

**PROJECT MANUAL
AND SPECIFICATIONS**

**STATE CAPITAL PARKING GARAGE
2026 REPAIRS**

93 Sewall Street
Augusta, Maine

Owner:

Bureau of General Services
111 Sewall Street, Cross State Office Building, 4th Floor
77 State House Station
Augusta, Maine 04333-0077

Prepared By:

Nate Powelson
Thornton Tomasetti
14 York Street
Portland, Maine 04101

Date:

September 2, 2026

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00 11 13
Notice to Contractors

State Capital Parking Garage 2026 Repairs

2995

Concrete and post tensioning repairs to the State Capital Parking Garage

The contract shall designate the Substantial Completion Date on or before *11 December 2026*, and the Contract Final Completion Date on or before *30 December 2026*.

1. Submit bids on a completed Contractor Bid Form (section 00 41 13), provided in the Bid Documents, include bid security when required, and scan each item as an attachment to an email addressed to: BGS.Architect@Maine.gov, so as to be received no later than **1:30:00 p.m. on 25 September 2026**. The email subject line shall be marked "**Bid for State Capital Parking Garage 2026 Repairs**".

Bid submissions will be opened and read aloud at **2:00 p.m.** on the date noted above at the Bureau of General Services office, accessible as a video conference call. Those who wish to attend the bid opening can access the video conference call by clicking on the "Join Bid Opening" link on the www.maine.gov/dafs/bgs/business-opportunities website.

Any bid received after the noted time will not be considered a valid bid and will remain unopened. Any bid submitted by any other means will not be considered a valid bid. In certain circumstances, the Bureau of General Services may require the Bidder to surrender a valid paper copy of the bid form or the bid security document. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.

2. Questions and comments on the *bid opening process* shall be addressed to: Division of Planning, Design & Construction, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077, BGS.Architect@Maine.gov.
3. Questions and comments regarding the *project* design specifications or drawings shall be directed in writing to the Consultant during the bid period prior to the question and comment deadline of 5:00 p.m. on 16 September 2027.

Thornton Tomasetti
Nathan Powelson
Npowelson@thorntontomasetti.com

4. ☒ Bid security is required on this project.
The Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.
or
☐ Bid security is not required on this project.

00 11 13
Notice to Contractors

5. ☒ Performance and Payment Bonds are required on this project.
If noted above as required, or if any combination of Base Bid and Alternate Bids amounts selected in the award of the contract exceeds \$125,000.00, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BGS website.
or
☐ Performance and Payment Bonds are not required on this project.
6. Filed Sub-bids *are not required* on this project.
7. ☐ Pre-qualified General Contractors are utilized on this project.
insert the company name, city and state for each
or
☒ Pre-qualified General Contractors are not utilized on this project.
8. ☒ An on-site pre-bid conference (☒ *mandatory* or ☐ *optional*) will be conducted for this project. The pre-bid conference is intended for General Contractors. Subcontractors and suppliers are welcome to attend. Contractors who arrive late or leave early for a mandatory meeting may be prohibited from participating in this meeting and bidding.
11 September 2026 @ 10 AM
On Site

or
☐ An on-site pre-bid conference will not be conducted for this project.
9. Bid Documents - full sets only - will be available on or about *3 September 2026* and may be obtained *online only* from:
<https://www.maine.gov/dafs/bgs/business-opportunities>
10. Bid Documents may be examined at:
Online

Notice to Contractors and Subcontractors**State Capital Parking Garage 2026 Repairs***Concrete and post tensioning repairs to the State Capital Parking Garage*

The cost of the work (prime Contractor contract) is approximately \$. The contract shall designate the Substantial Completion Date on or before *11 December 2026*, and the Contract Final Completion Date on or before *30 December 2026*.

1. Sealed Contractor bids, in envelopes plainly marked "Bid for *State Capital Parking Garage 2026 Repairs*" and addressed to:

*Desiree Snow
Bureau of General Services
4th Floor, Cross State Office Building, 111 Sewall Street
77 State House Station
Augusta, Maine 04333-0077*

will be opened and read aloud at *the address shown above* at **2:00:00 p.m. on 24 September 2026** . Any bid submitted after the noted time will not be considered a valid bid and will remain unopened.

2. The bids shall be submitted on the Contractor Bid Form (section 00 41 13) and Subcontractor Bid Form (section 00 41 16) provided in the Bid Documents. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.
3. Bid security *is required* on this project.
The Bidder shall include a satisfactory Bid Bond (sections 00 43 13 and 00 43 16) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.
4. Performance and Payment Bonds *are required* on this project.
The selected Contractor and Filed Sub-bid contractors shall furnish their respective 100% contract Performance Bonds (section 00 61 13.13 and 00 61 13.23) and 100% contract Payment Bonds (section 00 61 13.16 and 00 61 13.26) in their contract amounts to cover the execution of the Work. Bond forms are available on the BGS website.
5. Filed Sub-bids *are required* on this project.
The Bidder shall include in the bid all Filed Sub-bids identified in the Bid Documents and shown on the Contractor Bid Form (section 00 41 13). Filed Sub-bids are due at the Maine Construction Bid Depository at **3:00 p.m. on *insert date of Filed Sub-bid closing***. Bids submitted after the noted time will not be accepted.
6. There *are no* Pre-qualified General Contractors on this project.
If Pre-qualified General Contractors are identified for this project, the name of each company, with their city and state, are listed below.
7. An on-site pre-bid conference *will* be conducted for this project.
If a pre-bid conference is scheduled, it is *mandatory* for General Contractors and optional for Subcontractors and suppliers. Contractors who arrive late or leave early for a mandatory meeting

Notice to Contractors and Subcontractors

may be prohibited from participating in this meeting and bidding. *The meeting will take place at 10 AM on 11 September 2026.*

8. Bid Documents - full sets only - will be available on or about 3 September 2026 and may be obtained online from:

<https://www.maine.gov/dafs/bgs/business-opportunities>

9. Bid Documents may be examined at:

Online

00 41 13
Contractor Bid Form

Capital Parking Garage 2026 Repairs

2995

Bid Form submitted by: *email only to email address below*

Bid Administrator:

Desiree Snow

BGS.Architect@Maine.gov

Bureau of General Services

111 Sewall Street, Cross State Office Building, 4th floor

77 State House Station

Augusta, Maine 04333-0077

Bidder:

Signature: _____

Printed name and
title: _____

Company name: _____

Mailing address: _____

City, state, zip code: _____

Phone number: _____

Email address: _____

State of
incorporation,
if a corporation: _____

List of all partners,
if a partnership: _____

The Bidder agrees, if the Owner offers to award the contract, to provide any and all bonds and certificates of insurance, as well as Schedule of Values, Project Schedule, and List of Subcontractors and Suppliers if required by the Owner, and to sign the designated Construction Contract within twelve calendar days after the date of notification of such acceptance, except if the twelfth day falls on a State of Maine government holiday or other closure day, or a Saturday, or a Sunday, in which case the aforementioned documents must be received before 12:00 noon on the first available business day following the holiday, other closure day, Saturday, or Sunday.

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

00 41 13
Contractor Bid Form

1. The Bidder, having carefully examined the *Capital Parking Garage 2026 Repairs* Project Manual dated 8/31/2026, prepared by *Thornton Tomasetti* (Consultant), as well as Specifications, Drawings, and any Addenda, the form of contract, and the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the **Base Bid** amount of:

\$ _____ .00

Note: Base Bid includes Allowances and Unit Price Quantities as applicable (see below).

2. Allowances *are not included* on this project.
No Allowances

<u>No.</u>	<u>Description</u>	
1	<i>Not used</i>	<u>\$0.00</u>
2	<i>Not used</i>	<u>\$0.00</u>
3	<i>Not used</i>	<u>\$0.00</u>
4	<i>Not used</i>	<u>\$0.00</u>
5	<i>Not used</i>	<u>\$0.00</u>

3. Alternate Bids *are not included* on this project.
No Alternate Bids

Any dollar amount line below that is left blank by the Bidder shall be read as a bid of **\$0.00**.

<u>No.</u>	<u>Description</u>	
1	<i>Not used</i>	<u>\$</u>
2	<i>Not used</i>	<u>\$</u>
3	<i>Not used</i>	<u>\$</u>
4	<i>Not used</i>	<u>\$</u>
5	<i>Not used</i>	<u>\$</u>

00 41 13
Contractor Bid Form

4. Unit Prices are included in this project.
5. Unit prices are as shown below.

Any dollar amount line below that is left blank by the Bidder shall be read as a bid of **\$0.00**. *Note: ADD and DEDUCT unit prices cannot differ by more than 20%.*

<u>No.</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity*</u>	<u>Unit Price</u> <u>ADD</u>	<u>Unit Price</u> <u>DEDUCT</u>
1	<i>PT Sheathing Repair</i>	<i>LF</i>	<u>4</u>	\$	\$
2	<i>PT Tensioning – Button Head</i>	<i>EA</i>	<u>2</u>	\$	\$
3	<i>Supplemental Steel Beam</i>	<i>EA</i>	<u>7</u>	\$	\$
4	<i>Overhead Concrete Knockdown</i>	<i>EA</i>	<u>20</u>	\$	\$
5	<i>Overhead Concrete Repair</i>	<i>SF</i>	<u>50</u>	\$	\$
6	<i>Slab on Grade Concrete Repair</i>	<i>SF</i>	<u>110</u>	\$	\$
7	<i>Concrete Deck Repair</i>	<i>SF</i>	<u>100</u>	\$	\$
8	<i>CMU Spall Repair Concrete Repair</i>	<i>SF</i>	<u>20</u>	\$	\$
9	<i>Concrete Column Repair</i>	<i>SF</i>	<u>155</u>	\$	\$
10	<i>Top of Column Repair</i>	<i>EA</i>	<u>26</u>	\$	\$
11	<i>Concrete Stair Repairs</i>	<i>SF</i>	<u>25</u>	\$	\$
12	<i>Fence Repair</i>	<i>EA</i>	<u>14</u>	\$	\$
13	<i>Membrane Repairs</i>	<i>SF</i>	<u>95</u>	\$	\$
14	<i>Drain Replacement</i>	<i>EA</i>	<u>1</u>	\$	\$
15	<i>Sealant Replacement</i>	<i>LF</i>	<u>715</u>	\$	\$
16	<i>Wall Repair</i>	<i>SF</i>	<u>10</u>	\$	\$

* **Unit price quantities are included in the Base Bid amount above.** If installed quantities differ, then cost will be adjusted by Change Order according to the ADD and DEDUCT unit prices as provided above. Quantities shall be verified by the Consultant.

