety of adjacent structures, workers, or the general public appears to be endangered. Take precautions to properly support structures and protect workers and general public. Do not resume operations until safety is restored.

C. Prevent movement, settlement, or collapse of adjacent services, sidewalks, driveways, and trees. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no additional cost to Owner.

1.07 EXISTING SERVICES

A. Arrange and pay for disconnecting, removing, capping, and plugging utility services as indicated on the Drawings.

B. Place markers to indicate location of disconnected services. Identify service lines and capping locations on Project Record Documents as specified in Division 1.

PART 2 PRODUCTS

2.01 CONSTRUCTION FENCE

A. Construction fence shall be plastic "construction safety fence" per MDOT specifications.

PART 3 EXECUTION

3.01 CLEARING

A. Trees, shrubs, stumps, brush, downed timber, rubbish, organic matter, vegetation or extraneous debris not indicated on the Contract Documents or designated in the field by the Engineer to remain shall be cleared.

B. Clearing shall include the felling, cutting, and satisfactory disposal of all trees, stumps, and vegetative debris produced through the clearing operations.

C. Fell trees in such a way as to not injure trees to be saved. Excavation or grading within the branch spread of trees to be saved shall be performed only under the direction of the Engineer unless otherwise directed.

D. Stumps shall be removed to their full depth. Roots 3 inches and larger shall be removed to a depth of 2 feet below finished grade. Stumps shall be legally disposed of off-site.

3.02 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Existing structures and utilities shall be suitably protected from damage, including but not limited to existing lighting, traffic signal poles, signs, fencing, underground vaults, access grates, manholes, and utility lines.

B. Temporary and permanent erosion control shall be installed in accordance with the current Maine DEP Best Management Practices Manual for Erosion and Sedimentation Control prior to disturbing any earth.

3.03 PROTECTION OF CONSTRUCTION SITE

A. It is the contractor's responsibility to secure the construction site, both for the protection of the ongoing work and the protection of the public. The location of construction fencing used for this purpose shall be approved by the Engineer. There will be no additional compensation for repair of site improvements due to vandalism prior to Final Acceptance.

3.04 EXISTING SURFACE REMOVAL

A. Where indicated on the drawings, and as directed by the Engineer, existing asphalt pavement, brick sidewalk, and concrete pavers shall be removed and legally disposed of off-site to the full depth of the pavement section. Existing curb shall be removed and stockpiled as directed by the Engineer.

1. Where pavement and curb to be removed abuts pavement and curb to remain, a neat, straight saw cut shall be made.

2. Cobblestones encountered during surface removal shall be stockpiled for reuse as planting borders under the base bid.

3.05 ADJUST EXISTING MANHOLES, CATCH BASINS, AND GRATES

A. Existing structures to remain shall be adjusted to grade as indicated on the Contract Documents in accordance with MDOT Specifications Section 604 and applicable City of Bangor standards.

B. Materials, equipment, and labor necessary to make adjustments shall be paid for as described in Measurement and Payment.

3.06 ABANDONMENT OF EXISTING UTILITIES

A. Existing utility structure indicated on the Contract Documents shall be abandoned as specified and paid for under the work of this section.

3.07 SALVAGE, STOCKPILE, AND REUSE MATERIALS

A. Materials indicated on the Contact Documents or designated by the Engineer in the field to be salvaged shall be carefully removed, protected from damage, and placed in temporary storage as follows:

1. Salvaged material shall be stockpiled on-site in an area designated by the Engineer or loaded on City trucks as indicated.

B. Salvage material shall include the following: Granite curbing, cobblestones.

3.08 REMOVAL AND RELOCATION

A. Materials indicated on the Contract Documents or designated by the Engineer in the field to be removed and relocated shall be carefully removed, protected from damage, and put in the new location as indicated on the Drawings.

3.09 REMOVAL AND DISPOSAL OF MATERIALS

A. Materials indicated on the Contract Documents or designated by the Engineer in the field to be removed shall be dismantled, removed, and legally disposed of off-site, performed and paid for under the work of this section. Removals include but are not limited to the following: Benches, trash receptacles and cigarette receptacles.

B. Material resulting from the site preparation work and not scheduled to be salvaged and which is unsuitable for reuse on the project, shall become the property of the Contractor and shall be legally disposed of off-site.

C. Debris, rubbish, and other material shall be disposed of promptly and shall not be left until final cleanup of site.

D. Existing site structures indicated on the Contract Documents to be removed, shall be completely dismantled and removed from the site.

END OF SECTION

EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes excavating for site structures.

B. Related Sections:
   1. SITE PREP
   2. EARTHWORK
   3. TRENCHING
   4. SANITARY PRECAST STRUCTURES
   5. STORM PRECAST STRUCTURES

1.2 FIELD MEASUREMENTS

A. Verify that survey benchmark and intended elevations for the Work are as indicated.

PART 2 - EXECUTION

2.1 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Identify known underground, above ground and aerial utilities. Stake and flag locations.

C. Erect sheeting, shoring, and bracing as necessary for protection of persons, improvements, and excavations and as indicated on the Drawings.

D. Provide dewatering and drainage as required to accomplish work of this section.

E. Protect new construction, existing structures, existing utilities, plants, trees, etc., at all times. Report any damages immediately to Engineer and proper authorities.

F. Use extreme caution when excavating near underground utilities. Employ manual excavation where necessary.

G. Inform appropriate utility or agency of all actions in vicinity of underground pipes, mains, conduits, wires, etc. Coordinate all work with appropriate utility or agency and comply with all requirements. Dig Safe must be contacted.

2.2 EXCAVATING

A. Underpin adjacent structures, which may be damaged by excavation work, including utilities and pipe chases.

B. Excavate subsoil required to accommodate paving and site structures.

C. Machine slope banks to angle of repose or less, until shored.

D. Excavate all materials regardless of nature of elevations and dimensions indicated plus sufficient space for forming, shoring, draining, inspection, etc. Excavate using open cut method unless otherwise indicated or permitted.

E. Grade top perimeter of excavation to prevent surface water from draining into excavation.

F. Hand trim excavation. Remove loose matter.

G. Remove lumped subsoil, boulders, and rock up to 2 cubic yards measured by volume. Larger material will be removed under Section – Rock Excavation.

H. Allow Engineer to inspect bottom of excavation for suitability of base material.

I. Remove unsuitable base material to a depth of at least 12 inches below any pipe or structure or to a depth directed by the Engineer and replace with compacted screened gravel or crushed stone or provide proper base as otherwise directed by Engineer. Place no footing, wall, structure, pipe, etc., on unsuitable material.