6. Bid security *is required* on this project.
If noted above as required, or if the Base Bid amount exceeds \$125,000.00, the Bidder shall include with this bid form a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with this completed bid form submitted to the Owner.
7. Filed Sub-bids *are not required* on this project.
If noted above as required, the Bidder shall include with this bid form a list of each Filed Sub-bidder selected by the Bidder on the form provided (section 00 41 13F).

00 43 13
Contractor Bid Bond

Bond No.: insert bond number

We, the undersigned, insert company name of Contractor, select type of entity of insert name of municipality in the State of insert name of state as principal, and insert name of surety as Surety, are hereby held and firmly bound unto select title of obligee in the penal sum of five percent of the bid amount, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, signed this insert date, i.e.: 8th day of select month, select year, which is the same date as that of the first specified bid due date, or subsequent bid due date revised by addendum.

The condition of the above obligation is such that whereas the principal has submitted to the Owner, or State of Maine, to a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing, for the construction of insert name of project as designated in the contract documents

Now therefore:

If said bid shall be rejected, or, in the alternate,

If said bid shall be accepted and the principal shall execute and deliver a contract in the form of contract attached hereto, properly completed in accordance with said bid, and shall furnish a bond for the faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

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

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

00 43 13
Contractor Bid Bond

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

Signed and sealed this *insert date, i.e.: 8th* day of *select month, select year*, which is the same date as that of the first specified bid due date, or subsequent bid due date revised by addendum.

Contractor

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

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

State of Maine CONSTRUCTION CONTRACT

Large Construction Project

*This form is used when the Contract value is \$50,000 or greater.
The Project Manual, Specifications and Drawings, and any Addenda are considered part of this Contract.*

Agreement entered into by and between the contracting entity name hereinafter called the **Owner** and Contractor company name hereinafter called the **Contractor**.

BGS Project No.: number assigned by BGS

Other Project No.: _____

For the following Project: title of project as shown on bid documents at facility or campus name, municipality, Maine.

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

The *Owner* and *Contractor* agree as follows:

ARTICLE 1 COMPENSATION AND PAYMENTS

1.1 The Owner shall pay the Contractor to furnish all labor, equipment, materials and incidentals necessary for the construction of the Work described in the Specifications and shown on the Drawings the Contract Amount as shown below.

Base Bid	<u>\$0.00</u>
<u>Alternate Bid number and name or "no Alternates"</u>	<u>\$0.00</u>
<u>Alternate Bid number and name or "no Alternates"</u>	<u>\$0.00</u>
<u>Alternate Bid number and name or "no Alternates"</u>	<u>\$0.00</u>
<u>Alternate Bid number and name or "no Alternates"</u>	<u>\$0.00</u>
<u>Alternate Bid number and name or "no Alternates"</u>	<u>\$0.00</u>
Total Contract Amount	<u>\$0.00</u>

1.2 The Contractor's requisition shall contain sufficient detail and supporting information for the Owner to evaluate and support the payment requested.

1.2.1 Payments are due and payable twenty-five working days from the date of receipt of a Contractor requisition which is approved by the Owner.

1.2.2 Provisions for late payments are governed by 5 M.R.S. Chapter 144, *Payment of Invoices Received from Business Concerns*, and interest shall be calculated at 1% per month.

ARTICLE 2 COMMENCEMENT AND COMPLETION DATES

2.1 The Work of this Contract shall commence no sooner than the date this document is executed by the approval authority, or a subsequent date designated in the contract documents.

2.2 The Substantial Completion Date shall be _____.

2.3 The Work of this Contract shall be completed on or before the Contract Final Completion Date of _____.

2.4 The Contract Expiration Date shall be _____. (This date is the Owner's deadline for internal management of contract accounts. The Contract Expiration Date does not directly relate to any contract obligation of the Contractor.)

ARTICLE 3 INELIGIBLE BIDDER

3.1 By signing this contract the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Bureau of General Services may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.

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

3.3 The Contractor shall not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs or State of Maine projects.

ARTICLE 4 CONTRACTOR'S RESPONSIBILITIES

4.1 On this project, the Contractor shall furnish the Owner the appropriate contract bonds in the amount of 100% of the Contract Sum. Contract bonds are mandated if the Contract Sum exceeds \$125,000, or if bonds are specifically required by the Contract Documents.

4.2 The Contractor shall comply with all laws, codes and regulations applicable to the Work.

4.3 The Contractor shall acquire all permits and third-party approvals applicable to the Work not specifically identified as provided by the Owner. Costs for Contractor-provided permits and third-party approvals shall be included in the Contract Sum identified in Section 1.1 above.

4.4 The Contractor shall remain an independent agent for the duration of this Contract, shall not become an employee of the State of Maine, and shall assure that no State employee will be compensated by, or otherwise benefit from, this Contract.

4.5 The Contractor shall be responsible for any design cost, construction cost, or other cost incurred on the Project to the extent caused by the negligent acts, errors or omissions of the Contractor or their Subcontractors in the performance of Work under this Contract.

ARTICLE 5 OWNER'S RESPONSIBILITIES

5.1 The Owner shall provide full information about the objectives, schedule, constraints and existing conditions of the project. The Owner has established a budget with reasonable contingencies that meets the project requirements.

5.2 By signing this contract, the Owner attests that all State of Maine procurement requirements for this contract have been met, including the solicitation of competitive bids.

ARTICLE 6 INSTRUMENTS OF SERVICE

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

ARTICLE 7 MISCELLANEOUS PROVISIONS

7.1 This Contract shall be governed by the laws of the State of Maine.

7.2 The Owner and Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to this Contract. Neither party to this Contract shall assign the Contract as a whole without written consent of the other party, which consent the Owner may withhold without cause.

7.3 Notwithstanding any other provision of this Agreement, if the Owner does not receive sufficient funds to fund this Agreement or funds are de-appropriated, or if the Owner does not receive legal authority from the Maine State Legislature or Maine Courts to expend funds intended for this Agreement, then the Owner is not obligated to make payment under this Agreement; provided, however, the Owner shall be obligated to pay for services satisfactorily performed prior to any such non-appropriation in accordance with the termination provisions of this Agreement. The Owner shall timely notify the Contractor of any non-appropriation and the effective date of the non-appropriation.

ARTICLE 8 CONTRACT DOCUMENTS

8.1 The Project Manual, Specifications and Drawings, and any Addenda, together with this agreement, form the contract. Each element is as fully a part of the Contract as if hereto attached or herein repeated.

8.2 Specifications: *indicate date of issuance of project manual*

8.3 Drawings: *note here or attach each sheet number and title*

8.4 Addenda: *note each addenda number and date, or "none"*

BGS Project No.: _____

The Contract is effective as of the date executed by the approval authority.

OWNER**CONTRACTOR**

Signature *Date*
*name and title**name of contracting entity*
*address**telephone*
email address

Signature *Date*
*name and title**name of contractor company*
*address**telephone*
email address
*Vendor Number**Indicate the names of the review and approval individuals appropriate to the approval authority.*

select proper approval authority			
Reviewed by:		Approved by:	
<i>Signature</i> <i>Date</i> <i>insert name</i>		<i>Signature</i> <i>Date</i> <i>John Kenney, P.E.</i>	
<i>Project Manager/ Contract Administrator</i>		<i>Director, Planning Design and Construction Division (PDCD)</i>	

00 61 13.13
Contractor Performance Bond

Bond No.: insert bond number

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

The condition of the above obligation is such that if the principal shall promptly and faithfully perform the contract entered into this insert date, i.e.: 8th day of select month, select year, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of insert name of project as designated in the contract documents, then this obligation shall be null and void.

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

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

00 61 13.13
Contractor Performance Bond

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

Signed and sealed this *insert date, i.e.: 8th* day of *select month, select year*, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Contractor

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

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

00 61 13.16
Contractor Payment Bond

Bond No.: insert bond number

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

The condition of the above obligation is such that if the principal shall promptly satisfy all claims and demands incurred for all labor and materials, used or required by the principal in connection with the work described in the contract entered into this insert date, i.e.: 8th day of select month, select year, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of insert name of project as designated in the contract documents, and shall fully reimburse the obligee for all outlay and expense with said obligee may incur in making good any default of said principal, then this obligation shall be null and void.

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

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

00 61 13.16
Contractor Payment Bond

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

Signed and sealed this *insert date, i.e.: 8th* day of *select month, select year*, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Contractor

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

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

SECTION 01 30 00

SUBMITTALS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. The CONDITIONS OF THE CONTRACT, all Drawings, and all Sections of Division 1 are hereby made a part of this Section.

1.02 WORK INCLUDED

- A. This Section specifies administrative and procedural requirements for submittals required for performance of work, including:

- 1. Product data

- B. Administrative Submittals: Refer to requirements specified in other Division 1 Specification Sections, and other Contract Documents, for administrative submittals, including:

- 1. Permits

- 2. Applications for payment

- 3. Performance and payment bonds (where required).

- 4. Insurance certificates

- 5. Warranties

- 6. List of subcontractors

1.03 SUBMITTAL PROCEDURES

- A. Coordination of Submittals: Coordinate timing of submittals with construction activities. Transmit submittals well enough in advance of performance of work to avoid delays. Coordinate submittals of related elements of work.

- 1. Engineer may reject, or withhold action on submittals requiring coordination with other submittals until related submittals are received.

- B. Processing of Submittals: Allow sufficient review time to ensure installation will not be delayed because of time required to process submittals. Minimum processing times are as follows:

- 1. Review by Engineer: Allow ten (10) business days for review and processing.

2. No extension of Contract Time will be authorized due to failure to transmit submittals sufficiently in advance of scheduled performance of work.
- C. Contractors Preparation of Submittals: Place permanent label or title block on each submittal for identification. Indicate Project Name, Engineer's Project Number, Specification Section number and title, date of submittal, name and address of Engineer, name and address of Contractor, name and address of subcontractor and/or supplier, name of manufacturer, Drawing number and detail reference.
1. Contractor's Review and Action Stamp: Provide suitable space on label or title block for Contractor's review and action stamp. Stamp and sign each submittal to show Contractor's review and approval prior to transmittal to Engineer. Submittals not signed and stamped by Contractor will be returned without action.
 2. Engineer's Review and Action Stamp: Provide minimum 6 in. x 4 in. space on drawing for Engineer's review and action stamp. Deliver submittals to Engineer at address listed on cover of Project Manual.
 3. Modify and customize submittals as required to show interface with adjacent work and attachment to building.
- D. Transmittal of Submittals: Transmit each item with transmittal form. Identify Project, Contractor, subcontractor, major supplier; identify pertinent Drawing sheet and detail number and Specification section number, as appropriate, on transmittal form.
1. Source: Submittals received from sources other than Contractor will be returned without action.
 2. Deviations from Contract Documents: When products, materials or systems submitted deviate from Contract Documents, record deviations clearly on transmittal form, or separate attached sheet.
 3. If deviation includes design and/or material change, this shall be accompanied by design calculations stamped by a registered professional Engineer.
- E. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
1. All field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with the respect thereto;
 - a. the suitability of all materials with respect to the intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

- b. all information relative to the Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
 - c. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
 - F. Each Submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 - G. With each Submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.
 - H. After Engineer reviews submittal, revise and resubmit as required. Identify recipients to promptly report inability to comply with provisions.
 - I. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report inability to comply with provisions.
- 1.04 SUBMITTAL SCHEDULE
- A. Not required for this project.
- 1.05 SHOP DRAWINGS
- A. N/A
- 1.06 PRODUCT DATA
- A. Submittal Quantities: Submit product data in following quantities:
 - 1. Submit digital copies for review. One digital copy will be returned to Contractor for printing and distribution. Multiple copies will not be marked by Engineer.
 - B. Installer Copy: Verify that installer of work possesses a current copy of Engineer approved product data prior to installation.

1.07 ENGINEER'S ACTION

- A. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- B. Engineer's review and approval shall not relieve the Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with all requirements of this section, the general conditions of the Contract and the Engineer has given approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of paragraph 1.04.

1.08 DISTRIBUTION BY CONTRACTOR

- A. Distribution: When submittal is marked "APPROVED" or "APPROVED AS NOTED", make prints and copies and distribute to subcontractors, suppliers, fabricators, and other parties requiring information from submittal for proper coordination and performance of work. Print copies of shop drawings from approved reproducible only.

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. Drawings, Contract Conditions, and other Technical Specifications Sections apply to work of this Section insofar as applicable.

1.02 WORK INCLUDED

- A. This Section specifies construction facilities and temporary controls, including, but not limiting to:
 - 1. Temporary restrictions on construction activity.
 - 2. Temporary utilities.
 - 3. Temporary construction and support facilities.
 - 4. Temporary signage.
 - 5. Security and protection facilities.
- B. Contractor shall pay for all costs related to temporary facilities and utility service including but not limited to temporary heat, water and power, if required.

1.03 RELATED REQUIREMENTS

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
 - 1. CONTRACT AGREEMENT.
 - 2. Section 01 30 00: SUBMITTALS

1.04 SUBMITTALS

- A. Schedule: Submit a schedule indicating implementation and termination of each temporary utility within fifteen days of date established for Commencement of the Work.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of authorities having jurisdiction, codes, utility companies, OSHA, and industry standards including, but not limiting to:
 - 1. NFPA 241.
 - 2. NFPA 70.
 - 3. ANSI A10.
 - 4. NECA NJG-6.
- B. Electric Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.
- C. Inspections: Arrange for authorities having jurisdiction to inspect temporary utilities prior to use. Obtain required certifications and permits.

1.06 PROJECT CONDITIONS

- A. Conditions of Use: Maintain temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload temporary facilities. Do not allow hazardous, dangerous, or unsanitary conditions to develop on site.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials may be new or used but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.
- B. Lumber and Plywood:
 - 1. Signs and Directory Boards: Provide exterior grade, Medium Density Overlay (MDO) plywood, conforming to USDC PS1, of size and thickness indicated.
 - 2. Fences, Vision Barriers, and Safety Barriers: Provide exterior grade, C-D veneered plywood.

2.02 TEMPORARY UTILITIES

- A. Scope: Temporary utility work includes, but is not limited to:
 - 1. Electric power
 - 2. Telephone Service.

B. Temporary Electric Power and Light:

1. Power is currently available in the garage and can be used. Not all outlets are currently operational and may not provide easy access to all areas of work. Additional power maybe required and should be provided by the contractor.
2. Provide generator to run any large equipment.

C. Telephone Service: Provide cell phone contact for project superintendent and project manager for this project.

2.03 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES

A. Scope: Temporary construction and support facilities include, without limitation:

1. Temporary heat.
2. Temporary enclosures.
3. Construction aids.
4. Waste disposal services.
5. Water control.
6. Rodent and pest control.
7. Pollution and dust control.

B. Temporary Heat and Ventilation: Provide temporary ventilation required to maintain adequate environmental conditions to facilitate progress of work, to meet manufacturers specified minimum installation conditions, and to protect materials and finishes from damage due to temperature and humidity.

1. Ventilate enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors and gases.
2. Portable heaters shall be standard approved units with controls.
3. Pay costs of installation, inspection, maintenance, operation, removal, and fuel consumed.

C. Contractor's Field Offices and Sheds: Prior to installation of offices and sheds, consult with Engineer and Owner on location, access, and related facilities.

D. Sanitary Facilities: Contractor is required to provide their own sanitary facilities.

1. Maintain washrooms in clean and sanitary condition.
- E. Temporary Enclosures: Provide temporary weathertight enclosures of exterior walls as Work progresses. Design and construct temporary enclosures to provide acceptable working conditions, to provide weather protection for materials, to allow effective temporary heating, and to prevent entry of unauthorized persons.
1. Provide temporary exterior doors with self-closing hardware and padlocks.
 2. Design enclosures to be removable to allow handling of materials.
- F. Construction Aids: Provide construction aids and equipment required by personnel to facilitate execution of the work; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.
1. Refer to respective sections for particular requirements for each trade.
 2. When permanent stair framing is in place, provide temporary treads, platforms, and railings, for use by construction personnel.
- G. Use of Elevator: Will not be permitted for construction use.
- H. Waste Disposal: Maintain all areas under Contractor's control free of debris. Initiate and maintain a specific program to prevent accumulation of debris at construction area, storage and parking areas, or along access roads.
1. Provide containers for deposit of debris.
 2. Schedule daily collection and disposal of debris.
 3. Provide additional collections and disposals of debris whenever the daily schedule is inadequate to prevent accumulation.
- I. Water Control: Provide methods to control surface water to prevent damage to Project, site, and adjoining properties.
- J. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and properties.
- K. Pollution Control: Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations. Provide equipment and personnel, perform emergency measures required to contain any spillage and to remove contaminated soils or liquids.
1. Take special measures to prevent harmful substances from entering public waters.

2. Prevent disposal of wastes, effluents, chemicals, or other such substances in sanitary or storm sewers.
 3. Provide systems for control of atmospheric pollutants.
 4. Prevent toxic concentrations of chemicals.
 5. Prevent harmful dispersal of pollutants to atmosphere.
- L. Dust Control: Provide positive methods and apply dust control materials to minimize raising dust from construction/demolition operations. Provide positive means to prevent air-borne dust from dispersing into the atmosphere or into occupied areas.

2.04 TEMPORARY SIGNAGE

- A. Scope: Temporary signage includes, but is not limited to:
1. Traffic.
 2. Pedestrian.
 3. Means of Egress.
 4. Other signage as required in the Contract Documents or required by the owner.
- B. Sign Structure and Framing: New or used, wood or metal, in sound condition structurally adequate to work and suitable for specified finish.
- C. Rough Hardware: Galvanized steel or cadmium plated.
- D. Paint: Exterior quality.

2.05 SECURITY AND PROTECTION FACILITIES

- A. Scope: Security and protection facilities includes, but is not limited to:
1. Temporary fire protection.
 2. Barricades, warning signs, lights.
 3. Temporary access routes.
 4. Security procedures.

- B. Temporary Fire Protection: Provide and maintain suitable fire protection equipment and services. Establish procedures for fire protection for welding and other potentially hazardous construction operations. Ascertain and comply with requirements of Project insurance carrier, City of Portland and the State of Maine Fire Marshal. Permanent fire protection system may be activated to meet these requirements. Replace fusible link heads and other expended or discharged components at time of Substantial Completion.
 - 1. Locate temporary portable fire extinguishers in convenient locations, not less than one extinguisher per floor.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes.
- C. Construction Parking Control: Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations. Monitor parking of construction personnel's private vehicles:
 - 1. Maintain free vehicular access to parking spaces and through parking garage.
 - 2. Prohibit parking on or adjacent to access roads, or in non-designated areas.
 - 3. Contractor has been provided with spaces. See contract drawings.
- D. Safety Controls and Safety Signing:
 - 1. Detour signs shall have breakaway post assemblies conforming to the applicable provisions of MDOT Specifications.
- E. Barricades, Warning Signs, and Lights: Provide and maintain barricades, warning signs, warning lights, railings, walkways, and the like. Paint signs and barricades with appropriate colors, graphics, and warnings to inform public and job-site personnel of hazards.