J. Place no structure, pipe, etc., partially on earth and partially on rock. Remove rock and replace with compacted screened gravel or crushed stone.

K. Protect excavation bottoms from frost and weathering. Place no structure, pipe, etc., on frozen or weathered ground.

L. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.

M. Correct unauthorized excavation at no extra cost to Owner.

N. Correct areas over-excavated by error in accordance with Section - Backfilling.

O. Stockpile excavated material remains City property. This material shall be disposed of as directed by the City Engineer.

2.3 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Section Quality Control.

B. Provide for visual inspection of bearing surfaces.

END OF SECTION

GRANITE CURB

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the table of Contents, and applicable parts of GENERAL SPECIFICATIONS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing labor, equipment, materials, incidental work, and construction methods necessary to furnish and install granite curb, as indicated on the Contract Documents and as specified, including, but not limited to:

1. Granite Curb

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of Specifications:
   1. SITE PREP
   2. CONCRETE PAVERS

1.04 REFERENCES

A. The following standards shall apply to the work of this Section.

1. American Society for Testing and Materials (ASTM)

C131	Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in Los Angeles Machine
C615	Granite Dimension Stone

2. State of Main Department of Transportation (MDOT)

Specifications	Standard Specifications for Highways and Bridges

1.05 SUBMITTALS

A. Submit sample of granite curb to Engineer for approval. Sample shall be representative of curb units.

B. Granite curb shall match existing curb to be removed and reset in appearance and size to the maximum extent practicable.

C. Submit complete shop drawings of granite curbing for Engineer's approval.

1. Shop drawings shall indicate size, dimension, and finish of curb.

2. Submit a complete schedule for quantity, length, and size for granite curb.

3. Submit concrete mix design for concrete cradle at curb.

1.06 QUALITY ASSURANCE

A. Unless otherwise indicated, granite curb materials and construction shall conform to the applicable portions of the following:

1. MDOT Specifications Section 609, "Curbing".

B. Granite for all curbing shall be supplied from a single source for entire project.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Granite curb shall be ordered and delivered to the site in the time frame necessary to maintain the Construction Schedule.

B. Granite curb units shall be delivered to the job adequately protected from damage during transit.

C. Curb shall be protected against staining, chipping, and other damage. Cracked, badly chipped, or stained units will be rejected and shall not be employed in the work.

D. Store pallets of granite curbing on pavement or other hard, durable surfaces that will not compact as a result of the weight of the pallets of curbing. Prevent steel strapping from pallets from rusting and staining of pavement. Remove and replace all pavement stained by rusted steel strapping.

PART 2 PRODUCTS

2.01 GRANITE CURB

A. Granite shall be structural granite conforming to ASTM C 615, Class 1 Engineering Grade, suitable for curbstone use. Curb shall be light gray, free from seams which impair structural integrity, and with percentage of wear less than 32 percent as determined by ASTM C 131. Curb face shall withstand flaking or splitting when kicked by foot. Any curb that performs in this way shall be rejected.

1. Granite curb shall have the following minimum dimensions: min. length = 4', width at top = 6", depth = 18".

2. Top surface shall be sawn to an approximately true plane, having no projections or depressions greater than 0.125 inches and shall be peen hammered or thermal finished to create a non-slip surface.

3. Front and back arris lines shall be cut straight and true. Granite curb shall be dressed vertically on the back face to a depth of 4 inches from the back arris line such that there are no projections greater than one-sixteenth inch from the vertical. From that point downward there shall be no projection on the back surface that would exceed a batter of 4 inches in 12 inches.

4. Front face shall be at right angles to the planes of the top and ends, and shall be smooth quarry split, free from drill holes and with no projection of more than 1 inch, and no depression of more than ½ inches, measured from the vertical plan of the face.

5. The ends of the stone shall be squared with the planes of the top and face so that when the stones are placed end to end as closely as possible, no space shall show in the joint at the top and face of more than ¼ inches, for the full width of the top and for 8 inches down on the face.

6. Exposed surfaces of curb shall be free from saw marks.

7. Provide transition pieces at all sidewalk ramps.

6. Where transition piece is flush with surface of pedestrian pavers, exposed surface of the granite shall have a thermal finish.

7. Where flush curb meets a curb ramp on a radius, the straight width of the curb along the back shall be a minimum 4' wide.

2.02 CEMENT MORTAR

A. Mortar for pointing joints between curbstones shall be a cement mortar composed of one part Portland cement and two parts sand, by volume with sufficient water to form a workable, stiff, mixture.

2.03 CONCRETE

A. Concrete for Foundation Cradle at Curb: Concrete where designated for foundation cradle at curb installations shall be a zero slump concrete, described as follows:

1. MDOT Specifications, 3000 psi, ¾ inch aggregate concrete mix, without water, placed dry.

B. Concrete for Backing Up Curb: Concrete where designated for backing up curb shall be 4000 psi, ¾ inches high early strength concrete surface conforming to MDOT Specifications.

2.03 WOOD SHIMS

A. Wood shims to level curbs as necessary shall be pressure treated wood.

PART 3 EXECUTION

3.01 SETTING GRANITE CURB

A. Curb shall be set in accordance with MDOT Specifications Section 609.

B. Curb shall be set accurately to line and grade. Curb alignment shall be uniform with smooth and continuous lines.

C. Vertical face of vertical curb shall be plumb, with curb top parallel to adjacent surface.

D. Joints between curb units shall be carefully filled with cement mortar, and neatly pointed on the top and front exposed positions. After pointing excess mortar shall be cleaned from curb surface.

E. Backfill material on each side of curb and cradle shall be as specified for adjacent surface and shall be thoroughly compacted by means of power tampers. Extreme care shall be taken not to destroy curb alignment. Curb sections disturbed during backfilling or otherwise shall be reset to line and grade, and properly backfilled.

END OF SECTION

UNIT PAVERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of GENERAL SPECIFICATIONS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install the concrete unit pavers and metal edging, as indicated on the Contract Documents and as specified.

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. EARTHWORK

1.04 REFERENCES

A. The following standards shall apply to the work of this Section:

1. American Association of State Highway and Transportation Officials (AASHTO):

M 43	Standard Size of Coarse Aggregate for Highway Construction
M 140	Emulsified Asphalt
M 208	Cationic Emulsified Asphalt

B. American Society for Testing and Materials (ASTM):

C 33	Specification for Concrete Aggregates
C 136	Test Method for Sieve Analysis of Fine and Coarse Aggregates
C 936	Specification for Solid Concrete Interlocking Paving Units
D 36	Test Method for Softening Point of Bitumin (Ring-and-Ball Apparatus)
D 113	Test Method for Ductility of Bituminous Materials

D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)

D 3381 Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

C. State of Maine Department of Transportation (MDOT)

Specifications Standard Specifications of Highways and Bridges

1.05 SUBMITTALS

A. Shop Drawings: Submit shop drawings for layout, illustrating paver layout at typical intersections, typical banding and running bond along sidewalk and in typical seating areas.

B. Design Mix Submittals: Submit design mix submittals including description of materials, proportions, and mechanical sieve sizes of aggregates for the following:

1. Certified sieve analysis for sand

2. Bituminous concrete setting bed mix.

3. Neoprene tack coat.

C. Samples: Samples shall be submitted for the following items:

1. Furnish not less than four individual concrete pavers of each type, size, and finish required to Engineer for approval. Samples shall exhibit the full color range of pavers to be provided.

2. Submit a sample of metal edging, 12 inches length, with one stake.

D. Manufacturer's Product Data: Manufacturer's Product Data shall be submitted for the following items:

1. Concrete Paver (each type and size and full color range)

2. Metal Edging

3. Neoprene-modified asphalt adhesive

E. Test Report:

1. Test report of prest concrete paver shall be submitted (each type).

2. Testing shall be done by an independent testing laboratory. Test procedures shall conform to ASTM C 396 methods, where applicable.

3. Test report shall indicate, as a minimum, the following:

a. Compressive strength, pounds per square inch.
b. Absorption, 5 hr submersion in cold water.
c. Absorption, 24 hr submersion in cold water.
d. Maximum saturation coefficient.
e. Initial rate of absorption (suction)
f. Abrasion index
g. Freeze-thaw

1.06 QUALITY ASSURANCE

A. Installer must review installation procedures of all prest concrete paving and sequence of work with General Contractor to ensure proper coordination with other subcontractors and suppliers whose work is affected by the delivery schedule and installation of paving work.

1.07 SAMPLE PANEL

A. Construct a sample panel of each type of concrete pavers on the specified base and setting bed before start of any prest concrete paving. Sample panel shall exhibit proposed color range, texture, bond, jointing, pattern, finish, paver size, and workmanship. Unless otherwise indicated, size of panel shall be 6 feet by 6 feet minimum.

1. Each sample panel representing “Concrete Unit Pavers” shall be constructed on a bituminous concrete base, with neoprene setting bed, pavers, jointing and suface sealants as required for the finish work.

2. The sample panels may not be part of the finished work, and must include all paver types.

3. The quality of workmanship, paver jointing, and cleanliness of pavers after installation must be approved by the Engineer before permanent paving is started.

4. If the original sample is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved sample is obtained.

5. The approved sample shall become the standard for unit paving for the entire job. Panel shall remain undisturbed until all paving is completed. Remove panel from the site upon completion of paving.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Concrete paver units shall be packaged by strapping to manufacturer’s standard and delivered on pallets. Pavers damaged in any manner will be rejected and shall be replaced with new material at no additional cost to Owner.

B. Store all paving units on raised platforms. Storage piles or stacks shall be located to avoid or

be protected from heavy or unnecessary traffic. Store paving units on wood skids or pallets. Place and stack skids and units to distribute weight evenly and to prevent breakage or cracking of units. Materials shall be stored under an approved roof or covered with non-staining waterproof tarpaulins, at all times, except when materials are being installed. Protect paving units during storage and construction against moisture, soiling, staining, and physical damage.

C. Handle paving units to prevent chipping, breakage, soiling, or other damage. Do not use pinch or wrecking bars without protecting edges of units with wood or other rigid materials. Lift with wide-belt types, slings or vacuum lifts wherever possible; do not use wire cable or ropes containing tar or other substances which might cause staining. If required, use wood rollers and provide cushion at end of wood slides. Any paving unit chipped during delivery, storage, or handling will be rejected and replaced by the Contractor at no additional cost to the Owner.

D. Deliver cement in manufacturer's original water-resistant bags, labeled with manufacturer's name and product brand, with seals unbroken and full weight. Damaged and fractional packages will be rejected.

1.09 PROTECTION OF ADJACENT SURFACES

A. Finished surfaces adjacent to the concrete unit paving shall be adequately protected from soiling, staining, and other damage during construction.

PART 2 PRODUCTS

2.01 CONCRETE PAVERS

A. Concrete pavers shall be Hanover Traditional Prest.

1. Paver size shall be 4" x 8", "Traditional" style.

2. Paver thickness shall be 2 3/8 inches.

3. Color shall be Red/Charcoal Blend.

2.02 AGGREGATE BASE COURSE

A. Material for aggregate base course shall be as specified under the EARTHWORK and paid for under this UNIT PAVERS.

2.03 AGGREGATE SUBBASE COURSE

A. Material for aggregate subbase course shall be as specified under EARTHWORK and paid for under UNIT PAVERS.

2.04 BITUMINOUS BASE COURSE

A. Bituminous Concrete shall be as specified under H.M.A. PAVEMENT and paid for under UNIT PAVERS of this Specification.

2.05 ASHPALTIC PRIMER

A. Primer for base beneath bituminous setting bed and pavers shall be an emulsified asphalt rapid setting type conforming to AASHTO M 140, Grade RS-1, or AASHTO M 208, Grade CRS-1.

2.06 NEOPRENE-MODIFIED ASPHALT ADHESIVE

A. Neoprene modified asphalt adhesive shall meet the following requirements:

1. Mastic (asphalt adhesive):
    a. Solids (base) content by volume = 75 ± 1 percent.
    b. Weight = 8.0-8.5 lb/gal.
    c. Solvent vehicle = Varsol (over 100 degree F flash).

2. Base (2 percent neoprene, 10 percent fibers, 88 percent asphalt)
    a. Melting point (ASTM D 36) = 200 degree F minmum.
    b. Penetration at 77 degrees F 100 gram load 5 second (0.1 mm) = 23-27.
    c. Ductility (ASTM D 113 at 77 degrees F, 5 cm/minute = 125 cm, minimum.

2.07 SAND FOR JOINT FILLER

A. Material for sand joint filler shall be as specified under EARTHWORK, and paid for under this Section UNIT PAVERS of this Specification.

2.08 METAL EDGING

A. Metal Edging shall be PermaLoc AsphaltEdge aluminum edging, manufactured by PermaLoc, Holland, MI, 49424, or approved equal. Aluminum edging shall be shop fabricated from aluminum alloy 6063-T6, 3/16 inch thick x 2 ½ inch wall by 2 ¼ inch base, with standard black baked-on acrylic paint finish. Edging shall be furnished in 8-foot lengths.