PART 3 EXECUTION

3.01 MAINTENANCE, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit waste and abuse.
- B. Maintenance: Maintain temporary facilities in operating conditions; repair damages immediately upon discovery. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour per day basis.

- C. Termination and Removal: Unless otherwise requested by Engineer, remove each temporary facilities when no longer useful, or when replaced by permanent facility. Clean and renovate permanent facilities that have been used during construction period.

END OF SECTION

SECTION 01 60 00

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. The CONTRACT AGREEMENT, all Drawings, and all Sections of Division 1 are hereby made a part of this Section.

1.02 WORK INCLUDED

- A. This Section specifies administrative and procedural requirements for materials and equipment used for the Project.

1.03 MATERIAL AND EQUIPMENT INCORPORATED INTO THE WORK.

- A. Conform to applicable specifications and standards.
- B. Comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.
- C. Manufactured and Fabricated Products:
 - 1. Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - 2. Manufacture like parts of duplicate units to standard size and gages, to be interchangeable.
 - 3. Two or more items of the same kind shall be identical, by the same manufacturer.
 - 4. Products shall be suitable for service conditions.
- D. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.04 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.

- C. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.05 MANUFACTURERS' INSTRUCTIONS:

- A. When work is specified to comply with manufacturers' instructions, submit copies of said instructions, as specified in Section 01300, SUBMITTALS, distribute copies to persons involved, and maintain one set in field office.
- B. Perform work in accordance with details of instructions and specified requirements. Should a conflict exist between Specifications and manufacturer's instructions, consult with Engineer.

1.06 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site.
- B. Transport Products by methods to avoid Product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling or damage.
- D. Promptly inspect shipments to assure that Products comply with requirements, quantities are correct, and products are undamaged.

1.07 STORAGE AND PROTECTION

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

1.08 MATERIAL SUBSTITUTIONS

- A. Where products or materials are specified by manufacturer's name, trade name or catalog reference, the words "or approved equal" shall be understood to follow unless there is a statement specifically indicating that no substitution will be allowed. An item shall be considered equal to the item so named or described if in the opinion of the Engineer.
 - 1. It is at least equal in quality, durability, appearance, strength and design; including compliance with applicable specifications and compatibility with physical space allocations provided for the item;
 - 2. It performs at least equally the function imposed by the general design for the work;
 - 3. It conforms substantially, even with deviations to the detailed requirements for the item as indicated by the specifications.
 - 4. Contractor supplies a list of reference projects (3 min.) where they have successfully used this product.
- B. Where two or more products or materials are specified, the choice of these shall be optional with the Contractor.
- C. Material substitutions shall be listed in bid document. Material substitutions will be approved after contract has been awarded.
- D. Request constitutes a representation that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds, in all respects, specified Product;
 - 2. Will provide the same warranty for substitution as for specified Product;
 - 3. Will coordinate installation and make other changes which may be required for Work to be complete in all respects; and
 - 4. Waives claims for additional costs which may subsequently become apparent.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request on the form included at the end of this Section, or when acceptance will require substantial revision of Contract Documents.
- F. The Engineer will determine acceptability of proposed substitution, and will notify Contractor of acceptance or rejection in writing within a reasonable time.

- G. Any additional costs, or any loss or damage arising from the substitution of any materials, equipment or execution of work for those originally specified shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Engineer, unless such substitution was made at the written request or direction of the Engineer.

1.09 EQUIPMENT

- A. Contractor shall provide all necessary equipment to complete the Work.

END OF SECTION

SECTION 01 71 00

CLEANING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.
- B. Provide waste storage containers as directed by the Owner.
- C. Related work: In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. Conduct inspections to verify that requirements for cleanliness are being met.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

- A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

- A. Use only the cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

2.03 WASTE STORAGE CONTAINER

- A. The Contractor is responsible for providing a suitable waste storage container of sufficient size or numbers for the temporary storage of wastes generated by the work of this Section and other Sections of these Specifications.
- B. The Contractor is responsible for the proper and timely transfer of stored wastes to a proper off-site disposal.
- C. Demolition debris shall not be stored on the garage deck, pedestrian walkways or roads.

PART 3 – EXECUTION

3.01 PROGRESS CLEANING

A. General:

1. Retain stored items in an orderly arrangement, in designated areas allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this work, except in proper waste container(s).
3. Provide adequate storage for all debris and trash awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.
4. Waste containers shall be emptied, off site, a minimum of once per week.

B. Site:

1. Continuously inspect the site and pick up all scrap, debris, and waste material. Remove such items to the container(s) designated for their storage.
2. Daily and more often if necessary, inspect all arrangements of construction materials stored on the site. Restack, organize neatly, tidy or otherwise service arrangements to meet requirements of subparagraph 3.01-A-1 above.

C. Building:

1. Daily, and more often if necessary, inspect and pick up all scrap, debris, and waste material. Remove such items to the container(s) designated for their storage.
2. As required preparatory to installation of succeeding materials, clean the surfaces to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

3.02 FINAL CLEANING

- #### A. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.01 above.

B. Site:

1. Broom clean paved areas used by construction.

2. Rake grass and garden areas to remove construction debris.
3. Completely remove resultant debris.

C. Building:

1. Exterior:

- a. Visually inspect exterior building surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter caused by the work.
- b. Remove all traces of splashed materials from adjacent surfaces.
- c. Remove all unused construction material.
- d. Remove all temporary protection and shoring.
- e. Wash down all parking decks where work has been completed and/or affected by the work.

2. Interior:

- a. Visually inspect interior of building and remove all traces of soil, waste material, smudges, and other foreign matter caused by the work.

END OF SECTION

SECTION 02 07 00

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work included: Remove and demolish materials as indicated in the drawings.

1. Removal of materials and debris includes proper site storage and off-site disposal.

B. Should contractor discover upon demolition, concrete damage or deterioration of the structural steel or reinforcement, they shall, immediately and prior to performing any repairs to these surfaces, inform the Engineer of encountered conditions. The documents include procedures for “Temporary” concrete repairs.

C. Conform to all Federal, State and local safety requirements.

1.02 SUBMITTALS

A. Request for Engineer’s consent:

1. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Engineer and secure their written permission and the required Change Order prior to proceeding.

PART 2 PRODUCTS

2.01 TOOLS AND EQUIPMENT

A. Provide the adequate tools and equipment necessary to carry out the work of this Section and provide appropriate surface profile.

B. Do not use tools, products and/or equipment which could damage the portions of the building which are to remain.

C. Occupied spaces are located at within the footprint of the garage and equipment should be selected based on minimizing disruptions.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspections:

1. Inspect existing conditions, including elements subject to movement or damage during demolition.
2. After uncovering the work, inspect conditions affecting installation of new work.
3. Visually examine all areas of the project to determine actual conditions

B. Discrepancies:

1. If uncovered conditions are not as indicated, immediately notify the Engineer and secure needed directions prior to proceeding.
2. Do not proceed until written directions are obtained from the Engineer.

3.02 PREPARATION PRIOR TO REMOVAL

- A. Contractor shall sound all concrete surfaces and confirm extent of repair area within locations marked on plan. The Engineer should be immediately notified of any discrepancies in quantities.
- B. Provide required protection including, but not necessarily limited to, shoring, bracing and support to maintain structural integrity of the work and existing members.
- C. Contractor shall construct barriers and other methods of protecting people and property prior to demolition.
 1. Barriers and other methods shall be constructed in a manner that is acceptable to the Owner and the Building Inspector.
- D. Barriers and other methods shall be maintained throughout construction.
 1. As a minimum, all portions of deck areas where demolition or construction is taking place shall be completely closed to public access.

END OF SECTION

SECTION 03 23 00

POST TENSION CABLES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The drawings, contract and other Division 1 specification sections apply to work of this section.
- B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 SUMMARY

- A. This Section includes furnishing all labor, tools, materials, equipment and services necessary to properly splice broken Post Tension Cables. The existing tendons are paper wrapped 1/4 inch diameter wires bundled together.
- B. This section specifies furnishing, installing and stressing tendons in post tensioned building framing members as shown on the Drawings and described herein.

1.03 RELATED SECTIONS

- A. Section 01 30 00 SUBMITTALS
- B. Section 01 50 00 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS
- C. Section 01 71 00 CLEANING
- D. Section 03 30 00 CONCRETE REPAIR

1.04 REFERENCES

- A. Codes and Standards: Comply with requirements of Post-Tensioning Manual, most recent edition, except where more stringent requirements are specified.
- B. ACI Guideline No. 222 – Corrosion of Metals in Concrete
- C. ICRI Guideline 310.1R-2008 Guide for Surface Preparation for the Repair of Deteriorated Concrete resulting from Reinforcing Steel Corrosion

D. ACI/ICRI Concrete Repair Manual

1.05 SUBMITTALS

- A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with Section 01300.
- B. All submittals shall be reviewed and returned within 10 working days.
- C. Incomplete submittals will not be reviewed.
- D. Submittals not reviewed by the Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Section 01300 have been complied with.
- E. Engineer will review submittals a maximum of two review cycles as part of their normal services. **If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate the Owner for additional review cycles.**
- F. Product Data: Submit producers or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
 - 1. Stressing procedures and jacking forces to result in the final effective forces.
 - 2. Provide the following information:
 - a. Name and certifications of installer and inspector.
 - b. Jack and gage calibration certification.
 - c. Jack and gage Serial or identification number.
 - d. Gage pressure to achieve required stressing force per supplied calibration chart.
 - e. Calculated strand elongation and actual elongations.
 - f. Actual gage pressure.
- G. Hardware and accessory data sheets.