1. Adjacent sections shall be adjoined using a 4” siding, locking connector of aluminum alloy 6063-T6, maintaining 3/8” expansion joint between sections.

2. Stakes shall be spiral steel spikes with insulating plastic washers 10” x 3/8”.

2.09 WATER

A. Water shall be potable and shall be free of injurious contaminants.

2.10 SURFACE SEALANT FOR PAVERS

A. Surface sealant for all concrete paver pavement shall be Sure Klean Weatherseal SLX 100 Water and Oil Repellent, manufactured by ProSoCo Company, Inc., or approved equal.

1. Provide five (5) year labor and materials warranty.

PART 3 EXECUTION

3.01 METAL EDGING

A. Metal edging shall be installed at locations indicated on the Contract Documents. Install aluminum edging with the base resting on the concrete or bituminous binder base and facing toward the brick surface. Bituminous setting bed and tack coat shall be applied on top of edging. Set edging to the required alignment, straight and true and to the required elevation to ensure full paver restraint. Core drill holes in concrete base as necessary. Thread spike through insulating washer. Drive spikes into base until spike head firmly wedges washer against flange of aluminum edging.

1. Aluminum edging shall be securely staked in required position. Stakes shall be driven every 12" in straight runs and into every support section in curved sections.

2. Adjacent lengths shall be attached using manufacturer's standard connections according to manufacturer's published instructions.

3. Edging shall be set plumb and vertical at required line and grade. Straight sections shall not be wavy; curved sections shall be smooth and shall have no kinks or sharp bends.

3.02 ACCEPTABILITY OF BITUMINOUS BASE

A. Contractor shall examine the bituminous concrete base as specified under HOT MIX ASPHALT PAVING and provided, installed, and paid for under this UNIT PAVERS Specification, to determine its adequacy to receive concrete pavers and setting bed. Bituminous concrete shall have fully set prior to the work of installing concrete pavers. Evidence of inadequate base shall be brought to the immediate attention of the Engineer and shall be corrected by the Contractor as directed by the Engineer at no additional cost to the Owner.

B. Start of work of this Division 2 CONCRETE PAVERS shall constitute acceptance of bituminous concrete base.

3.03 AGGREGATE BASE COURSE

A. Aggregate subbase and base materials shall be to the depth indicated on the Contract Documents. Bases shall be as specified under EARTHWORK and paid for under UNIT PAVERS of this Specification.

3.04 BITUMINOUS SETTING BED

A. The surface of the bituminous base shall receive an asphalt prime coat before laying bituminous setting bed. Prime coat shall be applied at rate that will leave bituminous residue of 5 to 7 gallons per 100 SY after evaporation of vehicle. Base surface shall be dry and clean when prime coat is applied. Bituminous setting bed shall not be placed until vehicle has completely evaporated from prime coat.

B. Bituminous setting bed shall be installed over the bituminous base. Control bars ¾" deep shall be placed directly over the base. If grades must be adjusted, wood chocks under depth control bars shall be set to proper grade. Set two bars parallel to each other to serve as guides for the striking board. The depth control bars must be set carefully to bring the pavers, when laid, to proper grade.

C. While still hot (not less than 250 degrees F) some of the bituminous bed material shall not be placed between the parallel depth control bars. This bed shall be pulled with the striking board over the control bars several times. After each passage, low porous spots shall be showered with fresh bituminous material to produce a smooth, firm, and even setting bed. As soon as this initial panel is completed, advance the first bar to the next position in readiness for striking the next panel. After the depth control bars and wood chocks have been removed, carefully fill any depressions that remain.

D. The setting bed shall be rolled with a power roller to a nominal depth of 2" still hot. The setting bed thickness shall be adjusted so that when the concrete pavers are placed and rolled, the top surface of the pavers will be at the required finish grade.

E. A coating of neoprene-modified asphalt adhesive shall be applied by mopping or troweling over the top surface of the bituminous setting bed so as to provide continuous bond under the pavers.

1. If adhesive is trowel-applied trowel shall be serrated type with serrations not to exceed 1/16".

3.05 SETTING CONCRETE PAVERS

A. Concrete pavers shall be set on a bituminous setting bed over a prepared concrete or bituminous concrete base. Setting bed shall be protected from damage prior to setting pavers.

B. Concrete pavers with chips, cracks, stains, or other structural or aesthetic defects shall not be used.

C. Only competent workmen under adequate supervision shall perform the work of setting concrete pavers. Set pavers in accordance with manufacturer's recommendations. Concrete pavers shall be set true to the required lines and grades in the pattern detailed on the Contract Documents.

D. After the modified asphalt adhesive is applied, pavers shall be carefully placed by hand, set true to the required lines and grades, in the pattern shown on the Contract Documents. Accurate alignment shall be maintained. The Engineer will approve the start of paving layouts. Paving layouts shall always begin at building entries.

E. Pavers shall be neatly cut and fitted at all perimeters and closures to fit neatly and closely. Pavers shall be tightly butted. Joints between pavers shall be uniform and shall not exceed 1/8" in width. Joints greater than 1/8" in width will not be accepted. Surface edge of one paver shall be level with the next adjacent pavers so that no voids, rocking motions, or tripping hazards are encountered. There shall be no deviation from a true grade greater than ¼ inch in 10 feet. All finish paved areas shall slope to drain at a minimum of 1/8" in one foot.

F. All cutting and patching required to complete the work shall be done (including the filling and closing of all openings) with water-cooled radial cut-off type masonry saws with diamond-tipped blade for a

sharp, straight edge. Cut edges shall be plumb and straight. Scoring and breaking will not be acceptable.

1. After cutting of pavers, grind all cut edges of top surfaces of pavers to create a beveled, 45 degree angle equal to the manufacturers bevel. Ground bevels shall be straight and true and shall be accomplished using a sufficiently fine grinding wheel or blade to prevent apparent grind marks on the bevels.

G. After a sufficient area of pavers has been installed, joints of pavers shall be filled by sweeping sand into the joints, as specified, performed and paid for under UNIT PAVERS.

H. Completed surface shall be compacted by running a medium plate vibrator across the top of the pavers. Additional joint filler material shall be swept in the joints during vibration to completely fill joint space.

I. Newly laid pavers shall be protected at all times by panels of plywood. These panels may be advanced as work progresses; however, the plywood protection shall be kept in areas which will be subjected to continued movement of materials and equipment. All necessary precautions shall be taken in order to avoid depressions and protect paver alignment.

3.06 JOINT TREATMENT

A. Joint filler shall be swept dry into the joints between pavers until the joints are completely filled. Surface shall be swept clean. Swept surface shall then be thoroughly dampened with a low-volume fine spray of water.

1. Sweep sand into paver joints until joints are filled solid. Fog lightly with water and repeat a minimum of three times or until joints are compacted and full.

2. Prior to acceptance, the paved area shall be flooded with water to assure that there are no depressions. Pavers with top surfaces greater than 1/16” above or below adjacent pavers shall be removed and reset. Remove and reset pavers as required until surface is true to line and grade. Refill sand joints as necessary until all joints are filled to finish grade.

3.07 CLEANING OF UNIT PAVER SURFACES

A. After completion of concrete paving, surfaces shall be carefully cleaned, removing all dirt, excess filler, and stains.

B. Clean pavers using an approved masonry cleaner and soft bristle brush.

3.09 APPLICATION OF SURFACE SEALANT OF CONCRETE PAVER SURFACES

A. Seal pavement surface as follows:

1. Apply surface sealer to installed, thoroughly cleaned paved areas using a low pressure airless

sprayer, brush, or roller in compliance with manufacturer's recommendations. Apply material in quantities sufficient to saturate the surface pavement and not less than one gallon per 450 square feet.

2. Contractor shall take safety precautions in order to avoid all skin contact with the sealer, keep the sealer away from all heat sources or flame, and maintain adequate ventilation to avoid any concentration of sealer vapors in the work area. Vapors may ignite explosively and may travel along the ground by ventilation to ignition sources far from the product.

3. Sealed, paved, surfaces shall display no color difference from the unsealed surface and no surface sheen. Paved areas that do exhibit these qualities after sealant installation shall be removed and replaced at no additional cost to the Owner.

END OF SECTION

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Slabs-on-grade.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates.

E. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Waterstops.
6. Curing compounds.
7. Floor and slab treatments.

8. Bonding agents.
9. Adhesives.
10. Vapor retarders.
11. Semirigid joint filler.
12. Joint-filler strips.
13. Repair materials.

F. Field quality-control test and inspection reports.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

B. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. High-density overlay, Class 1 or better.
b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
c. Structural 1, B-B or better; mill oiled and edge sealed.
d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

E. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

F. Chamfer Strips: Wood, metal, PVC, or rubber strips, 1/2 by 1/2 inch, minimum.

G. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

H. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

I. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive damp-

proofing or waterproofing.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, Grade 60 (Grade 420), deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706, deformed.

C. Galvanized Reinforcing Bars: ASTM A 615, Grade 60 (Grade 420) deformed bars, ASTM A 767, Class II zinc coated after fabrication and bending.

D. Steel Bar Mats: ASTM A 184fabricated from ASTM A 615, Grade 60 (Grade 420) , deformed bars, assembled with clips.

E. Plain-Steel Wire: ASTM A 82, as drawn

F. Deformed-Steel Wire: ASTM A 496.

G. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

H. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

I. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from galvanized steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615 Grade 60 (Grade 420), plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Zinc Repair Material: ASTM A 780, zinc-based solder, paint containing zinc dust, or sprayed zinc.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.5 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source

1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94 and potable.

2.6 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A or Type F.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.7 WATERSTOPS

A. Chemically Resistant Flexible Waterstops: Thermoplastic elastomer rubber waterstops for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals. Factory fabricate corners, intersections, and directional changes.

1. Products:
   a. JP Specialties, Inc.; Earth Shield TPE-Rubber.
   b. Vinylex Corp.; PetroStop.
   c. WESTEC Barrier Technologies, Inc.; 600 Series TPE-R.

2. Profile: Ribbed with center bulb

B. Flexible PVC Waterstops: CE CRD-C 572 for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

1. Manufacturers:

    a. Bometals, Inc.
    b. Greenstreak.
    c. Meadows, W. R., Inc.
    d. Murphy, Paul Plastics Co.
    e. Progress Unlimited, Inc.
    f. Tamms Industries, Inc.
    g. Vinylex Corp.

2. Profile: As indicated

C. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

1. Products:

    a. Colloid Environmental Technologies Company; Volclay Waterstop-RX.
    b. Greenstreak; Swellstop.
    c. Progress Unlimited, Inc.; Superstop.

2.8 VAPOR RETARDERS

A. Plastic Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Products:
    a. Raven Industries Inc.; Vapor Block 15.
    b. Stego Industries, LLC; Stego Wrap, 15 mils.
    c. W. R. Meadows; Perminator, 15 mils.

2.9 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products:
    a. Dayton Superior Corporation; Sure Film.
    b. Euclid Chemical Company (The); Eucobar.
    c. Sika Corporation, Inc.; SikaFilm.
    d. Symons Corporation, a Dayton Superior Company; Finishing Aid.

B. -Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

2.10 FLOOR AND SLAB TREATMENTS

A. Water Repellent Treatment: Water-repellent and chlorine retarding surface preparation, manufactured for application to concrete surfaces.

1. Products:
   a. Prosoco Inc; “Saltguard”

2.11 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: : ASTM D4819, Type II, two pound minimum density closed cell polyethylene with 1/2-inch deep top strip-off edge to allow installation of joint sealant; 1/2-inch thickness by full depth of slab

1. Foam Peel HT; Foamtastic, division of Hohmann & Barnard or accepted equivalent.

B. Joint-Filler Strips Left Exposed: ASTM D 1751, asphalt-saturated cellulosic fiber

1. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Joint Sealant: Single-component pourable urethane sealant, Class 25.

1. Products: Sika Corporation, Inc.; Sikaflex - 1CSL.

2.12 REPAIR MATERIALS

A. Repair Underlayment (To Receive Resilient Floor Covering): Cement-based, polymer- modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

2.13 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Admixtures: Use admixtures according to manufacturer's written instructions.

2.14 CONCRETE MIXTURES

A. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4500 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.42.
3. Slump Limit: 4 inches, plus or minus 1 inch
4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.

2.15 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2.17 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.

2. Variation of Cross-Sectional Dimension (thickness): 12 inch dimension or less, do not exceed 3/8 inch greater nor 1/4 inch less than indicated. 12 inch dimension but not over 3 foot dimension, do not exceed 1/2 inch greater nor 3/8 inch less than indicated.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

2.18 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located using templates, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

2.19 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 48 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

2.20 VAPOR RETARDERS

A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.

B. Granular base shall be level and properly rolled or tamped, ready to receive vapor retarder.

C. Place vapor retarder with the longest dimension parallel with the direction of the pour.

D. Lap vapor retarder on to foundation walls and seal.

E. Lap joints 6 inches and seal with manufacturer's recommended tape.

F. Seal perimeter edges of vapor retarder at foundation walls and other vertical obstructions.

G. Seal pipe penetrations with pipe boot made from vapor barrier and tape.

H. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with manufacturer's recommended tape.