1.06 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm experienced in producing post tension strand fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.
- B. Installation shall be performed by PTI certified installer or qualified technician with (3) three years' experience of (5) five projects of similar size and scope.
- C. Proper calibrated stressing equipment shall be supplied for the particular application and/or barrier cable system that are necessary to perform the work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in original sealed factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.
- B. Store product in location protected from freezing, damage, construction activity, precipitation, and direct sunlight, in strict accordance with manufacturer's recommendations.
- C. Handle all products with appropriate precautions and care as stated on Material Safety Data Sheet.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Post-Tensioning Steel:
 - 1. Conform to ASTM A416, Grade (270K) Low Relaxation strand, with anchorages developing at least 95 percent of the minimum specified ultimate strength of the prestressing steel.
 - 2. Provide low relaxation strand with a mill applied continuous permanent physical marking to permit field identification.
 - 3. Package material at the source in a manner that prevents physical damage to strand during transportation and protects material from deleterious corrosion during transit and storage.
- B. Post-tensioning materials comply with Post-Tensioning Manual Guide Specifications.
- C. Anchorages and Couplings:
 - 1. Design tendon anchorages and coupling to develop static and dynamic strength requirements of Section 3.1.6(a) and Section 3.1.8 (1) and (2) of Post-Tensioning Manual Guide Specifications for Post-Tensioning Materials.

Castings shall be nonporous and free of sand, blowholes, voids, and other defects.

2. Average compressive concrete bearing stress of anchorages shall not exceed limits set forth in Section 3.1.7 of Post-Tensioning Manual Guide Specifications for Post-Tensioning Materials.
3. For wedge type anchorages, design wedge grippers to preclude premature failure of prestressing steel due to notch or pinching effects under static and/or dynamic test load conditions stipulated under Paragraph 1 for both stress relieved and low relaxation prestressing steel materials.
4. Use couplings only at locations specifically indicated on contract documents or as approved.
5. Coat couplings with the same corrosion preventive coating used on strand and enclose in sleeves.
6. Anchorages shall include design features permitting a watertight connection of sheathing to anchorage, and watertight closing of wedge cavity, for stressing and nonstressing (fixed) anchorages. Design intermediate stressing anchorages to permit complete watertight encapsulation of prestressing tendons.
7. Anchorages for unbonded slab tendons shall receive an epoxy corrosion protective coating. Correct field damage to coating by field touch-up of coating surface.

D. Corrosion Preventive Coating of Unbonded Tendons:

1. Corrosion preventive coating material shall have following properties:
 - a. Provide corrosion protection to prestressing steel.
 - b. Provide lubrication between strand and sheathing.
 - c. Resist flow from sheathing within anticipated temperature range of exposure.
 - d. Provide a continuous nonbrittle film at lowest anticipated temperature of exposure.
 - e. Be chemically stable and nonreactive with the prestressing steel, sheathing material, and concrete.
2. Film shall be an organic coating with appropriate polar, moisture displacing, and corrosion preventive additives.
3. Minimum weight of coating material on prestressing strand shall be not less than 2.5 pounds (1.1 kg) of coating material per 100 feet (30 m) of 0.5-inch (13 mm) diameter strand, and 3.0 pounds (1.3 kg) of coating material per 100 feet (30 m) of 0.6-inch (15 mm) diameter strand. Amount of coating material used shall be sufficient to ensure essentially complete filling of annular space between strand and sheathing. Extend coating over entire tendon length.
4. Provide test results in accordance with Table I for corrosion preventative coating material.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Reference Spec Section 02070 Selective Demolition and 03310 Concrete Repair for removal and preparation of concrete surfaces.
- B. Do not expose tendons to excessive temperatures, welding sparks or electric ground currents.
- C. For wedge type anchorages, seat fixed end wedges, with a load of not more than 80 percent of minimum ultimate tensile strength of tendon. Seating load shall be sufficient to ensure adequate capacity of non-stressing anchorages.
- D. Minimum concrete cover for splices chucks and dog bone shall not be less than minimum cover to reinforcement at other locations in structure.

3.02 STRESSING

- A. After deteriorated concrete has been removed and tendons have been prepared, stress tendons by means of hydraulic jacks equipped with calibrated pressure gauges with an accuracy of 1 percent of scale range to permit the stress in tendons to be computed at any time. Equip hydraulic stressing rams used to stress unbonded single strand tendons with stressing grippers that will not notch strand more severely than normal anchoring wedges. Notify Resident Engineer 48 hours before any stressing operation that takes place.
 - 1. Conduct stressing operation as recommended by manufacturer of stressing tendons and in conformance with approved shop drawings.
 - 2. Keep records of elongation and of tension applied to each tendon and submit four copies to Engineer promptly upon the completion of post-tensioning of each member. Make elongation measurements at each stressing location to verify that effective force has been properly achieved. Measured elongations shall agree with calculated elongations within ± 5 percent. Resolve discrepancies exceeding ± 5 percent with Engineer. At time of stressing first member of each type, check stresses in individual tendons to establish a post-tensioning procedure producing uniform results.
 - 3. Complete stressing records during the tensioning operation, with following data recorded as a minimum:
 - a. Tendon mark or identification.
 - b. Required elongation.
 - c. Gauge pressure to achieve required elongation.
 - d. Actual elongation achieved.
 - e. Actual gauge pressure.
 - f. Date of stressing operation.
 - g. Signature of stressing operator or inspector.

- h. Serial or identification number of jacking equipment. Stressing records shall then be turned over to the Government and professional engineer of record for verification and approval.
- 4. Obtain written permission of Engineer before cutting tendons or capping post-tensioned anchorages.
- B. In no case shall tendons be anchored at stresses above 80 percent of specified tensile strength of tendon.
- C. Do not do any welding around tendons.
- D. Take reasonable care to prevent damage to tendons. In event that a single wire in multiple wire strands is broken, replacement will not be required providing total loss caused by broken strand is less than 2 percent of total prestress in the member. Contractor shall replace tendon at no additional cost to the Owner in event prestress loss through breakage is greater than 2 percent.

3.03 FINISHING

- A. Trimming of excess tendon length: As soon as possible after tendon tensioning and satisfactory check of elongation by Resident Engineer, cut excess tendon length. Tendon length protruding beyond wedges after cutting shall be between 0.75 and 1.25 inches.
- B. Tendons may not be cut by means of oxyacetylene cutting. Abrasive wheel or hydraulic shears are acceptable means of cutting tendons.
- C. Complete overhead concrete repair area. Under no circumstances shall grout or mortar used for pocket filling contain chlorides or other chemicals known to be deleterious to prestressing steel.
- D. Coat exposed strand and wedge areas with tendon coating material comparable to that used over length of the tendon and a watertight cap shall be applied over the coated area.

END OF SECTION

SECTION 03 30 00
CONCRETE REPAIR

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.
- B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

- A. Work included: Provide labor, materials, and equipment necessary to complete the work of this Section and, without limiting the generality thereof, furnish and include the following:
 - 1. Cast-in-Place concrete repairs

1.03 RELATED WORK:

- A. Traffic Coatings: Section 07180
- B. Joint Sealants: Section 07920

1.04 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with provisions of the latest edition of the following except where more stringent requirements are shown or specified:
 - 1.ACI 362.1R-97 "Guide for the Design of Durable Parking Structures."
 - 2.ACI 546R-04 "Concrete Repair Guide."
 - 3.ICRI Technical Guideline No. 03731 "Guide for Selecting Application Methods for the Repair of Concrete Surfaces."
 - 4.ICRI Technical Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion"

5.ICRI Technical Guideline No. 03732 “Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.”

6.“Code of Federal Regulations, Part 1926” per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

- B. Materials and installed work may require testing and retesting, as directed by the Engineer, at any time during progress of work. Allow free access to material stockpiles and facilities. Tests not specifically indicated to be done at Owner's expense, including retesting of rejected materials and installed work, shall be done at Contractor's expense.

1.05 SUBMITTALS

- A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with Division 1.
- B. All submittals shall be reviewed and returned to the Contractor within 10 working days.
- C. **Incomplete submittals will not be reviewed.**
- D. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with.
- E. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate the owner for Engineer's for additional review(s) cycles.
- F. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
 - 1.One Component, Early Strength Gaining, Cementitious Repair Material .
 - 2.High Modulus, Low Viscosity, High Strength Epoxy Grout.
 - 3.Admixtures.
 - 4.Primers/Bonding Agents.
- G. Contraction/Construction Joints: Reference Section 07920.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in manufacturer's original unopened containers and packaging bearing labels as to type and names of products and manufacturers.
- B. Deliver and store restoration material in manufacturer's original, unopened containers with the grade, batch and production data shown on the container or packaging.
- C. Protect restoration material during storage and construction from rain, ground water, and other sources of moisture and from staining or intermixture with soils or other types of material.
- D. Protect grout, mortar and other materials from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.
- E. Damaged Material: Remove any damaged or contaminated materials from job site immediately, including materials in broken packages or packages containing water marks or other evidence of damage, unless Engineer specifically authorizes correction and use on project.

1.07 PROTECTION/SITE CONDITIONS:

- A. Protect pedestrians, vehicles, building site and surrounding buildings from injury resulting from concrete restoration work.
- B. Clean surfaces only when air temperatures are above 40 degrees F and will remain so until concrete has cured.
- C. Do not perform any patching work if precipitation is expected. In case of unexpected precipitation, work shall cease and all uncured material shall be adequately protected with an impermeable polyethylene sheet.
- D. Do not perform any patching unless the air temperatures are between 40 degrees F and 86 degrees F and will remain a minimum of 40 degrees F for at least 48 hours after completion of work.
- E. If the ambient or subsurface temperature is expected to rise above 86 degrees F during curing then the hot weather requirements of ACI 305R hot weather concreting shall be followed.
- F. If the ambient or subsurface temperature is expected to fall below 40 degrees F during curing then the cold weather requirements of ACI 306R cold weather concreting shall be followed.