2.21 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

2.22 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one- fourth of concrete thickness, 1 inch minimum, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction (control) joints with power saws equipped with

shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. Form joints with Soff-Cut early- entry dry-cut control joint saw cutting. Install cuts at each control joint location as soon as concrete will support weight of saw and operator without disturbing final finish. Provide adequate equipment to complete cutting operations within 2 hours after final pass of trowel. Use Soff-Cut blades and skid plates, using a new skid plate with each new blade. Remove debris in path of cut and under skid plate before cutting. Install Soff-Cut joint protector at saw-cut intersection prior to cross-cut. Remove dry powder saw cut concrete spoils immediately without disturbing finish.

3. Joint Width: 1/8-inch for slabs to receive floor coverings. 1/4-inch for joints to be left exposed and filled with joint sealant.
4. Contraction joints shall be placed in accordance with approved Shop Drawings. The panel shall be as nearly square as possible. If panel cannot be square, do not exceed panel length to panel width ratio of 1 to 1-1/2. Conform to bay spacing wherever possible (at column centerlines, half bays, third bays, one quarter bays, or equal division to meet the specified spacing requirements).
5. Make initial saw cut at mid-length of slab and proceed by saw-cutting at mid-length of each subsequent panel until all joints have been cut.
6. Joints are not permitted in slabs of coolers or freezers.
7. Avoid traffic across saw cut until sufficient strength is gained to protect joint edges.
8. Saw cut slabs on grade in accordance with spacing indicated. Where not indicated, saw cut in accordance with the following maximum spacing:
9. 4 inches thick slab: 5-8 feet.
10. 5 to 6 inches thick: 8 feet.
11. 6 1/4 to 7 inches thick: 12 feet.
12. 7 1/4 to 8 inches thick: 14 feet.

C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

D. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one

side of joint.

E. Joints in Sidewalks and Exterior Flatwork: Radius edges of walks and outside edges of slabs with 1/4 inch radius edge tool.

1. Saw cut joints, complying with contraction joint cutting requirements, unless indicated otherwise. Submit shop drawing of saw cut layout for approval.

2.23 WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

2.24 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
2. Water added shall not exceed total allowable water for water cement ratio of the concrete mix design. Record water added at the Project site on batch ticket.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

2.25 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

2.26 FINISHING FLOORS AND SLABS

1. Exterior Concrete Walks and Flatwork: Place concrete, screed and wood float surfaces to a smooth and uniform finish, free of open texturing and exposed aggregate. Avoid working bleed water into surface mortar.

a. Bull float directly behind screed before bleedwater appears.
b. Immediately behind bullfloat, drag broom across surface for a light broom finish if surface paste provides adequate stiffness to maintain acceptable surface texture. If bleedwater appears before application of broom finish, allow surface water to evaporate before brooming.

B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

2.27 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-

weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete slab surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

2.28 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Formed Surfaces Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete, but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

2.29 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.
2. Headed bolts and studs.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.
6. Verification of concrete strength before removal of shores and forms from beams

and slabs.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
    b. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive strength testing if adequate evidence of satisfactory strength is provided.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
    c. Properly store cylinders while awaiting transport to laboratory, maintaining temperature between 60 deg F and 80 deg F. Deliver to laboratory for curing within 24 hours of casting test specimen.
    d. Field-Cured Cylinders: For cold weather concrete operations, prepare an additional set of four standard cylinders to be cured at the site, maintaining cylinders in the conditions and at the temperature of the in-place concrete. Protect field cylinders from being hit, damaged, and from vibration during initial set.

7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured

specimens at 7 days and one set of two specimens at 28 days.

a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

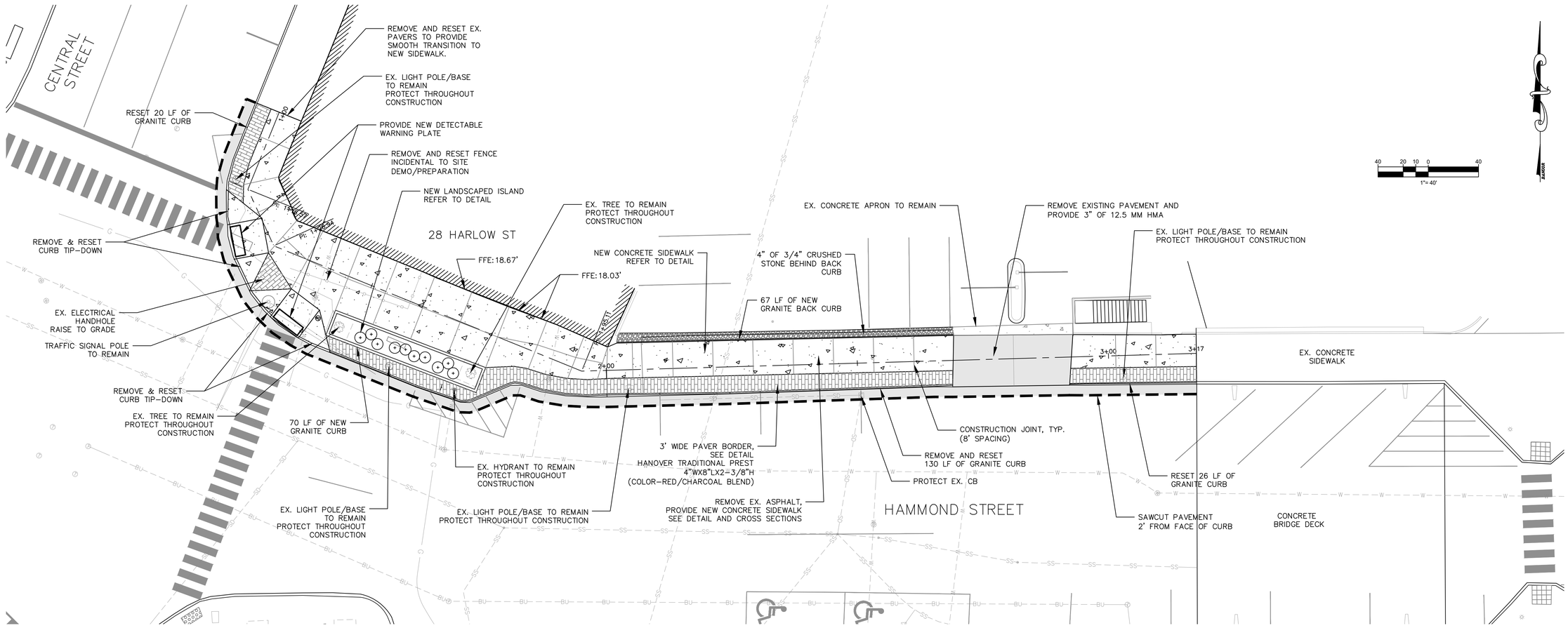
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