- G. Prevent patching materials from staining the face of other surfaces to be exposed to view. Immediately remove all patching materials that come into contact with such surfaces.
- H. Do not apply any material to frozen surfaces.
- I. If materials are installed and cured in temperatures outside of the range noted above or per the manufacturer's recommendations. Written approval and modified installation instructions must be provided from the manufacturer and submitted for record to the Engineer. This installation shall not void the warranty.

PART 2 PRODUCTS

2.01 FORM MATERIALS:

- A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.
- B. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 REINFORCING MATERIALS:

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed and ASTM A 706, Grade 60, deformed, weldable.
- B. Welded Wire Fabric: ASTM A 185, welded steel wire fabric. Provide welded wire fabric in flat sheets.
- C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use plastic or wire bar type supports complying with CRSI recommendations, unless otherwise specified. **Wood, concrete block, clay brick and other unspecified devices are not acceptable.**

2.03 REPAIR MATERIALS:

- A. All concrete repair materials shall be compatible with each other and with existing concrete. If possible all primers, repair material, and other products should be from the same manufacturer.
- B. All materials shall be compatible with chloride contents of 1.0 lbs/cy or greater.

- C. All pre-mixed concrete repair products shall be one-component cementitious products specifically noted for use in parking structures.
- D. All materials shall be resistant to stresses resulting from automobile traffic and freeze/thaw cycles, de-icing salts, continuous presence of moisture, and a temperature range of -30 to 100 degrees F.
- E. C.I.P. Topping Repairs.
 - 1. One-component, early strength gaining cementitious repair material with the following properties:
 - a. Minimum 28 day compressive strength: 5,000 psi.
 - b. Maximum water cement ratio: 0.40
 - c. Air Content: 6 1/2 +/- 2%
 - d. Shrinkage compensated
 - 2. Product shall be recommended for vertical application in parking garages in ACI Exposure Zone III.
 - 3. Manufacturers:
 - a. Sika
 - b. BASF Masterbuilders
 - c. Approved equal (must be submitted with bid)
- F. Overhead and Vertical Repairs.
 - 1. One-component, early strength gaining cementitious repair material with the following properties:
 - a. Maximum water cement ratio: 0.40
 - b. Approved for overhead and vertical surfaces
 - c. Integral corrosion inhibitor
 - d. Minimum compressive strength: 5000 psi.
 - 2. Product shall be recommended for overhead application in parking garages in ACI Exposure Zone III.
 - 3. Manufacturers:
 - a. Sika

- b. BASF Masterbuilders
- c. Approved equal (must be submitted with bid)

2.04 RELATED MATERIALS:

- A. Moisture-Retaining Cover: One of the following, complying with ANSI/ASTM C 171.
 - 1. Waterproof paper.
 - 2. Polyethylene film.
 - 3. Polyethylene-coated burlap.
- B. Reinforcement Primer: Provide primer that is compatible with concrete repair material and recommended by the concrete manufacturer.
- C. Liquid Membrane-Forming Curing Compound: Not permitted.
- D. Preformed Expansion Joint Formers:
 - 1. Bituminous Fiber Type, ASTM D 1751.
 - 2. Felt Void, Poly-Styrene Cap with removable top as manufactured by SUPERIOR.
- E. Slab Joint Filler: Multi-component polyurethane sealant (self-leveling type). Reference Section 07920.
- F. Epoxy Overlay Mortar: 2-component 100% solids, moisture-tolerant, epoxy resin mortar.
 - 1. Sikadur 22 Lo-Mod by Sika
 - 2. Silica Sand: Silica sand approved by epoxy resin mortar manufacturer.
- G. Epoxy Crack Injection: 2-component 100% solids, moisture tolerant, low viscosity epoxy adhesive, ASTM C 881.
 - 1. Sikadur 35 Hi-Mod LV by Sika
 - 2. Dural 50 LM by Euclid
 - 3. Or approved equal
- H. Waterproofing Crack Injection: Polyacrylic injection resin.
 - 1. Sikafix HH
 - 2. Or approved equal

2.05 CONCRETE MIXING:

- A. Mixing shall be in strict conformance with manufacturer's recommendations.

PART 3 EXECUTION

3.01 FORMS:

- A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.
- B. Design, construct, erect, maintain, and remove forms for cast-in-place concrete work in compliance with ACI 347.
- C. Design formwork to be readily removable without impact, shock or damage to existing and new concrete surfaces and adjacent materials.
- D. Chamfer exposed corners and edges as indicated or to match existing, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- E. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement as required to eliminate mortar leaks and maintain proper alignment.

3.02 PLACING REINFORCEMENT:

- A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
 - 1. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
 - 2. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
 - 3. Install welded wire fabric in flat sheets in as long lengths as practicable. Lap adjoining pieces at least two full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.03 PREPARATION OF FORM SURFACES

- A. Prior to patching, all surfaces must be prepared in accordance with this section of the specification and the manufacturers recommendations.
- B. Sawcut perimeter of damage area to a depth of 1/2" +/- (unless note otherwise on Drawings). Do not cut reinforcement. Remove, by hand, a section to confirm depth of reinforcement and adjust depth as required.
- C. The removal of all unsound concrete, using lightweight demolition hammers, not to exceed **15 pounds is recommended**. All removals to be performed with ICRI Guidelines, which shall be a part of these specifications, with regard to removal geometry, exposure, undercutting and cleaning of embedded reinforcement, and conditioning of edges and surfaces. **Damage caused as a result of using larger hammers will be repaired at the Contractors expense.**
- D. Steel reinforcement shall be thoroughly prepared by mechanical cleaning to remove all traces of rust.
- E. Pressure wash all surfaces, including reinforcement using 3000 to 4000 psi water blast, as required to remove all dust and dirt. The surface shall be saturate surface dry (SSD) with no standing water during application
- F. The result of this preparation shall render an exposed aggregate surface with a minimum surface profile of +/- 1/8". The surface shall be clean, meaning having complete exposure of sound original material without any deposits of contaminants, foreign matter or loose material, which could affect the bond or long term durability of the surface and the repair material.

3.04 INSPECTION:

- A. Inspect all concrete surfaces prior to application of primers/adhesives to insure proper preparation and surface drying.
- B. Conform to all manufacturers' preparation instructions.
- C. Inspect reinforcement for section loss at locations of deterioration. If loss exceeds 25% notify Engineer prior to proceeding with the repair.

3.05 PRIMING OF REINFORCING STEEL

- A. Any reinforcement exposed in the course of removing unsound materials shall be cleaned and prepared in accordance with the above specifications.

- B. All exposed reinforcement shall be primed with an approved bonding agent compatible with the repair materials. Coat all exposed surfaces in accordance with the manufacturer's instructions. Care must be taken to create a continuous coating on the full surface, including the underside of the undercut reinforcement. Observe manufacturer's minimum and maximum timing window for repair after application of primer.

3.06 CONCRETE REPAIR

- A. Following preparation, as specified above, contractor shall maintain work area in a clean condition, including materials, equipment and workers' footwear, to avoid tracking in of contaminants, dirt, dust, mud or other materials which may interfere with adhesion and durability of repairs.
- B. Prior to installation, all repair areas shall be kept continuously wet for at least 20 minutes prior to application of patching compound. Before placing repair material, excess water shall be blown, vacuumed or otherwise removed from the surface, leaving the surface damp or saturated/surface dry.
- C. Vigorously brush apply a slurry coat per manufacturer recommendations into all cavity surfaces. Unless noted otherwise in manufacturer's installation instructions. All primers shall be compatible with repair material.
- D. Within specified time frame of primer application, mix and place repair compound in accordance with manufacturer's instructions.
- E. Mix the precisely measured quantity of water specified by the manufacturer with full bags of patching compound only. Mix using slow speed drill (450 rpm maximum) with mud or paddle mixer. Motorized mortar mixers may be used for mixing larger quantities. Mix to a uniform consistency, free of lumps or dry material. Do not whip air into the mix. Do not overmix
- F. When placing the repair material, care shall be taken to assure that all corners and gaps under reinforcing steel and entire cavity profile is completely filled and properly compacted to prevent formation of voids or unbonded areas. "Work" the material into corners and gaps, and onto cavity sidewalls using pressure on the trowel to assure good contact between patch and substrates.
- G. Patches deeper than 1" (25 mm) may be extended by coarse aggregate addition. 20 pounds of clean, washed, 3/8" pea stone suitable in composition and surface profile for use as a concrete aggregate, may be added to each 50 pound bag of patching compound.
- H. Do not re-temper material which has begun to set. Discard any unused material after 20 minutes. Do not excessively wet repair surfaces after placement or as an aid to trowelling. Limit surface water addition to light misting and do not wet or rework repeatedly.
- I. Observe the curing requirements for each day's working conditions, as specified herein. Do not open to traffic or expose to weather until adequate strength has been reached, as affected by working and curing conditions.
- J. Finish: Provide finish to match existing or as required for membrane application.

3.07 EPOXY RESUFRACING REPAIR:

A. Preparation:

1. Surfaces must be free of moisture, dust, laitance, grease, oils, foreign particles and coatings. Surfaces must be clean and sound.
2. Mechanically prepare the concrete substrate to obtain a surface profile of +/- 1/16", equal to CSP 4 or greater based on ICRI surface profile guidelines.
3. Mask/Tape off all areas not to receive epoxy resin including joint sealants.
4. Provide protections below application areas to prevent leakage onto vehicles or pedestrians.

B. Application:

1. Apply at temperatures 40 degrees F and rising with substrate temperatures 5 degrees F above dew point.
2. Add clean oven-dried silica sand, 3 parts silica sand to 1 part epoxy resin and mix thoroughly for 3 to 5 minutes.
3. Apply epoxy resin neat as a primer coat to the prepared concrete surfaces. Apply epoxy mortar the area by trowel. Finish with finishing trowel. Do not exceed the maximum thickness of 1/2".
4. Allow epoxy to fully cure prior to allowing pedestrians and vehicle traffic over treated areas. Follow manufacturer recommended cure times.
5. Confirm manufacturer's installation instructions.

3.08 EPOXY CRACK INJECT

A. Preparation:

1. Surfaces must be free of moisture, dust, laitance, grease, oils, foreign particles and coatings. Surfaces must be clean and sound.
2. Clean interior of the crack with pressurized air to remove loose materials.
3. Drill injection port holes using drill with vacuum attachment to remove dust and debris generated by drilling
4. Determine port spacing based on the size and depth of the crack and manufacturer's recommendation. Generally, space injection ports 4-9 inches on center. Spacing shall allow travel of epoxy resin between ports and fill cracks to the maximum.

5. Drill holes to a minimum depth of 5/8 inch, exercising care in aligning the hole along the plane of the crack.
6. Insert ports approximately 1/2" allowing for small reservoir below the injection port.
7. Seal crack surface and injection ports with epoxy per manufacture's recommendations. Place a minimum epoxy cap of 1 inch wide by 1/4 inch thick. Allow epoxy resin cap sufficient time to cure before injecting.

B. Injection:

1. Inject epoxy in accordance with manufacturer's instructions.
2. Begin at entry port of lowest elevation and continue until uncontaminated epoxy flows out of the adjacent port. Start injection process at the widest part of the crack and continue until there is epoxy resins at the adjacent port
3. Injection pressure shall be kept as low as practical and shall generally be between 20 and 30 psi plus any hydrostatic head. Inject epoxy with in each port with steady pressure to achieve maximum penetration
4. Ensure the connection between the port and mix head f the injection nozzle is sufficiently tight to prevent epoxy from running out on the concrete surface.
5. After injection at a given port is complete, the port shall be plugged and injection started a next adjacent port.

C. Cleaning:

1. Clean concrete surface areas of excess epoxy material and injection ports after completing epoxy injection work.
2. Clean in a manner that will not damage concrete by light sand blasting or grinding.
3. Clean excess material so that no epoxy material or injection ports extend beyond the plane surface of the concrete.

3.09 WATERPROOFING CRACK INJECTION:

A. Preparation:

- 1.Remove all existing joint sealant.
- 2.Remove all loose and deteriorated material.

3. Surfaces of cavities and cracks need to be clean, free of loose particles, dust, oil and any other bond-breaking substances. Any dirt must be blown out by compressed air.

4. Conform to all manufacturers' preparation requirements.

B. Material Injection:

1. Drill and install ports at a 45 degree angle to the crack.

2. Install injection ports. Tighten mechanical packers so that they can withstand the maximum injection pressure. Inject material into port and until material comes out adjacent port and work the entire crack from bottom to top.

3. Install as per manufacturer's requirements.

3.10 CRACK CHASE REPAIR:

A. Preparation:

1. Remove all existing joint sealant.

2. Center routed groove on crack.

3. Remove all loose and deteriorated material.

4. All joint wall surfaces must be clean, sound, and frost free. Joint walls must be free of oils, grease, curing compound residues, and any other foreign matter that might prevent bond. This should be accomplished by blast cleaning or equivalent mechanical means.

5. Conform to all manufacturers' preparation requirements.

B. Sealant Installation:

1. Sealant shall conform to specification Section 07900; Joint Sealant.

2. Install as per manufacturer's requirements.

3. Install sealant evenly and recess 1/8" below surface. DO NOT OVERFILL JOINT.

3.11 MONOLITHIC REPAIR FINISHES:

A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, and as otherwise indicated.

- B. Trowel Finish: Apply trowel finish to monolithic slab surfaces indicated, including slab surfaces to be covered with carpet, resilient flooring, paint or other thin-film finish coating system.
- C. Slab finishes for floor coverings not indicated shall be coordinated with the Engineer prior to slab placement.

3.12 CONCRETE CURING AND PROTECTION:

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 as herein specified.
- B. Curing Methods: Perform curing of concrete by moist curing, by moisture-retaining cover curing. **Slab repairs shall be cured by moist curing methods for a minimum of 3 days.**
- C. Protection From Mechanical Injury: During the curing period, the concrete shall be protected from damaging mechanical disturbances, such as load stresses, heavy shock, and excessive vibration. All finished concrete surfaces shall be protected from damage by construction equipment, materials, or methods, by application of curing procedures, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

3.13 QUALITY CONTROL TESTING DURING CONSTRUCTION:

- A. Engineer shall verify reinforcement, including slab reinforcement (WWF or reinforcing bar).
- B. Concrete shall be sampled and tested for quality control during placement. Quality control testing shall include the items listed in paragraph D, this section, unless otherwise directed by the Engineer.

3.14 CLEANING:

- A. Clean off excess material adjacent to work in progress by methods and with cleaning materials approved by manufacturer of patch materials.

END OF SECTION

SECTION 07 18 00

TRAFFIC COATINGS

PART 1 GENERAL

1.01 SUMMARY

- A. The drawings and general conditions of the contract apply to work of this section.
- B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.
- D. The work described in this section will proceed while garage operations continue. Contractor to coordinate traffic patterns with garage manager for garage to remain open to traffic during construction. Contact information for garage manager will be provided after the award of the contract.
- E. There will be parking spaces made available to the contractor Monday through Sunday for the work and traffic alterations at any one-time during construction. Contractor to provide all traffic barriers signage, and traffic flagging personnel as required to maintain safe garage operation during construction. Security and flagging personnel are mandatory if two-way traffic is required on any ramp.
- F. Contractor's Use of Premises: During construction, Contractor shall have restricted use of the garage as described within the specifications. Contractor's use of premises is limited only by Owner's right to perform work or employ other contractors on these premises.

1.02 DESCRIPTION OF WORK

- A. Furnish all the labor, materials, equipment, and incidentals necessary to install traffic membranes. This work shall include restriping of parking spaces (as needed) and painting of directional information (as needed) to match existing layout and a five (5) year material and labor warranty.
- B. All existing membrane that is loose or not fully adhered shall be completely removed to concrete.
- C. The traffic membrane system shall be a complete system of compatible materials supplied by traffic membrane manufacturer to create a seamless waterproof membrane.

1.03 RELATED SECTIONS

- A. Section 01 30 00 SUBMITTALS
- B. Section 01 50 00 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS
- C. Section 01 71 00 CLEANING
- D. Section 03 30 00 CAST-IN-PLACE CONCRETE REPAIR
- E. Section 07 92 00 JOINT SEALANTS

1.04 SUBMITTALS

- A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with Section 01300.
- B. All submittals shall be reviewed and returned within 10 working days.
- C. Incomplete submittals will not be reviewed.
- D. Submittals not reviewed by the Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Section 01300 have been complied with.
- E. Engineer will review submittals a maximum of two review cycles as part of their normal services. **If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate the Owner for additional review cycles.**
- F. Product Data: Submit manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
 - 1. Traffic membrane system.
 - 2. Warranty: Submit a sample warranty that states that the material and labor/workmanship involved in this application will be warranted for 5 years from the date of substantial completion by the installer and traffic membrane manufacturer.
 - 3. Applicator's Approval: Submit letter from traffic membrane manufacturer stating applicator is approved to install vehicular traffic coating system specified in full compliance with the material warranty.

4. Material substitutions may be submitted for Engineer and Owner approval.

1.05 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following, except as otherwise indicated:
 1. ICRI Guidelines No. 03732 "Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays."
 2. "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).
 3. ACI 308: Standard Practice for Curing Concrete
- B. Contractor qualifications: Qualified to perform work specified by reason of experience or training provided by product manufacturer.
- C. Mockup: Provide mockup of at least 100 square feet to include surface preparation/profile, for each condition and allow for evaluation of slip resistance of Traffic Deck Coating System and adhesion test in accordance with ASTM D4541.
 1. Install mockup with specified coating types and with other components noted.
 2. Locate where directed by Engineer or Owner.
 3. Mockup may remain as part of Work if acceptable to Engineer and Owner.
- D. Notify manufacturer's authorized representative at least two weeks before start of work. Schedule minimum of 2 job site inspections by manufacturer's authorized representative, first scheduled before application of product to review surface preparation for each condition. Second, to review application/installation of membrane systems at each condition. **Application of elastomeric Traffic Deck Coating System without prior review by manufacturer will not void the warranty provided to the Owner.**

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in original sealed factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.
- B. Store product in location protected from freezing, damage, construction activity, precipitation, and direct sunlight, in strict accordance with manufacturer's recommendations.
- C. Recommended storage temperature is 75 degrees F.
- D. Handle all products with appropriate precautions and care as stated on Material Safety Data Sheet.

1.07 PROJECT CONDITIONS

- A. Do not use products under conditions of precipitation or freezing weather or when such conditions are imminent. Use appropriate measures for protection and supplementary heating to ensure proper drying and curing conditions in accordance with manufacturer's recommendations if application during inclement weather occurs.
- B. Ensure substrate is clean and dry prior to application.
- C. **Do not proceed with application of materials when deck temperature is less than 40 degrees F unless approved in writing by the manufacturer.**
- D. Protect all adjacent work from contamination due to mixing, handling, and application of preparation and repair products and Traffic Deck Coating System.
- E. Conform to all the manufacturer's recommendations regarding project/surface conditions.

1.08 WARRANTY

- A. System Manufacturer: Furnish Owner with written membrane warranty that system will be free of defects, water penetration and chemical damage related to system design, labor/workmanship or material deficiency.
- B. If material surface shows any of defects listed above, supply labor material to repair all defective areas and to repaint all damaged line stripes.
- C. Warranty period shall be 5 yrs commencing with date of acceptable Work.
- D. Perform any repair under this warranty at no cost to Owner.

E. Before Construction, provide Owner with sample of final warranty. Warranty shall be provided by manufacturer.

F. Vandalism and abnormally abrasive maintenance equipment are exempted from warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The only acceptable manufacturer and supplier allowed under this section is NEOGARD® Division of JONES-BLAIR® Company for recoat of Levels B and C. Kelmar Waterproofing Systems is to be approved manufacturer and supplier for the Level E Roof Deck membrane system.