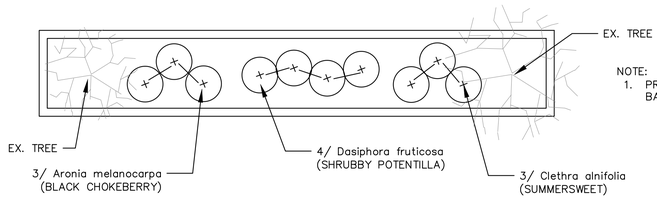
END OF SECTION

APPENDIX D

PLANS AND DETAILS

HAMMOND/CENTRAL STREET SIDEWALK IMPROVEMENTS

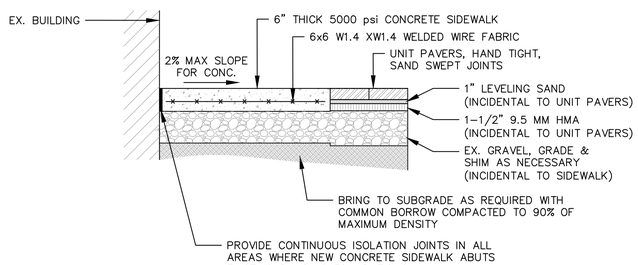




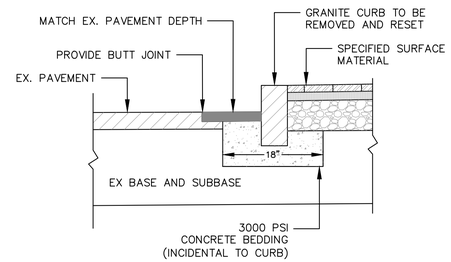
NOTE:
1. PROVIDE 12" OF CLEAN LOAM AND 3" OF BARK MULCH.

LANDSCAPED ISLAND
NOT TO SCALE

NOTE:
1. COMPACT GRAVEL SUB-BASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION



CONCRETE SIDEWALK W/ CONCRETE PAVER BORDER
NOT TO SCALE



GRANITE CURB
NOT TO SCALE

GENERAL NOTES:

1. LOCATIONS OF UTILITIES ARE APPROXIMATE AND LOCATED USING BEST AVAILABLE INFORMATION OF THE RESPECTIVE UTILITY COMPANIES AND THE CITY OF BANGOR. IT IS POSSIBLE THAT OTHER ACTIVE AND INACTIVE UTILITIES MAY EXIST IN THE PROJECT AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING DIGSAFE AND ANY NON MEMBER UTILITIES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATING ALL UTILITIES AND DIGGING ALL TEST PITS BEFORE COMMENCING ANY OTHER WORK. IF UTILITY RELOCATIONS ARE REQUIRED BECAUSE OF A FAILURE TO DIG A TEST PIT AS SHOWN ON THE CONTRACT DRAWINGS THE CONTRACTOR SHALL PAY ALL COSTS ASSOCIATED WITH THE RELOCATION OF THE UTILITY.

2. PROPERTY BOUNDARIES AND RIGHT OF WAY LINES SHOWN ON PLANS ARE APPROXIMATE BASED ON FIELD EVIDENCE OBSERVED AND TAX MAP INFORMATION AND ARE INCLUDED FOR REFERENCE ONLY. NO LEGAL REPRESENTATION IS INTENDED NOR WAS ANY FORMAL BOUNDARY SURVEY CONDUCTED.

3. CONTRACTOR SHALL PROPERLY PROTECT AND AVOID DISTURBING PROPERTY MARKERS. IF DISTURBED, THE MARKER SHALL BE RESET AT THE CONTRACTOR'S EXPENSE BY A REGISTERED LAND SURVEYOR.

4. CONTRACTOR SHALL EXERCISE APPROPRIATE EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION IN ACCORDANCE WITH ACCEPTED PRACTICE, APPLICABLE LAWS AND REGULATIONS, AND THE CONTRACT DOCUMENTS. THIS WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, CATCH BASIN PROTECTION AND STREET SWEEPING AS DIRECTED BY RESIDENT ENGINEER.

5. ALL AREAS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UNLESS OTHERWISE NOTED. COST OF RESTORATION OUTSIDE OF THE PAY LIMITS IS INCIDENTAL TO THE CONTRACT.

6. CONTRACTOR SHALL ARRANGE FOR EXISTING SITE FEATURES TO BE SUPPORTED OR TEMPORARILY REMOVED AS NECESSARY TO ACCOMMODATE NEW INSTALLATION.

7. ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)-LATEST EDITION. CONTRACTOR SHALL MAINTAIN AT A MINIMUM A SINGLE LANE OF TRAFFIC THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL ALSO PROVIDE ACCOMMODATIONS FOR PEDESTRIANS TO SAFELY TRAVERSE THROUGH WORKZONE.

8. CONTRACTOR SHALL PROVIDE TEMPORARY ENTRANCES TO ALL USED DOORS DURING DEMOLITION AND CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH THE CITY AND BUILDING/BUSINESS OWNERS.

9. CONTRACTOR WILL MAINTAIN SIDEWALK ACCESS ON ONE SIDE OF ROAD AT ALL TIMES.

10. CONTRACTOR SHALL SEAL CONCRETE SIDEWALKS TO PROTECT FROM SALT AT PROJECT COMPLETION.

11. ALL CONTRACTORS AND SUBCONTRACTORS ARE HEREBY NOTIFIED THAT THE CITY OF BANGOR HAS ENTERED INTO A CONSENT DECREE WITH THE UNITED STATES AND THE STATE OF MAINE. FOR THE PURPOSES OF THE CONSENT DECREE, CONTRACTORS AND SUBCONTRACTORS ARE DEEMED AGENTS OF THE CITY. ANY AND ALL WORK PERFORMED BY CONTRACTORS AND SUBCONTRACTORS MUST CONFORM WITH THE TERMS OF THE CONSENT DECREE. CONTRACTORS MUST FAMILIARIZE THEMSELVES WITH THE CONTENTS OF THE DOCUMENT AND MUST MAKE THE DOCUMENT AVAILABLE TO ALL SUBCONTRACTORS. THIS DOCUMENT IS AVAILABLE ELECTRONICALLY AT HTTP://WWW.BANGORMAINE.GOV/FILESTORAGE/318/350/775B/ENV_ENFORCEMENT.PDF OR IN HARD-COPY IN THE CITY OF BANGOR'S ENGINEERING DEPARTMENT.

CITY OF BANGOR
ENGINEERING DEPARTMENT
Bangor, Maine 04401
Tel: (207)992-4250
Fax: (207)992-4194

LICENSED LANDSCAPE ARCHITECT
Jefferson Davis Jr.
No. 3942
STATE OF MAINE

No.	Date	Revision

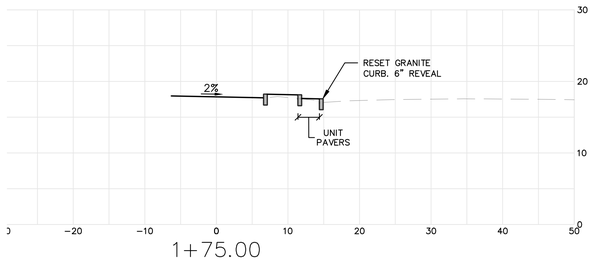
DESIGNED BY:	JLD
DRAWN BY:	JLD
CHECKED BY:	JLD
APPROVED BY:	JMT
COORD./DATUM:	NAD83/88
Date:	06/21/2024

SCALE: AS NOTED

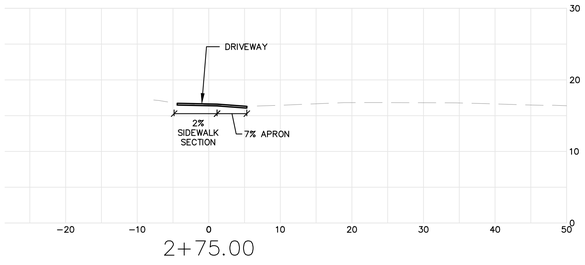
HAMMOND/CENTRAL STREET
BANGOR, MAINE

SIDEWALK IMPROVEMENTS PLAN

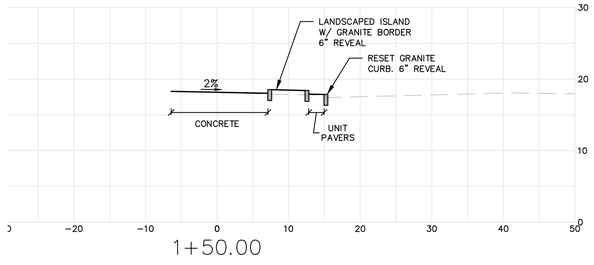
Job No.
Sheet No. C1



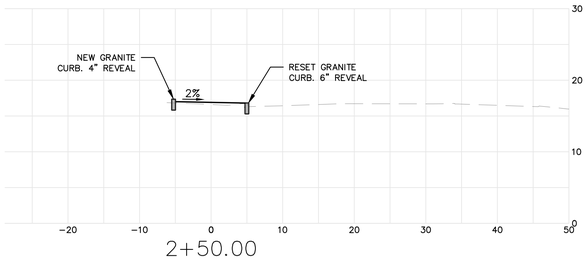
1+75.00



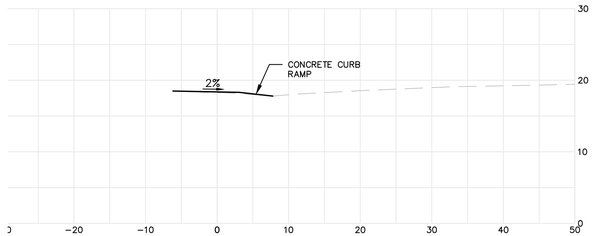
2+75.00



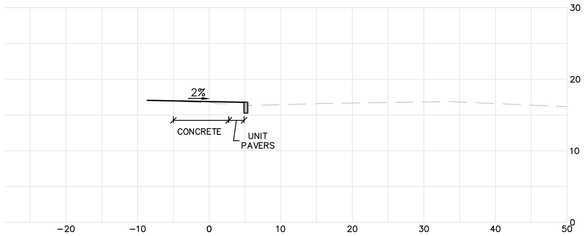
1+50.00



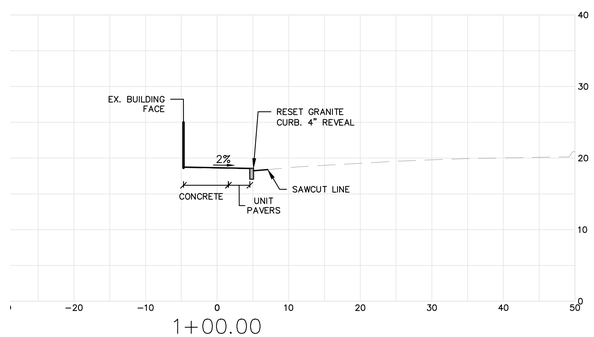
2+50.00



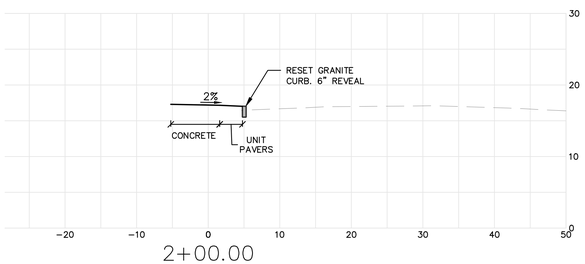
1+25.00



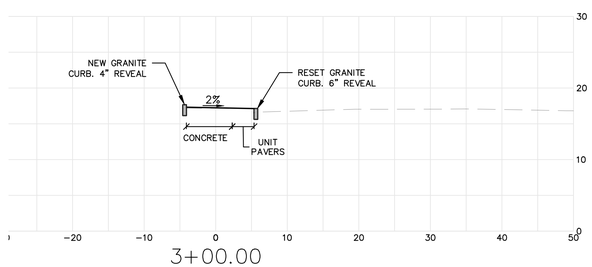
2+25.00



1+00.00



2+00.00



3+00.00

HORIZONTAL

CITY OF BANGOR
ENGINEERING DEPARTMENT
Bangor, Maine 04401
Tel: (207)992-4250
Fax: (207)992-4194

LICENSED LANDSCAPE ARCHITECT
Jefferson Davis Jr.
No. 3942
STATE OF MAINE

No.	Date	Revision

DESIGNED BY:	JLD
DRAWN BY:	JLD
CHECKED BY:	JLD
APPROVED BY:	JMT
COORD./DATUM:	NAD83/88
Date:	06/21/2024

SCALE: AS NOTED

HAMMOND/CENTRAL STREET
BANGOR, MAINE

CROSS SECTIONS

Job No.
Sheet No. **XS1**