2.02 MATERIALS

A. Vehicular Traffic Coating Material

1. Primer: Concrete and metal primers as required by NEOGARD®.
2. Flashing Tape: 86218 flashing tape (ETERNABOND™ WebSeal™) or approved equal having a minimum thickness of 30 mils.
3. Liquid Flashing: FC7500/FC7960 or FC7520/FC7962 polyurethane coating.
4. Aggregate: 7992T silica (quartz) sand or other aggregate approved by NEOGARD®.
5. Elastomeric Base Coat: FC7500/FC7960 polyurethane coating, gray in color.
6. Elastomeric Wear Coat: FC7510/FC7961 polyurethane coating.
7. Elastomeric Topcoat (Exterior/Interior Use): FC7540/FC7964 series polyurethane coating.
8. Sealant: Polyurethane sealant approved by NEOGARD®.

B. Match as close as possible to existing colors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect all areas involved in work to establish extent of work, access and need for protection of surrounding construction.

B. Protect all surroundings from Primers, Patching Repair Compounds and Finish products and to include, but not be limited to, windows, roofs, walkways, drives, automobiles, and landscaping.

C. Existing Concrete Decks: Verify that the work done under other sections meets the following requirements:

1. That the concrete deck surface is free of ridges and sharp projections.
2. That the concrete was cured for a minimum of 28 days. (Minimum of 5,000 psi compressive strength). Water-cured treatment of concrete is preferred. The use of concrete curing agents require written approval by the manufacturer.
3. That the concrete was finished by a power or hand steel trowel followed by soft hair broom to obtain light texture or “sidewalk” finish.
4. That damaged areas of the concrete deck be restored to match adjacent areas.

D. Existing Membrane

1. Remove all loose and delaminated traffic membrane down to sound substrate. Remove existing vehicle traffic bearing waterproofing down to concrete deck complete at areas indicated on the drawings. Remove all traffic membrane residue.

3.02 SITE VERIFICATIONS OF CONDITIONS

- A. Conduct all pre-application inspections of site verification with authorized Manufacturer’s Representative.
- B. Inspect all joints to ensure there is no deteriorated sealant, adhesion loss or non-elastomeric caulks installed in joints. Repair all deficient sealant.
- C. Inspect all through deck penetrations, including electrical, lighting, signage, plumbing, HVAC, fire sprinkler piping for watertight seal. Repair all deficiencies.

3.03 SURFACE PREPARATION:

A. NEW & EXISTING CONCRETE SURFACES:

1. Cleaning: Surfaces contaminated with oil or grease shall be vigorously scrubbed with a power broom and a strong non-sudsing detergent. Thoroughly wash, clean, and dry. Areas where oil or other contaminants penetrate deep into the concrete may require removal by mechanical methods.

2. Shot Blasting: Required surface preparation method for remedial construction, is also the preferred method for new construction. Mechanically prepare surface by shot blasting to industry standard surface texture (ICRI's CSP3-4) without causing additional surface defects in deck surface. Shot blasting does not remove deep penetrating oils, grease, tar or asphalt stains. Proper cleaning procedures should be followed to insure proper bonding of the deck coating.
3. Cracks and Cold Joints: Visible hairline cracks (up to 1/16" in width) in concrete and cold joints shall be cleaned, primed as required and treated with liquid flashing a minimum distance of 4" on each side of crack to yield a total thickness of 30 dry mils. Large cracks (over 1/16" in width) shall be routed and sealed with sealant. Sealant shall be applied to inside area of crack only, not applied to deck surface.
4. Control Joints: Seal secondary control joints with sealant. Sealant shall be applied to inside area of joint only, not applied to deck surface. Detail sealed joints with reinforcing fabric set in liquid flashing a distance of 4" on each side of joint to yield a total thickness of 30 dry mils.
5. Flashing and Reinforcing Tape: Install flashing tape where recommended by manufacturer prior to the application of elastomeric coating.
6. Surface Condition: Surface shall be clean and dry prior to coating.

3.04 APPLICATION:

A. New & Existing Concrete Surfaces:

1. Complete all preparatory work before application begins. Apply base coat, wear, and top coats with properly sized equipment to arrive at required mil thickness. Verify mil thickness of all coats by use of wet-mil thickness gauge.
2. Vacuum thoroughly all surfaces to be coated. Apply primer to all deck surfaces at manufacturers recommended application rate. Force primer into pores and voids to eliminate pinholes. Do not apply Primer over pre-striping.
3. Installation:
 - a. **Primer:** Apply primer at a rate of 300-500 sf/gallon to all exposed concrete and coated surfaces in strict accordance with procedures outlined by NEOGARD®. **Within 24 hours of application of primer, base coat must be applied. If base coat cannot be applied within 24 hours, re-prime.**

- b. **Base Coat:** Apply FC7500/7960 to surfaces at a rate of 60 sf/gallon (30 mils) in strict accordance with procedures outlined by NEOGARD®. Extend base coat over cracks and control joints which have received treatment.
- c. **Wearing Surface Coat:** Apply FC7510/7961 coat at a rate of 133 sf/gallon (12 mils) in strict accordance with procedures outlined by NEOGARD® and immediately broadcast **7992T aggregate**, evenly distributed, into wet coating at the rate of 10 to 15 pounds per 100 square feet.
- d. **Finish Top Coat:** When dry, remove excess aggregate and recoat surface with FC7540/7964 at rate of 133/gallon (12 mils) in strict accordance with procedures outlined by NEOGARD®.
- e. Total system coating thickness averages 54 dry mils exclusive of aggregate.

B. Existing Membrane Surfaces:

- 1. Complete all preparatory work before application begins. Apply wearing and topcoats with properly sized equipment to arrive at required mil thickness. Verify mil thickness of all coats by use of wet-mil thickness gauge.
- 2. Vacuum thoroughly all surfaces to be coated. Apply primer to all deck surfaces at manufacturers recommended application rate. Force primer into pores and voids to eliminate pinholes. Do not apply Primer over pre-stripping.

3.05 PROTECTION

- A. After completion of application, do not allow traffic on coated surfaces for a period of at least 24 - 36 hours at 75°F. and 50% R.H., or until completely cured.

3.05 FIELD QUALITY CONTROL

- A. Contractor to provide a minimum 100 square foot mock-up for Engineer review and adhesion testing. Adhesion testing to be performed by Contractor or their representative. Notify Engineer for review.
- B. Manufacturer's Field Service, Final inspection, and Warranty request: Manufacturer's representative will inspect finished surface preparation, application, and finished coating and may require further preparation or application to achieve appropriate result. In no case will manufacturer's representative approve surface or finish if following conditions are found:

pinholes, insufficient coating thickness, or any other conditions, that, in manufacturer's representative's opinion, may cause failure of installation.

3.06 CLEANING

- A. Conform with specification Section 01 71 00.
- B. Clean all equipment, tools, and spillage with manufacturer's recommend solvent.
- C. Clean up and properly dispose of all debris remaining on job site related to application.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

1. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.
2. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
3. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK

A. This Section includes joint sealants for the following locations:

1. Joints between PC spandrel and upturned beam.

1.03 RELATED SECTIONS

- A. Concrete Repair: Section 03 30 00.
- B. Traffic Membrane: Section 07 18 00.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.05 SUBMITTALS

- A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with 01300.
- B. All submittals shall be reviewed and returned within 10 working days.
- C. **Incomplete submittals will not be reviewed.**
- D. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with.
- E. Engineer will review submittals a maximum of two review cycles as part of their normal services. **If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate the Owner for additional review cycles.**
- F. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
 - 1. Joint Sealant Material.
 - 2. Certification that joint sealant product plus the primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds.
 - 3. Warranty.

1.06 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following, except as otherwise indicated:
 - 1. ACI 504R-90 "Guide to Sealing Joints in Concrete Structures."
 - 2. SWR "Applying Liquid Sealants."
 - 3. SWR "Sealants: The Professionals Guide."
 - 4. "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

- B. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver Materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.08 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg. F.
 - 2. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than or greater than that allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.09 WARRANTY

- A. System Manufacturer: Furnish Owner with written total responsibility guarantee that system will be free of defects, water penetration and chemical damage related to system design, workmanship or material deficiency, consisting of:
 - 1. Any adhesive or cohesive failures.
 - 2. Weathering
 - 3. Surface crazing.

- B. If material surface shows any of defects listed above, supply labor material to repair all defective areas and to repaint all damaged line stripes.
- C. Guarantee period shall be 5 yrs commencing with date of acceptable Work.
- D. Perform any repair under this guarantee at no cost to Owner.
- E. Before Construction, provide Owner with sample of final guarantee. Guarantee shall be provided by manufacturer.
- F. Vandalism and abnormally abrasive maintenance equipment are exempted from warranty.

PART 2- PRODUCTS

2.01 MATERIALS GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another, with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience and the traffic membrane.

2.02 ELASTOMERIC JOINT SEALANTS

- A. General building sealants: 2 or 3-component, Type II, non-sag, urethane sealant, conforming to ASTM C 920.
- B. Accepted general building sealants:
 - 1. "Sikaflex NP2," Sika Corp, Lyndhurst, NJ.
 - 2. "Sikaflex-2C NS/TG," Sika Corp., Lyndhurst, NJ.
 - 3. Approved equal.
 - 4. Self-leveling products are not acceptable.
 - 5. All products must be traffic grade.
- C. Packing and backer rod: See heading, "Joint Sealant Backing."
- D. Sealants used shall not stain masonry or concrete. Aluminum pigmented compounds not acceptable.

2.03 MISCELLANEOUS MATERIALS

- A. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean concrete, masonry, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressor.
 - 3. Remove laitance and form release agents from concrete.
- B. Joint Priming: Priming not required.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- D. Tooling of Non sag Sealants: Immediately after sealant application and prior to skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
 - a. Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.04 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION