

# PROJECT MANUAL

*June 10, 2025*

Repair and Preventive Maintenance

of the

## **7 LEBANON STREET PARKING GARAGE**

Hanover, New Hampshire

Client:

**TOWN OF HANOVER**

46 Lyme Road

Hanover, NH 03755

Consultant:

**DESMAN**

18 Tremont Street – Suite 300

Boston, MA 02108



**PROJECT MANUAL**  
BID DOCUMENTS AND SPECIFICATIONS  
for  
REPAIR AND PREVENTIVE MAINTENANCE  
of the  
**7 LEBANON STREET PARKING GARAGE**  
Hanover, New Hampshire

***June 10, 2025***

**D E S M A N**  
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**REPAIR and PREVENTIVE MAINTENANCE**  
**of the**  
**7 LEBANON STREET PARKING GARAGE**  
Hanover, New Hampshire

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**SECTION 00100**  
**INFORMATION TO BIDDERS**

Unit 1 - Bid Requirements, Contract Forms, Conditions of Contract, Unit 2 - Technical Specifications and the Drawings compose the Contract Documents.

The following definitions apply to all contract documents:

**‘Owner’** shall mean **National Development**.

**‘Engineer’**, **‘Architect’** & **‘Consultant’** shall mean **DESMAN** or other Professional Engineering firm/Engineer retained by the owner.

Proposals to be entitled to consideration must be made in accordance with the following instructions:

**A. BID PROPOSALS:**

1. Bid proposals shall be made upon the form provided herein, and all blank spaces shall be fully filled; numbers shall be stated both in writing and figures; the signature shall be in long hand; and the completed form shall be without interlineations, alteration or erasure.
2. Proposals shall be mailed enclosed in an opaque sealed envelope addressed to Mr. Peter Kulbacki, Director of Public Works, **Town of Hanover**, 194 Lebanon Street, Hanover NH 03755, marked "Bid Proposal", and bearing the title of the work (Repair and Preventive Maintenance of the 7 Lebanon Street Parking Garage) and the name of the bidder. Bids shall be received no later than Wednesday July 9, 2025 at 3:00 pm. A PDF copy of the bids should also be emailed by the same deadline to [DWP@hanovernh.org](mailto:DWP@hanovernh.org)
3. A mandatory pre-bid walk-through will be held on Friday June 20, 2025 at 10:00 am at the parking garage.
4. The Form of Contract, Addendum to Contract and General Conditions are included in this Project Manual. Bidders are expected to sign the Contract and include any requested changes with their bids.
5. Each proposal shall be properly signed as follows:  
When a CORPORATION with the name of the corporation, signature of an officer or other person properly authorized to enter into obligations for it and his title. When a PARTNERSHIP with name of partnership and signature of one of the partners. When SOLE PROPRIETORSHIP with his signature.

**B. SCHEDULE OF CONSTRUCTION:**

1. Execution of the Contract Work will involve consideration for allowing the Owner to carry on many of his normal functions. The Contractor shall perform his

work between the hours of 7AM through 3PM Monday through Friday. Work on weekends and after working hours on weekdays may be allowed at the discretion of the Owner.

C. STARTING AND COMPLETION TIME:

1. Mobilization shall start no more than 2 weeks after the award of the project.
2. All work as per the contract documents shall be completed in accordance with the successful Contractor's approved schedule.

D. GENERAL:

1. Should a bidder find discrepancies in, or omissions from the drawings or documents, or should he be in doubt as to their meaning, he should at once notify the Engineer, who will send a written instruction to all bidders. Neither Owner nor Engineer will be responsible for any oral instructions. Lack of such notification to the Engineer will indicate that the bidder considers the documents to be sufficiently complete to prepare a bid for complete installation including all necessary accessory parts.
2. The drawings and specifications shall be considered to be cooperative and anything appearing in the specifications which may not be indicated on the plans, or vice versa, shall be considered as part of the contract and must be executed by the contractor the same as though indicated by both.
3. Before submitting a proposal, bidders should carefully examine the drawings and specifications: Check all schedules, visit the site, fully inform themselves as to all existing conditions and limitations and shall include in the proposal a sum to cover the cost of all items included in that part.
4. Any addenda issued during the time of bidding shall be taken into account in preparing proposals, and shall become a part of the contract documents.

E. MISCELLANEOUS:

1. All (local, state, and federal) laws, codes, ordinances, and regulations pertaining to this class or type of construction shall be obeyed in regard to preparation of bids, letting of contracts, and complete installation of work.
2. Wherever in the contract documents, a particular article, material, device, form of construction, fixtures, etc., is shown or specified, such article, material, device, form of construction, fixture, etc., shall be known as standard. All PROPOSALS SHALL BE BASED ON STANDARDS SPECIFIED, and where two or more are named, bidders may bid on any so named. The Contractor is responsible for any extra cost due to changes required by substitutions or selection of any other than the first named product.

3. SUBSTITUTIONS for standards may be bid ONLY AS ALTERNATES, and written approval secured from the Engineer prior to award of the Contract.

F. CONSTRUCTION CONTRACT ADMINISTRATION:

1. Successful bidders shall furnish to the Engineer, at the time of signing the Contract, the following:
  - a. List of Sub-Contractors:
    - 1) Division of Work
    - 2) Amount of Sub-Contract
    - 3) Firm Name
    - 4) Address
    - 5) Telephone Number
    - 6) Representative
  - b. List of Major Material Suppliers:
    - 1) Division of Work
    - 2) Amount of Material Purchase Order
    - 3) Firm Name
    - 4) Address
    - 5) Telephone Number
    - 6) Representative
  - c. Contract Cost Breakdown:
    - 1) Shall be provided on AIA Form G-703.
2. Application for Payment:
  - a. The Contractor shall use AIA Form G-702.
  - b. Partial payments made as the work progresses shall in no way be considered as an acceptance of any portion of the labor or material embraced in the contract.
  - c. Material delivered at the site and approved by the Engineer and included in a certified estimate for partial payment shall become the property of the Owner and in no case shall such materials be removed from the site. However, if such material is stolen, destroyed or damaged by casualty before being used, the contractor will be required to replace it at his own expense. Storage of materials shall comply with the manufacturer's instructions or recommendations.
  - d. The Contractor, upon receipt of payment, shall reimburse each subcontractor for labor and materials for which the contractor has received payment from the Owner. The contractor upon receipt of payment, shall pay each material supplier for materials for which the contractor has

- received payment from the Owner.
- e. Contractor's requests for payment shall normally be submitted by the Contractor once a month.
  - f. During the course of work, a retainage of ten (5%) percent will be withheld from work performed.
  - g. All materials delivered on the site shall be paid for at the rate of ninety (95%) percent of the invoiced value of the material.
  - h. During the course of construction, payment on estimates approved by the Engineer and filed with the Owner shall be made within 30 days.
  - i. All monies paid on account to any contractor for materials or labor shall be regarded as funds in his trust for payment of any and all obligations relating to his contract and no such amount of monies shall be permitted to accrue to the contractor until all such obligations are satisfied. Evidence, satisfactory to the Owner, may be required to show that all current obligations relating to this work are satisfied before releasing any payment due on the work. Before payment of the final estimate, each contractor shall file an affidavit with the Owner, stating that monetary obligations relating to lienable items in connection with this work have been fulfilled. When the major portion of the project is substantially completed and occupied, or in use, or otherwise accepted and there exists no other reasons to withhold retainage, the retained percentages held in connection with such portion will be released from escrow and paid to the Contractor, withholding only that amount necessary to assure completion. The balance of funds will be paid to the Contractor within thirty days from the date of completion and after acceptance by the Engineer and Owner. Provided, however, that nothing in this Contract shall be construed to create an obligation or incur a liability against the Owner in excess of the encumbrances issued to support this Contract.
  - j. Payment for materials stored, but not installed, may require the Engineer to visit the Contractor's place of storage for verification of all items on the Contractor's certificate. He shall certify that the items are in agreement with the specifications, and approve their incorporation into the project.

G. PROGRESS SCHEDULE:

The progress schedule required by the owner shall be based on starting construction upon receiving the owner's authorization to proceed on or about July 21, 2025 and completion of the project as stipulated in the Contract. After contract is awarded, a meeting shall be held at the job before work is started, to be attended by representative of the General Contractor and all affected subcontractors, the Engineer, and the Owner's Representative to work out a definite schedule to be followed for starting and completing each Phase of the work and provide information for Progress Schedule.

H. PURPOSE AND INTENT:

In order to assist those invited to submit a proposal and their prospective subcontractors, the following sources are available for consultation:

Matthew W. Gallagher – DESMAN ..... Vice President/Project Mngr (617) 778-9882  
Peter Kulbacki – Town of Hanover ..... Director, Public Works (603) 643-3327

I. BID AND PERFORMANCE BOND:

No Bid Bond is required. Prior to signing the contract, the Owner may require that the selected contractor secure and post a Performance and Payment Bond in the amount of 100% of the contract price, and in a form approved by the Owner. All such bonds shall be issued by a surety acceptable to the Owner. The contractor is also required to submit a Five Year Corrective Certificate (Warranty) for all the work performed under this Contract.

J. TOWN RESERVES THE FOLLOWING RIGHTS:

1. No proposal submitted shall be further altered in any way after the bid opening, but the TOWN reserves the right to ask CONTRACTORS submitting proposals for clarification on the proposals submitted before forwarding a recommendation to the HANOVER TOWN Manager.
2. The TOWN of HANOVER reserves the right to reject any or all responses to this document, or to waive minor irregularities in the responses. The TOWN of HANOVER reserves the right to accept any proposal that will in its opinion best serve the interests of the TOWN of HANOVER, regardless of whether that bid is the lowest submitted.

**END OF SECTION**

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**SECTION 00200**  
**INSTRUCTION TO BIDDERS**

The "Instruction to Bidders", AIA Document A701-1987, is a part of this Contract, and is incorporated herein as fully as if here set-forth.

## **MODIFICATIONS TO INSTRUCTIONS TO BIDDERS**

### **ARTICLE 2 BIDDER'S REPRESENTATION**

Add:

- 2.1.4 Bidders must visit the site and take such other steps as may be necessary to ascertain the nature and location of the Work, and the general and local conditions which can affect the Work or cost thereof. In addition, bidders shall examine all Contract Documents in relation to the site, the existing structures and conditions of the ground, the obstacles which may be encountered and all other conditions having a bearing upon the performance of the Work, superintendence of the Work, requirements for heat, time of completion and all other relevant matters. Failure to take such steps shall not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner shall assume no responsibility for any understanding or representations concerning conditions made by any of its agent, representatives or employees prior to the execution of the Contract, unless in the Contract Documents.
- 2.1.5 The submission of a bid shall be taken as prima facie evidence of compliance with this Article 2. To arrange a time to make an additional site visit during regular business hours telephone Peter Kulbacki at (603) 643-3327 and make an appointment. Upon arrival at the site, state purpose before examining existing conditions.

### **ARTICLE 3 BIDDING DOCUMENTS**

- 3.1.3 Add the following: "However, incomplete sets of bidding documents will be issued upon:
1. Written request in duplicate. Letters must state the portion of the Bidding Documents requested, that all reproduction costs and shipping charges will be borne by the requesting bidder, and that the requesting bidder is responsible for any errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
  2. Such documents will be returned to Engineer within 10 days after bids are due."

#### **3.2 Interpretation or Correction of Bidding Documents**

Change the first sentence of 3.2.3 to read: Any interpretation, correction or change of the Bidding Documents will be made by Addenda, which will be filed with the Drawings and Specifications, and mailed to persons who obtained complete sets of Bidding Documents.

To the end of Article 3.2.3 add the sentence, "The bidder has the responsibility of reviewing the bidding Documents on file prior to submitting a bid to determine what Addenda, interpretations, corrections or changes have been made."

### 3.3 Substitutions

Delete Paragraph 3.3.1; substitute:

"3.3.1 The materials, products and equipment are identified in the specifications or described on the Drawings by one or more of the following methods:

- .1 Manufacturer's name
- .2 Brand Name.
- .3 Catalog designation.
- .4 Quality Standards.
- .5 Performance standards.
- .6 Generic names to denote accepted standards in trade."

Amend the first sentence of 3.3.2 to read, "No substitutions or equals will be considered prior to receipt of Bids unless...."

Amend the third sentence of 3.3.2 to read, "A statement, signed by an authorized person of the bidder, setting forth any deviations from the item specified, any changes in other materials, equipment or work that incorporation of the substitute or 'equal' would require shall be included."

## ARTICLE 6 POST BID INFORMATION

### 6.3 Submissions

Delete Article 6.3.3 and Substitute:

"6.3.3 Prior to the award of the Contract, the Engineer will notify the Bidder in writing if either the Owner or the Engineer, after due investigation, has reasonable and substantial objection to any person or organization on such list."

**END OF SECTION**

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**SECTION 00300**  
**BID FORM**

REPAIR and PREVENTIVE MAINTENANCE  
7 LEBANON STREET PARKING GARAGE  
Hanover, New Hampshire

**TO:** Peter Kulbacki  
Director of Public Works  
Town of Hanover  
194 Lebanon Street  
Hanover, NH 03755

**FROM:** (Bidder) \_\_\_\_\_  
(Address) \_\_\_\_\_  
(City, State, Zip) \_\_\_\_\_

Operating as (*strike out conditions that do not apply*) an individual, a company, a corporation organized and existing under the law of the State of \_\_\_\_\_, or a proprietorship, a partnership, or joint venture consisting of \_\_\_\_\_. Bidder (is/is not) registered to do business in the State of New Hampshire.

The undersigned hereby declares that he has carefully examined all bidding and contract documents, and hereby proposes and agrees to provide all supervision, labor, materials, plant, equipment, transportation and other facilities as necessary and/or required to execute all the work described by the aforesaid documents for the restoration of the referred projects, for the total consideration of:

\_\_\_\_\_  
\_\_\_\_\_

\$ \_\_\_\_\_. Sum of Base Bid Items 1 through 15.

ESTIMATED  
QUANTITY

UNIT  
PRICE

(BIDDER'S NAME)  
TOTAL  
COST

Bid Item #1 – Mobilization and Demobilization

For setting up all necessary general plant storage area and facilities required by State laws and City ordinances and the general mobilization and demobilization of equipment required for completion of the work as shown on drawings, specifications or work ordered by the Engineer.

LUMP SUM = \$ \_\_\_\_\_

Bid Item #2 – Large Area Full Depth Concrete Repair at Precast Tees

This work consists of the full depth reconstruction of supported pre-cast tee slab using 5,000 psi concrete. This work shall include marking out repair areas for review by the Engineer prior to demolition; shoring of adjacent slabs before demolition as necessary; sawcutting ½” at the periphery of repair area; demolish concrete (delaminated and sound) using 25 lb jackhammers; sandblast cleaning of existing reinforcing steel scheduled to remain; supplement with new epoxy coated reinforcing as directed by the engineer; formwork for new slabs; necessary falsework and placement of new concrete. Included in this work is provision of a tooled, sealed joint around the periphery of the repair area. Cut out and remove existing WWF leaving at least two grids along perimeter of repair. Install new epoxy coated 6x6-W2xW2 WWF. The work shall be as per Detail 1/R-5 and in accordance with Sections 03200, 03240, 03300 (or 03320) and 07900 of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

\_\_\_\_\_ 400 \_\_\_\_\_ SF x \$ \_\_\_\_\_ /SF = \$ \_\_\_\_\_

Bid Item #3 – Small Area Full Depth Concrete Repair at Precast Tees

This work consists of the full depth reconstruction of supported pre-cast tee slab using 5,000 psi concrete. This work shall include marking out repair areas for review by the Engineer prior to demolition; shoring of adjacent slabs before demolition as necessary; sawcutting ½” at the periphery of repair area; demolish concrete (delaminated and sound) using 25 lb jackhammers; sandblast cleaning of existing reinforcing steel scheduled to remain; supplement with new epoxy coated reinforcing as directed by the engineer; formwork for new slabs; necessary falsework and placement of new concrete. Included in this work is provision of a tooled, sealed joint around the periphery of the repair area. The work shall be as per Detail 2/R-5 and in accordance with Sections 03200, 03240, 03300 (or 03320) and 07900 of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

\_\_\_\_\_ 40 \_\_\_\_\_ SF x \$ \_\_\_\_\_ /SF = \$ \_\_\_\_\_

Bid Item #4 – Partial Depth Cast-in-Place Slab Repair

Partial depth cast-in-place slab repair shall include marking out repair areas for review by the Engineer prior to demolition. Work shall include the demolition of deteriorated areas at the supported cast-in-place floor areas and the subsequent placement of new 5,000-psi concrete. The repair of deteriorated concrete consists of marking out the repair area in the presence of the

		(BIDDER'S NAME)
ESTIMATED QUANTITY	UNIT PRICE	TOTAL COST

engineer; sawcutting (1/2" deep) around perimeter of the repair area; removal of existing concrete slab (delaminated and sound) using 25 lb chipping hammers to a depth of 3/4" below the existing reinforcing; sandblast clean exposed reinforcing; placing, finishing and curing new concrete. Included in this work shall be the provision of a tooled joint around the periphery of the repair area and sealing the same with a two component polyurethane sealant. The work and any new reinforcing shall be as per Detail 2/R-6 and in accordance with Sections 03200, 03240, 03300 (or 03320) and 07900 of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

220 SF x \$ \_\_\_\_\_ /SF = \$ \_\_\_\_\_

**Bid Item #5 – Overhead Cast-in-Place Concrete Slab Repair**

This work shall include marking out repair areas for review by the Engineer prior to demolition. Overhead cast-in-place concrete slab repair and any new reinforcing shall be as per Detail 5/R-6. Repair of the undersides of the deteriorated cast-in-place concrete slabs using an approved trowel applied or pumpable mortar. This work consists of marking out repair areas for review by the Engineer prior to demolition, sawcutting around periphery of repair area, removal of delaminated, spalled and sound concrete to a depth of 3/4" behind existing reinforcing using chipping hammers; sandblast clean exposed reinforcing; supplement steel that has lost more than 20% of its original cross section. Patch repair area using a polymer modified repair mortar as per manufacturers' recommendations and in accordance with Section 03340 (or 03345) of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

60 SF x \$ \_\_\_\_\_ /SF = \$ \_\_\_\_\_

**Bid Item #6 – Overhead Beam Repair**

This work consists of repair of deteriorated concrete at the beams using an approved trowel applied or pumpable mortar. Prior to demolition contractor should shore adjacent beams and overhead slabs. This work consists of marking out repair areas for review by the Engineer prior to demolition, sawcutting around periphery of repair area, removal of delaminated, spalled and sound concrete to a depth of 3/4" behind existing reinforcing using chipping hammers, sandblast cleaning of exposed reinforcement and patch repair area using a polymer modified repair mortar as per manufacturers recommendations This work shall be as per Detail 6/R-6 and in accordance with Section 03340 (or 03345) of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

120 SF x \$ \_\_\_\_\_ /SF = \$ \_\_\_\_\_

**Bid Item #7 – Concrete Tee Stem Repair**

This work shall include marking out repair areas for review by the Engineer prior to demolition.

ESTIMATED  
QUANTITY

UNIT  
PRICE

(BIDDER'S NAME)  
TOTAL  
COST

Work to include concrete removal by approved method, surface preparation, debris removal, installation of SS pins, placement of approved polymer modified concrete repair mortar, finishing and curing as per the manufacturer's recommendations. This work shall be as per Detail 1/R-6 and in accordance with Section 03340 (or 03345) of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

20 LF x \$ /LF = \$

Bid Item #8 – Concrete Wall Repair

This work shall include marking out repair areas for review by the Engineer prior to demolition. Work consists of concrete repair of interior and perimeter walls as per Detail 7/R-6. This work consists of sawcutting around periphery of repair area; removal of delaminated, spalled and sound concrete to a depth of ¾" behind existing reinforcing using chipping hammers; sandblast clean exposed reinforcing; apply an approved repair mortar as per manufacturers recommendations and in accordance with Section 03340 (or 03345) of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

250 SF x \$ /SF = \$

Bid Item #9 – Concrete Curb Repair

This work shall include marking out repair areas for review by the Engineer prior to demolition. Work shall include the demolition of deteriorated concrete curbs and the subsequent placement of new 5,000-psi concrete. The repair of deteriorated concrete consists of marking out the repair area in the presence of the engineer; sawcutting (½" deep) around perimeter of the repair area; removal of existing concrete curb (delaminated and sound) using 25 lb chipping hammers to a depth of ¾" below the existing reinforcing; sandblast clean exposed reinforcing; supplement with new epoxy coated reinforcing as directed by the engineer, placing, finishing and curing new concrete. The work shall be as per Detail 3/R-6 and in accordance with Sections 03200, 03240 and 03300 (or 03320) of the specifications.

10 SF x \$ /SF = \$

Bid Item #10 – Re-Weld Tee Connectors

Work shall consist of re-welding existing precast tee connections at precast tee flanges, as per Detail 3/R-5. Inclusive of this item is the provision of new steel slugs. As directed by the Engineer in the field.

ALLOWANCE = \$ 10,000

		(BIDDER'S NAME)
ESTIMATED QUANTITY	UNIT PRICE	TOTAL COST

Bid Item #11 – Remove and Replace Precast Joint Sealant

Remove existing sealant at precast joints and cove joints at the roof level. Clean existing concrete surface and apply two component polyurethane joint sealant. This work shall be similar to Detail 3/R-5 and in accordance with Section 07900 of the specifications. As directed by the Engineer in the field.

LUMP SUM = \$ \_\_\_\_\_

Bid Item #12 – Remove Membrane at Roof Level

Remove existing membrane at the roof level by acceptable mechanical means. No extras will be paid to repair damaged surfaces from the removal work.

\_\_\_\_\_ 19,500 SF x \$ \_\_\_\_\_ /SF = \$ \_\_\_\_\_

Bid Item #13 – New Expansion Joint at Roof Level

Furnish and install new watertight expansion joint seal as per Detail 4/R-6. Included in this work shall be the removal of existing seals, associated concrete work, and preparation of surfaces to receive new seals. Also include is proper termination of all joints and turning up at columns, curbs, walls, etc. This work shall be in accordance with Section 07910 of the specifications. Locations as shown on plans and as directed by the Engineer in the field.

\_\_\_\_\_ 80 LF x \$ \_\_\_\_\_ /LF = \$ \_\_\_\_\_

Bid Item #14 – Stair Tread Repair

This work shall include marking out repair areas for review by the Engineer prior to demolition. Work shall include the demolition of deteriorated concrete stairs and the subsequent placement of new 5,000-psi concrete. The repair of deteriorated concrete consists of marking out the repair area in the presence of the engineer; sawcutting (½" deep) around perimeter of the repair area; removal of existing concrete curb (delaminated and sound) using 25 lb chipping hammers to a depth of ¾" below the existing reinforcing; sandblast clean exposed reinforcing; supplement with new epoxy coated reinforcing as directed by the engineer, placing, finishing and curing new concrete. The work shall be similar as per Detail 3/R-6 and in accordance with Sections 03200, 03240 and 03300 (or 03320) of the specifications.

\_\_\_\_\_ 5 EA x \$ \_\_\_\_\_ /EA = \$ \_\_\_\_\_

**ESTIMATED  
QUANTITY**

**UNIT  
PRICE**

---

**(BIDDER'S NAME)**  
**TOTAL  
COST**

Bid Item #15 – Miscellaneous Repairs

General Conditions; Traffic control and maintenance; Erection, maintenance and removal of temporary dustproof partitions; barricades around work area; general cleanup and incidentals necessary to complete the work as shown on plans and as specified.

LUMP SUM     =     \$ \_\_\_\_\_

**TOTAL BASE BID**

(Sum of Bid Items 1 thru 15)

\$ \_\_\_\_\_

## **GENERAL REQUIREMENTS**

The bidder shall, before submitting his Proposal, carefully examine the Contract Documents. He shall inspect in detail the site of the proposed work and familiarize himself with all the local conditions affecting The Work and the detailed requirements of construction. If his Proposal is accepted, he will be responsible for all errors in his Proposal resulting from his failure or neglect to comply with these instructions or errors in judgment arising from said inspections of the work site and examination of the Contract Documents. The Engineer and/or the Owner will, in no case, be responsible for any losses or change in Contractor's anticipated profits resulting from such failure or neglect.

If the bidder finds any language in the Contract inconsistent, vague or difficult to understand or interpret, for any reason, he shall request clarification in writing from the Engineer or Owner not less than 5 working days prior to the scheduled dates for response thereto in writing to all bidders known to the Owner. Unless the bidder seeks clarification in accordance with this paragraph, he will be deemed to have waived his rights, if any he had, to object to said Contract language as vague or misleading for any reason.

When the plans and Special Provisions include information pertaining to surface observations, material testing and other preliminary investigations, such information represents only the opinion of the Engineer as to the location, character, or quantity of the materials encountered and is only included for the convenience of the bidder. The Owner/Engineer assumes no responsibility whatever in respect to the sufficiency or accuracy of the information, and there is no guarantee, either expressed or implied, that the conditions indicated are accurate or unanticipated developments may not occur. Said information shall not be considered by the parties as a basis for the Contract award amount.

The Bidder agrees that adequate time was allowed the bidder to inspect all work sites and, unless express written request has been made, the Engineer/Owner will be presumed to have supplied the bidder all the information and access required to adequately complete the Proposal.

The estimated quantities of work to be done and materials to be furnished under these Specifications are given in the Proposal. All quantities are to be considered as approximate and are to be used only for comparison of bids and as a basis for computing amounts of bid bonds, payments bonds and performance bonds to be furnished. The unit and lump sum prices to be tendered by the bidders are to be for the scheduled quantities as they may be increased or decreased.

ESTIMATED QUANTITY	(BIDDER'S NAME)	
	UNIT PRICE	TOTAL COST

Payments will be made to the Contractor only for the actual quantities of work performed and materials furnished in accordance with the Plans and Specifications. The scheduled quantities may each be increased or diminished or entirely deleted. Such changes may become necessary for the best interest of the project due to circumstances not known at the time the Contract was entered into or arising thereafter. In the event, in the sole judgment of the Owner or its representative such changes become necessary, the lump sum and unit prices set forth in the Proposal and embodied in the Contract shall remain valid.

Work acceptance is to be made by the Engineer.

Any extra work beyond the scheduled quantities requiring additional cost to the Owner shall be approved by the Owner prior to taking such action. Claims for extra work which have not been authorized in writing by the Owner and approved by the Engineer will be rejected and the Contractor shall not be entitled to payment thereof.

#### CONSTRUCTION TIME

The undersigned agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed", and proposes to complete all work in the Base Contract by:

\_\_\_\_\_

#### RIGHT TO REJECT BIDS AND SIGNING CONTRACTS

In submitting this Bid, it is understood that the right is reserved by the Owner to reject any and all bids. If written notice of acceptance of this bid is mailed, telegraphed or delivered to the undersigned within sixty (60) days after the opening thereof, or at any time thereafter before this bid is withdrawn by written notification, the undersigned agrees to execute and deliver a Contract in the prescribed form. The Work shall be commenced by the successful bidder within 14 days after the Notice to Proceed from the Owner.

		(BIDDER'S NAME)
ESTIMATED QUANTITY	UNIT PRICE	TOTAL COST

### ADDENDA ACKNOWLEDGMENT

The undersigned acknowledges receipt of the following addenda:

ADDENDUM NUMBER

DATE OF ADDENDUM

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### GENERAL STATEMENT

The undersigned has checked all of the above figures, and understands that the owner will not be responsible for any errors or omissions on the part of the undersigned in preparing this bid.

In submitting this bid, it is understood that the right is reserved by the Owner to reject any or all bids and waive all technicalities and informalities in connection therewith. It is agreed that this Bid may not be withdrawn for a period of 60 days from the time of opening.

The undersigned declares that the person or persons signing this bid is/are fully authorized to sign on behalf of the firm listed, to all of the Bid's conditions and provisions thereof.

It is agreed that no persons or company other than the firm listed below or as otherwise indicated has any interest whatsoever in this Bid or the contract that may be entered into as a result of this Bid and that in all respects the Bid is legal and firm, submitted in good faith without collusion or fraud.

It is agreed that the undersigned has complied and/or will comply with all requirements of local, state or national laws, and that no legal requirements has been or will be violated in making or accepting this Bid, in awarding the contract to him and/or in the prosecution of the work required.

		<b>(BIDDER'S NAME)</b>	
	<b>ESTIMATED QUANTITY</b>	<b>UNIT PRICE</b>	<b>TOTAL COST</b>

SUBCONTRACTOR’S LIST (If applicable)

NAME\_\_\_\_\_

ADDRESS\_\_\_\_\_

WORK\_\_\_\_\_

NAME\_\_\_\_\_

ADDRESS\_\_\_\_\_

WORK\_\_\_\_\_

NAME\_\_\_\_\_

ADDRESS\_\_\_\_\_

WORK\_\_\_\_\_

SIGNATURE OF BIDDER

(Date)\_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

(Firm Name)\_\_\_\_\_  
(Seal)

(Address)\_\_\_\_\_

(Signature)\_\_\_\_\_

(Name Typed) \_\_\_\_\_

(Title) \_\_\_\_\_

	(BIDDER'S NAME)	
ESTIMATED QUANTITY	UNIT PRICE	TOTAL COST

### BID GUARANTEE

The undersigned agrees that this bid may be held by the owner for a period not exceeding sixty (60) days from the date set up for the opening of the bids and that the bid may be withdrawn within that period.

IN WITNESS WHEREOF the undersigned Bidder has caused their signature and seal to be affixed thereto by duly authorized officers this \_\_\_\_\_ day of \_\_\_\_\_, 20. \_\_\_\_\_

FIRM NAME \_\_\_\_\_

BY \_\_\_\_\_

TITLE \_\_\_\_\_

TELEPHONE NO. \_\_\_\_\_

OFFICIAL ADDRESS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Witness*

*Attest:*

\_\_\_\_\_  
**Notary Public**

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# AGREEMENT

THIS AGREEMENT, made this \_\_\_\_ day of \_\_\_\_\_, **2025** by and between the **Town of Hanover**, New Hampshire, a New Hampshire municipality with a principal place of business of 41 South Main St., Hanover, NH, 03755 hereinafter called "OWNER," and \_\_\_\_\_, doing business as a (State) \_\_\_\_\_ (Corporate type ) \_\_\_\_\_, with a principal place of business of \_\_\_\_\_, hereinafter called "CONTRACTOR".

WITNESSETH: That for the consideration of the covenants and payments set forth herein, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. This Agreement shall consist of this agreement together with Exhibit A (Contract Documents and Definitions); Exhibit B (Pricing list and Payment terms); Exhibit C (OWNER's Request for Proposals) and Exhibit D (CONTRACTOR's bid for Services) all of which are attached and incorporated herein.
2. The CONTRACTOR will furnish and install items described in the REPAIR and PREVENTIVE MAINTENANCE 7 LEBANON STREET PARKING GARAGE documents including Large and small area full depth concrete repair of pre-cast tees, partial depth cast-in place slab repair, overhead cast-in place concrete slab repair, overhead beam repair, concrete tee stem repair, concrete wall repair, concrete curb repair, re-weld tee connectors, remove and replace precast joint sealant, remove membrane at roof level, install new expansion joints at roof level, stair tread repair and miscellaneous repairs and Payment and Performance Bond. Project cost may be adjusted based on the actual work completed, the pricing for which is attached hereto as Exhibit B to this Agreement.
3. The CONTRACTOR will furnish all materials, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein. However, the "OWNER" will be responsible for the provision of any required uniformed-police details.
4. The CONTRACTOR will commence the work within 30 days of CONTRACT AWARD and will complete PROJECT within 180 days by \_\_\_\_\_.
5. The CONTRACTOR agrees to perform all WORK described in the CONTRACT DOCUMENTS consistent with industry standards and in compliance with all standards for such work set by the Town and Liberty Utilities. CONTRACTOR shall ensure all required certifications for work on this project are current and comply with the terms therein for the unit prices as shown in the cost proposal dated \_\_\_\_\_, and appended hereto as Exhibit B to this Agreement.
6. The OWNER will pay the CONTRACTOR in the manner and at such times as set forth

in the Contract Documents in such amounts as required by the CONTRACT DOCUMENTS.

7. The OWNER will pay for the additional work using the unit prices as bid or as agreed to under this agreement, unless otherwise agreed-to, and the terms and costs of such optional work shall be reflected in writing, subject to all other provisions of this Agreement.
8. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.
9. In executing this Agreement, the signatories represent and warrant that all required formalities have been followed to allow for the execution of this Agreement and that the signatories have the respective authority to execute this Agreement and, in so doing, render it binding on behalf of their respective parties.
10. This Agreement shall be subject to the laws of the State of New Hampshire, without regard for to any conflict of laws principles.
11. This Agreement may not be altered, amended, or otherwise amended except in writing signed by both Parties.

IN WITNESS WHEREOF the parties hereto have executed or caused to be executed by their duly authorized officials, this Agreement which shall be deemed an original on the date first above written.

OWNER:

FOR THE TOWN OF HANOVER, NH

\_\_\_\_\_  
Signature

Name Rob Houseman

Title Town Manager

Town of Hanover, NH  
41 South Main St.

Hanover, NH 03755

CONTRACTOR:

Title \_\_\_\_\_

Name \_\_\_\_\_

\_\_\_\_\_  
Signature

**EXHIBIT A**  
**CONTRACT DOCUMENTS AND DEFINITIONS**

**ARTICLE 1 - DEFINITIONS**

Wherever the words defined in this article, or pronouns used in their stead, occur in the Agreement to which these Contract Documents and Definitions are attached, the words shall have the meanings herein given.

1.1 OWNER – The word “OWNER” shall mean the Town of Hanover, NH, a New Hampshire Municipality with a principal place of business of 41 South Main St., Hanover, NH, 03755.

1.2 CONTRACTOR – The word “CONTRACTOR” shall mean

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1.3 SUBCONTRACTOR – The word “SUBCONTRACTOR” shall mean a person, firm or corporation supplying labor, materials, or any other services under a separate agreement with CONTRACTOR related in any way to the Project or the work to be performed by the CONTRACTOR under the Agreement.

1.4 AGREEMENT – The word “AGREEMENT” shall mean the Agreement between the OWNER and the CONTRACTOR related to the Town Hall Electrical Upgrade and all addenda, exhibits, or other materials appended thereto or referenced therein.

1.5 WORK – The word “WORK” shall mean all services, labor, materials, actions, deliverables, and other actions to be performed or provided by CONTRACTOR under the Agreement.

**ARTICLE 2 - OBLIGATIONS AND LIABILITY**

2.1 The CONTRACTOR shall complete the work to the satisfaction of the TOWN MANAGER at the prices herein agreed upon and fixed, therefore.

2.2 The CONTRACTOR shall conduct its work so as to interfere as little as possible with the use, safety, or disruption of the OWNER’s property, municipal rights-of-way, or private property located adjacent thereto. If a uniformed officer and police detail are mandated, the OWNER shall be responsible for this cost and will arrange coverage. The CONTRACTOR shall bear all losses, or risk thereof, resulting to CONTRACTOR or the

OWNER on account of the amount or character of the work or on the account of weather elements or other causes. The CONTRACTOR shall assume the defense of all claims against the CONTRACTOR. Claims against the CONTRACTOR shall be settled in an expedient manner, proof of which shall be provided to the TOWN MANAGER.

2.3 The OWNER disclaims any responsibility for job site safety and for the safety of persons who are or are not part of the construction process. It is understood and agreed that the OWNER will not be responsible for compliance of safety programs, put forth by the CONTRACTOR or related OSHA regulation required to be followed by the CONTRACTOR, employees, subcontractors, and agents. Job site safety shall be the responsibility of the CONTRACTOR at all times. Nothing in this Paragraph 2.3 shall be construed as modifying or otherwise excusing CONTRACTOR from performing the WORK in compliance with all applicable laws, rules, and regulations, and for complying with all pertinent safety standards and/or applicable building, fire, life-safety, electrical, or other codes.

### **ARTICLE 3 – TOWN MANAGER TO DECIDE**

3.1 The TOWN MANAGER or designee, in consultation with the CONTRACTOR, shall in all cases determine the amount, quality, accessibility and fitness of the kinds of work and materials which are to be paid for under this contract.

3.2 Nothing in this agreement shall be construed as giving the TOWN MANAGER or designee the responsibility to direct construction means, methods, techniques, procedures, or safety methods.

### **ARTICLE 4 - ABSENCE OF CONTRACTOR**

4.1 WORK shall neither commence nor proceed unless supervised by the CONTRACTOR or his duly authorized superintendent. Delays in the WORK due to the absence of the CONTRACTOR or his duly authorized representative shall not constitute the reason for extension of time for completion. The TOWN MANAGER or designee shall be notified at least 72 hours in advance of any deviation from the normal daily work schedule.

### **ARTICLE 5 - PARTS OF THE CONTRACT**

5.1 The information supplied by OWNER to bidder as part of OWNER's "TOWN OF HANOVER, New Hampshire, **Repair and Preventative Maintenance of the 7 Lebanon Street Parking Garage** Project, May 2025" and all addenda related thereto, as well as the proposal submitted by the CONTRACTOR, are hereby incorporated by reference into this Agreement and are attached hereto as Exhibit D.

### **ARTICLE 6 - DISPUTE RESOLUTION AND INTERPRETATION OF DOCUMENTS**

6.1 Should a discrepancy or any misunderstandings arise as to the import of anything

contained in this Agreement, the interpretation and decision of the TOWN MANAGER shall be final and binding on both parties of this Agreement. The CONTRACTOR shall immediately notify the TOWN MANAGER of any known discrepancies or concerns related to any interpretation or decision of the TOWN MANAGER for proper resolution.

6.2 The TOWN MANAGER shall reconsider said interpretation or decision when such correction is necessary for their fulfillment of the intent of the Parties as expressed in this Agreement. When an interpretation or decision of the TOWN MANAGER contradicts an express provision of this Agreement, in lieu of reconsidering said interpretation or decision, the Parties may negotiate in good faith an amendment to this Agreement to account for any additional work.

## **ARTICLE 7 – INSURANCE**

### **7.1 Indemnification -**

The CONTRACTOR releases the OWNER Its officials, agents, volunteers and employees (“Indemnified Parties”) from, agrees that the OWNER shall not be liable for and indemnifies the OWNER against, all liabilities, claims, costs and expenses, including out-of-pocket and incidental expenses and legal fees imposed upon, incurred or asserted against the OWNER arising directly or indirectly in whole or in part, out of the negligence or willful act or omission of the CONTRACTOR, its agents or anyone who is directly employed in connection with (i) this Agreement or (ii) the project, including construction of the project and the maintenance, repair and replacement of any improvements which the CONTRACTOR is required to undertake pursuant to this Agreement or any permit or approval, provided that, such release or indemnification shall not apply to any actions or claims brought as a result of any material breach of this Agreement, willful misconduct or fraudulent action of the OWNER.

In case any claim or demand is at any time made, or action or proceeding is brought, against or otherwise involving the OWNER in respect of which indemnify may be sought hereunder, the person seeking indemnity promptly shall give notice of that action or proceeding to the CONTRACTOR.

In addition, and regardless of respective fault, CONTRACTOR shall defend, indemnify, and hold harmless the Indemnified Parties for any costs, expenses, and liabilities arising out of a claim, charge or determination that CONTRACTOR’s officers, employees, CONTRACTORS, subcontractors or agents are employees of the Indemnified Parties, including but not limited to claims or charges for benefits, wages, fees, penalties, withholdings, damages or taxes brought in connection with laws governing worker’s

compensation, unemployment compensation, social security, Medicare, state or federal taxation, and/or any other similar obligation associated with an employment relationship.

The CONTRACTOR's obligations to defend, indemnify and hold harmless the Indemnified Parties hereunder shall survive the term of this Agreement.

7.2 Insurance – requirements shall be as follows:

**Workers Compensation – Statutory with Employers Liability as follows:**

E.L. (employers' liability) each accident: \$500,000

E.L. disease – each employee: \$500,000

E.L. disease – policy limit: \$500,000

**Commercial Auto Liability:**

Combined Single Limit (bodily injury and property damage) – each accident: \$1,000,000

**Commercial General Liability:**

Each occurrence: \$1,000,000

General Aggregate: \$2,000,000 with per project aggregate endorsement

Products/Completed Operations Aggregate: \$2,000,000

**Commercial Umbrella/Excess Liability:**

Each Occurrence: \$1,000,000

General Aggregate: \$1,000,000

Products/Completed Operations Aggregate: \$1,000,000

**Owners Liability – Named Insured: The Town of Hanover, NH**

The Town of Hanover, NH its officials, agents, volunteers, and employees shall be named as an additional insured for on-going and completed operations on a primary and noncontributory basis by way of certificate of insurance and amendatory endorsement on all liability insurance policies required above.

7.3 The insurance provided herein is to be primary, and no insurance held or owned by the OWNER shall be called upon to contribute to a loss.

7.4 A copy of the required policy endorsements shall be attached to each certificate submitted. CONTRACTOR shall not alter or amend any policy provided by the CONTRACTOR unless CONTRACTOR provides the OWNER with a notice of such alteration in writing no less than thirty days before the effective date of such a change.

7.5 The OWNER, in its sole discretion, reserves the right to increase or reduce the required limits, or to require other forms of insurance, as deemed appropriate in relation to the scope of a project. For example, some projects may require pollution liability, professional liability, or other specialty coverages.

## **ARTICLE 8 – COMPLIANCE WITH LAWS**

8.1 The CONTRACTOR at all times shall observe and comply with, and cause all his agents and employees to observe and comply with all Federal, State, and/or local law, rules or regulations, orders or decrees.

## **ARTICLE 9 – QUALITY OF WORK/ASSIGNMENT**

9.1 The CONTRACTOR shall give his personal attention constantly to the faithful prosecution of the WORK, shall keep the same under his personal control. CONTRACTOR shall perform all work in a good and workmanlike fashion and in accordance with all customary and/or established industry best practices.

9.2 CONTRACTOR shall not assign by power of attorney or otherwise, nor subject the WORK or any part thereof, with-out the previous written consent of the OWNER and shall not either legally or equitably assign any of the monies payable under this Agreement or CONTRACTOR's claim thereto, unless by and with the like consent of the OWNER.

## **ARTICLE 10 – TIME OF BEGINNING WORK**

10.1 It is the intent of this contract to have the CONTRACTOR commence field work within the Town on or before \_\_\_\_\_. However, the actual commencement date may occur earlier based upon discussion between CONTRACTOR and OWNER and all 'date certain' milestones will be agreed upon at that time.

10.2 No work shall begin on any Town right-of-way or town property before 7:00 a.m. and all daily activity shall finish before the hour of 7:00 p.m. unless prior authorization has been granted by the OWNER.

10.3 A construction schedule shall be provided prior to any work. Any change shall be provided a minimum of 2 business days prior to any work.

## **ARTICLE 11 – DELAY BY OWNER**

11.1 The OWNER may delay the beginning of the WORK or any part thereof, if materials or equipment to be furnished by the OWNER are not delivered. The CONTRACTOR shall have no claim for damages on account of such delay but shall be entitled to such additional time wherein to perform and complete this Agreement on CONTRACTOR's part as the TOWN MANAGER shall certify in writing to be just and reasonable.

## **ARTICLE 12 – TIME OF COMPLETION**

12.1 The rate of progress shall be such that WORK shall be performed and completed in accordance with the terms of this Agreement.

12.2 It is agreed that the rate of progress herein required has been purposely made slow enough to allow for the ordinary delays incident to construction work of this character. No extension of time will be made for ordinary delays, inclement weather and accidents, and occurrences of such will not relieve the CONTRACTOR from the necessity of maintaining the rate of progress.

12.3 If delays are caused by acts of god, acts of government or State, extra work, or contingencies clearly beyond the control or responsibilities of the CONTRACTOR, the CONTRACTOR shall be entitled to additional time wherein to perform and complete this contract on his part as the OWNER may reasonably grant.

12.4 The CONTRACTOR shall provide a schedule to meet the milestones to be established by the parties following the execution of this Agreement. Changes to the schedule should only be made in accordance with Paragraph 11 of the Agreement. The CONTRACTOR agrees to exercise diligence in the performance of its services consistent with the agreed upon schedule, subject, however, to the generally accepted standards of care for performance of such services.

12.5 Work is expected to be fully complete within \_\_\_\_ days of the NOTICE TO PROCEED

12.6 If work has begun and is stopped for any reason (including acts of God) the CONTRACTOR is required to take all necessary care to ensure the public safety and the safeguard of property of the OWNER and the public at all times (satisfactory to the OWNER), at its own expense. Failure to ensure public safety (including maintaining building access) or safeguarding the property of the OWNER and the public may be deemed a breach of contract.

### **ARTICLE 13 – NIGHT AND SUNDAY WORK**

13.1 Night work is generally not to be assumed, however, may be requested by the OWNER or CONTRACTOR.

13.2 All work that causes noise (including equipment and vehicle noise) shall be done between the hours of 7 am and 10 pm Monday through Friday.

13.3 No Sunday work is permitted, except in the event of an emergency, and to such extent that may be necessary.

### **ARTICLE 14 – Independent Contractor & Disclaimer of Joint Venture, Partnership, and Agency**

14.1 Independent Contractor: CONTRACTOR's relationship with the Town under this Agreement shall be that of an independent contractor. The employees, procedures, equipment, and facilities used by the CONTRACTOR shall at all times be under its exclusive direction and control. Nothing in this Agreement shall be construed to designate, any of its principals, officers, agents, employees, personnel, contractors and subcontractors as employees or agents of Town within the meaning or application of any

federal, state or local law, rule or regulation, including without limitation, laws rules and regulations regarding or related to unemployment benefits, workers' compensation, labor, or taxes of any kind. CONTRACTOR shall assume sole and exclusive responsibility for the payment of wages and all applicable taxes and insurance for its employees and shall require the same of any contractor or subcontractor it retains in connection with this Agreement. CONTRACTOR shall protect indemnify, safe and hold harmless Town from any third-party claims stemming from the subject of this paragraph shall employ only competent persons to do the WORK, and whenever the TOWN MANAGER shall notify the CONTRACTOR in writing that any such persons on the WORK is, in the TOWN MANAGER's opinion, incompetent or acting in a way contrary to the terms or standards provided for in this Agreement, such persons shall be discharged from the WORK and shall not again be employed on it, except with the consent of the TOWN MANAGER.

14.2 Disclaimer of Joint Venture, Partnership, and Agency: This Agreement shall not be interpreted or construed to create an association, joint venture, or partnership between the parties or to impose any partnership obligation or liability upon either party. Neither party shall have any right, power, or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent of representative of, or to otherwise bind, the other party unless explicitly contracted to do so.

14.3 CONTRACTOR shall require in its contracts with any subcontractors retained for the project that all subcontractors provide the same insurance coverage, compliance with laws and state regulations and indemnification contained herein.

14.4 CONTRACTOR shall be responsible for paying all subcontractors and shall indemnify, defend, and hold harmless OWNER with regard to any claims, demands, causes of actions, liabilities, judgments, damages, or any other obligations asserted by any subcontractor (including attorney's fees) related to any claims of non-payment asserted by any subcontractor related to the WORK or services provided by subcontractor related, in any way, to this Agreement, as this Agreement may be modified.

14.5 CONTRACTOR shall be required to obtain a payment bond for the full cost of the project which will remain in effect until released upon full completion.

## **ARTICLE 15 – ACCESS TO WORK**

15.1 If, in the opinion of the TOWN MANAGER, public health, safety and welfare are jeopardized, the OWNER reserves the right to access the WORK or any site where WORK is being or has been performed, and, if necessary, employ such individuals, regardless of whether a party to this Agreement, to correction or address such conditions or defects in the WORK giving rise to the risk to public health, safety, and welfare and may assess the costs and or performance of such work through an adjustment of the Contract Price in accordance with Article 18.

## **ARTICLE 16 – EXAMINATION OF WORK**

16.1 The TOWN MANAGER or designee shall be furnished with every reasonable opportunity and all access for ascertaining that the WORK is in accordance with the requirements and intention of this Agreement, even to the extent of uncovering portions of the WORK.

## **ARTICLE 17 – DEFECTIVE WORK**

17.1 The inspection of the WORK shall not relieve the CONTRACTOR of any of CONTRACTOR's obligations to fulfill this Agreement contract as herein prescribed. CONTRACTOR shall correct and address defective work without undue delay and unsuitable material shall be rejected, notwithstanding that such work and materials have been previously overlooked or undiscovered by the TOWN MANAGER and accepted or compensated for. If any portions of the WORK are found to be defective before the final acceptance of the whole work, the CONTRACTOR shall forthwith make good such defects in a manner satisfactory to the TOWN MANAGER, and if any material brought upon the ground for use in the WORK shall be rejected by the TOWN MANAGER as unsuitable or not in conformity with the specifications set forth in this Agreement, the CONTRACTOR shall remove such materials from the vicinity of the WORK and make good areas of uncertainty at the CONTRACTOR's expense to the satisfaction of the TOWN MANAGER.

## **ARTICLE 18 – MISTAKES OF CONTRACTORS**

18.1 The CONTRACTOR shall pay the OWNER all expenses, losses, and damages as based on inspection by town employees, agents or representatives incurred in consequence of any defect, omission, or mistake of the CONTRACTOR or the making good thereof.

## **ARTICLE 19 – RIGHT TO MATERIALS**

19.1 Nothing in this contract shall be constructed as vesting in the CONTRACTOR any right of property in any of the materials removed (panels, wire, etc.) or placed once having been affixed to the WORK or the soil, but all such materials shall, upon being so removed, attached or affixed become the property of the OWNER.

## **ARTICLE 20 – LIMITATIONS AND ALTERATIONS OF WORK**

20.1 Changes in the scope of work may be accomplished after execution of this Agreement and without invalidating the Agreement be execution of a "Change Order" or other written agreement specifying a minor change in work, subject to limitations elsewhere in this Agreement.

20.2 A change order shall be based upon written agreement by OWNER and CONTRACTOR and shall specify the change in the work agreed to; as well as any amount of adjustment (if any) in the contract sum, and the extent of the adjustment (if any)

in the time for completion under the Agreement.

## **ARTICLE 21 – EXTRA WORK**

21.1 The CONTRACTOR shall perform work incidental to the proper completion of the Agreement.

### **21.2 Changes to the Scope of Work:**

24.3.1. Changes in the scope of work may be accomplished after execution of this Agreement and without invalidating the Agreement by execution of a “Change Order: or other written agreement specifying a minor change in work, subject to limitations elsewhere in this Agreement.

24.3.2 A change order shall be based upon written agreement b OWNER and CONTRACTOR and shall specify the change in the work agreed to; as well as any amount of adjustment (if any) in the contract sum, and the extent of the adjustment (if any) in the time for completion under the Agreement.

21.3 The OWNER and CONTRACTOR may agree to extend this Agreement to an extent to be agreed upon.

## **ARTICLE 22 – EXTRA TIME**

25.1 When extra work is agreed-upon or required during the progress of WORK, which requires, in the opinion of the TOWN MANAGER, an unavoidable increase of time for the completion of the Agreement, the Parties shall negotiate in good faith a reasonable and suitable extension of the completion for the WORK.

## **ARTICLE 23 – CLAIMS FOR DAMAGES**

23.1 Any controversy arising out of or relating to this contract, or the breach thereof shall be settled by arbitration. The parties shall select an arbitrator. The arbitrator shall adopt appropriate arbitration rules similar to the American Arbitration Association or any other arbitration procedure. The place of arbitration shall be in the town/city within which the contract shall be principally performed. The arbitration hearing shall be held within thirty (30) days after the notice of arbitration is delivered by one party to the other party. In the event the parties are unable to agree on the arbitrator then application can be made to the Superior Court for the County within which the contract shall be principally performed under RSA Chapter 542.

## **ARTICLE 24 – ABANDONMENT OF WORK**

24.1 If the WORK to be done under this Agreement shall be abandoned, or if this Agreement or any part thereof shall be assigned without the consent by the OWNER or the rate of progress is unreasonably delayed or that the CONTRACTOR has violated any of the provisions of this Agreement, the OWNER may notify the CONTRACTOR by a

written order, with a copy mailed to the home office of the Surety, to discontinue all WORK or any part thereof and the OWNER may thereupon by Agreement or otherwise as OWNER may determine, complete the WORK and charge the entire expense of completing the WORK to the CONTRACTOR; and for such completion the OWNER for itself or its CONTRACTORS may take possession of and use or cause to be used in the completion of the WORK, materials, equipment, machinery, implements and tools of every description as may be found at the location of such WORK.

## **ARTICLE 25 – PRICES OF WORK**

25.1 The OWNER shall pay, and the CONTRACTOR shall receive the prices stipulated in the proposal attached hereto as Exhibit D as full compensation for everything furnished and done by the CONTRACTOR under this Agreement and for faithfully completing the work.

## **ARTICLE 27 – SAFETY AND HEALTH REGULATIONS**

27.1 The CONTRACTOR alone is responsible for the safety, efficiency, and adequacy of CONTRACTOR's plant, appliances, and methods and for any damage which may result from the failure or the improper construction, maintenance or operation.

## **ARTICLE 28 – LIABILITY OF THE OWNER**

28.1 No person, firm, or corporation, other than the signer of this Agreement as CONTRACTOR now has any interest in this Agreement, and CONTRACTOR is aware of no claim to the monies to be paid by OWNER to CONTRACTOR under this Agreement.

28.2 Neither the OWNER, nor any agent of the OWNER, shall be liable for or be held responsible to pay any money except as herein provided.

28.3 The acceptance by the CONTRACTOR of the payment of the final estimate shall release to the OWNER, and every agent of the OWNER, from all claims or liabilities held by, or that could be asserted by, the CONTRACTOR for anything done or furnished for or relating to the WORK.

28.4 Under no circumstances shall OWNER's liability under this Agreement exceed the agreed-upon price to be paid by the OWNER under this Agreement.

## **ARTICLE 29 – GUARANTEES**

29.1 CONTRACTOR guarantees that the work to be done under this contract and the materials to be furnished by him for use in the construction of the same will be free from defects or flaws. **This labor warranty shall be for a period of one year and after the date of acceptance.**

29.2 CONTRACTOR warrants that all materials when delivered are in new condition and in its original packaging, will be free of defects in material and workmanship. The determination of whether materials are defective shall be made following an inspection by the CONTRACTOR and after consultation with the OWNER.

29.3 It is hereby agreed and understood that this warranty shall not include repairs made necessary for any cause other than defective work or materials furnished by the CONTRACTOR. The CONTRACTOR shall at all times within said period of warranty keep the surface of the ground over CONTRACTOR's WORK in the condition required by this Agreement and refill settlement or erosion due to any cause whatsoever during the WORK or when directed by the TOWN MANAGER. Should CONTRACTOR fail to do so, the OWNER may have said WORK completed as described in ARTICLE 24.

### **ARTICLE 30 – TERMINATION**

30.1 Upon fourteen calendar (14) days written notice to the CONTRACTOR, OWNER may without cause and without prejudice to any other right of remedy, elect to abandon the PROJECT and terminate the Agreement. In such a case, CONTRACTOR shall be paid for all WORK performed at the contract prices prior to the date of termination as its sole remedy.

### **Exhibit B (Pricing list and Payment terms)**

- 1) The CONTRACTOR shall provide a schedule of values breaking down materials, installation, subcontracted, and overhead costs.
- 2) The OWNER shall pay within 30 days following receipt of an invoice.
- 3) The TOWN is exempt from the state's sales and use tax as well as all federal excise taxes.
- 4) Should any items contained in the bid form be found unnecessary for the completion of the WORK, the OWNER may eliminate such items from the AGREEMENT, and such action shall in no way invalidate the AGREEMENT, and OWNER shall not be required to pay CONTRACTOR for such WORK that is not actually performed or that is otherwise eliminated.
- 5) The OWNER may increase the quantities of items included in the Bid based upon actual numbers of units.
- 6) Final Payment will be due when the CONTRACTOR has completed all WORK, the CONTRACTOR has submitted all required paperwork, and the quality of the WORK is determined by the OWNER to be in accordance with the Agreement (subject to tests required under these contract documents).

**Exhibit C (OWNER's Request for Proposals)**

**Exhibit D (CONTRACTOR's bid for Services)**

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**SECTION 00900**  
**CERTIFICATE OF FIVE YEAR CORRECTIVE PERIOD**

Date of Issuance \_\_\_\_\_  
THIS IS TO CERTIFY THAT, In accordance with the terms of a contract executed the \_\_\_\_\_  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by and between \_\_\_\_\_ Contractor, and  
\_\_\_\_\_ Owner, for the five year period for correcting work and materials  
found to be defective or not in accordance with the Contract Documents as stipulated in the  
General Requirements, Section 01020, Special Conditions, Part 2(m) by the above named  
contractor will expire the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_. The status of account under  
the above contract is as follows:

Original Contract Sum .....\$ \_\_\_\_\_  
Additions.....\$ \_\_\_\_\_  
Original Sum plus Additions .....\$ \_\_\_\_\_  
Deductions .....\$ \_\_\_\_\_  
Final Contract Sum .....\$ \_\_\_\_\_  
Total certified to the Owner.....\$ \_\_\_\_\_  
Leaving not yet certified .....\$ \_\_\_\_\_

\_\_\_\_\_  
DESMAN

The Contractor, having examined the above Certificate, finds it correct and acknowledges  
receipt, upon the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_, of said certificate.

\_\_\_\_\_  
CONTRACTOR

BY \_\_\_\_\_

*NOTE: Work to be corrected within this period does not cover any normal maintenance work  
which has been abused or neglected by the Owner or his successor. The issuance of this  
Certificate and its acceptance are his without prejudice to any other rights of the Owner under  
their Contract.*

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**SECTION 01010**  
**SUMMARY OF WORK**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 INTENT OF PLANS AND SPECIFICATIONS

- A. The intent of the Plans and Specifications is to describe The Work which the Contractor undertakes to do, in full compliance with the Contract, and it is understood that the Contractor will furnish, unless otherwise provided in the Contract, all materials, machinery, equipment, tools, supplies, transportation, labor, and all other incidentals necessary to the satisfactory prosecution and completion of the Work. The Plans and Specifications are complementary, and what is called for by either is as binding as if called for by both.
- B. The Special Conditions shall control where in conflict with the Standard Specifications. However, such portions of the Standard Specifications not in conflict or not rendered meaningless by the Special provisions shall remain in full force and effect and be binding on the parties hereto.
- C. In the event the Contractor discovers any error or discrepancy in the Contract Documents, he shall immediately call upon the Engineer for his decision. The Engineer shall then make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the Specifications, Special Provisions, Plans and other Contract Documents, as construed by him and his decision shall be final.

1.03 SUMMARY OF WORK

- A. General Mobilization: This work consists of all labor, materials, tools and equipment required for setting-up general plant, storage/staging areas and facilities required by State Laws and City Ordinances; and the general mobilization of equipment required for the completion of the work shown on the Contract Documents. The cost of this item shall include all permits and fees required to perform the project, unless otherwise noted in the Contract Documents, and all expenses for the de-mobilization after the work has been completed. If a building permit is required, it will be the contractor's responsibility to get the necessary permit to perform the repair work, unless noted otherwise in the documents. This work shall also include the following items:

1. Reviewing existing electrical plans, if available, and existing conditions for each phase of the work to identify the likelihood of embedded conduits/wiring. All existing mechanical and electrical services shall be maintained/restored by the Contractor for all work areas.
  2. Provide effective ventilation system to safely remove all dust and hazardous fumes generated from the concrete and masonry demolition and any surface treatment applications.
  3. Protection of overhead fire protection system to be maintained in-place, if any.
  4. Protection of existing overhead mechanical and electrical systems, if any, to be maintained in-place.
  5. Coordinate and assist the security and property management personnel in respect to the security of commercial spaces during the repair work.
  6. Electricity (power) and water required for the completion of the work shall be furnished by the Owner at existing fixtures or outlets. (The Owner will not provide any temporary pipes, cables, etc.) The contractor shall provide temporary lighting in the work areas, as required, during the restoration work. If the existing capacity is insufficient for the contractor's use, the contractor is responsible for supplementing existing capacity as needed.
  7. Contractor shall take care to protect in place or store and re-install all existing light fixtures and ceiling mounted electrical conduits during construction.
  8. Existing dry sprinkler system to be protected. If needed contractor shall coordinate removal, storage and re-attachment of sprinklers as required with garage management.
- B. Demolition: This work consists of full depth removal of deteriorated areas of the precast concrete tee slab, partial and overhead removal of the deteriorated areas at the cast-in-place sections of the slab, as well as the demolition of the deteriorated sections of the overhead tee stems, beams, walls and curbs. This work also includes the removal of the deteriorated roof level expansion joint, sealant at the precast joints and removal of the waterproofing membrane at the roof level.
- C. Concrete Work: This work consists of full depth precast concrete precast tee slab repair, and partial depth and overhead repair at the cast-in-place slabs. Concrete work also includes repairs to the deteriorated sections of overhead tee stems, beams, walls, columns and curbs.
- D. Waterproofing: This work consists of replacing sealant at the precast joints and cove joints at curbs and replacing the deteriorated roof level expansion joint.

- E. Miscellaneous Items: This work consists of items not otherwise specifically indicated or shown on the plans, but which are ancillary to the specified scope of work. This work shall also include the following:
1. The contractor shall furnish, install, maintain, relocate and remove all signs, barricades, cones, warning lights, and other safety control devices and temporary signage required for the proper execution of the project. The Engineer and the Owner shall review the safety control device placement before work begins and also prior to the beginning of work on any subsequent construction stages. Any deficiencies in the location or arrangement of devices shall be corrected by the contractor before starting work.
  2. The miscellaneous work shall include the repairs to the non-functioning electrical/mechanical systems caused by the contractor's construction activities, for the entire work areas. The contractor shall submit to the Owner/Engineer the documentation of all existing non-functioning electrical/mechanical systems in the entire work areas. This documentation should be based on the contractor's condition survey performed immediately prior to the scheduled mobilization. The contractor shall not start the mobilization until the Owner approves the submittal.
  3. The miscellaneous work shall also include the dismantling of any existing mechanical, fire protection and electrical installations in the repair areas, as required. The temporarily dismantled installations shall be reinstalled immediately after the repairs are completed.
  4. At other locations of repair areas, the contractor shall provide adequate protection systems, as required, for the existing mechanical, plumbing and electrical installations to remain in-place.

**PART 2 - PRODUCTS** (Not Applicable)

**PART 3 - EXECUTION** (Not Applicable)

**END OF SECTION**

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**SECTION 01020**  
**SPECIAL CONDITIONS**

1.01 **GENERAL**

All contract documents apply to work of this section.

1.02 **SPECIAL CONDITIONS**

A. Examination of the Site:

All Contractors submitting proposals for this work shall first examine the site and all conditions thereon. All proposals shall take into consideration all such conditions as may affect the work under this contract.

B. Grades, Lines, Levels and Surveys:

1. All grades, lines, levels and bench marks shall be established and maintained by the Contractor who shall be responsible for same.
2. Verify all grades, lines, levels and dimensions, as shown on the drawings, and report any errors or inconsistencies discovered in the above to the Engineer before commencing work.

C. Progress Schedule:

1. As soon as practical (not more than 7 days) after the award of the contract, the Contractor shall furnish progress charts to the following:
  - a. Owner
  - b. Project Manager
  - c. Job Superintendent
2. May be bar type or CPM charts
3. Revise charts as work progress deviates from chart schedule or when requested by the Engineer.

D. **Field Measurements:** The Contractor shall take measurements in the field to verify or supplement dimensions indicated on drawings and shall be responsible for accurate fit of specified work.

E. Protection:

1. The Contractor shall install and maintain protection to slab attachments such as sprinkler lines, ventilation ductwork and fans etc. prior to concrete removal.

2. Any electrical conduit and wiring work in the work areas is to be performed by Owner.
3. The Contractor will be held responsible for all his work and materials provided for by the plans and specifications until the work is completed and accepted.

F. Ventilation:

1. The Contractor shall provide effective ventilation of the structure throughout the construction period.
2. The ventilation shall be under control to avoid excessive rates of dust.

G. Lawful Fees:

All Contractors shall obtain and pay for all permits, licenses, certificates, inspections or other legal fees both permanent or temporary which are required for the execution of his contract.

H. Weather Protection:

1. All Contractors shall at all times provide protection against weather so as to maintain their work, materials, apparatus, and fixtures free from injury or damage. At the end of the day's work, all new work likely to be damaged shall be covered.
2. During cold weather the Contractor shall protect all work from damage.
3. Any work damaged by failure to provide above protection shall be removed and replaced with new work at the Contractor's expense.
4. In cold weather, Contractor shall provide cold weather protection and heating for proper installation of waterproofing elements as required by the material manufacturers.

I. Project Sign:

1. No signs or advertisements will be allowed to be displayed without the approval of the Owner.

J. Work in Existing Garage:

1. The Contractor shall be responsible for all work relating to all trades and shall remove, cutoff and cap, rewire or re-pipe existing electrical, plumbing, heating and ventilating lines and materials as required.
2. Wherever demolition and cutting work has occurred, or where existing

surfaces and materials of items or equipment have been damaged or disturbed as a result of this contract, the said surfaces and areas shall be carefully closed up, patched and finished, and materials of items or equipment shall be repaired, restored or replaced as required to completely restore all such surfaces, areas, materials, etc. All surfaces patched and restored shall match the existing surrounding surfaces and they shall be completely and properly finished.

- K. Restoration: Where existing properties, streets, paving, curbs, etc. are removed or damaged as a result of work operations, the responsible Contractor shall restore the foregoing items to match the original conditions or as required by local authorities.
- L. Entry: The Contractor shall pay the cost of repair or replacement from theft or damage to existing equipment, material or work due to negligence by the Contractor in securing the project site and adjacent areas affected by the Contractor's operations.
- M. Guarantees: Work guaranteed for a period greater than that described in the General Conditions shall have a written guarantee. The guarantee will be as described in the related specification section governing that work or elsewhere in the specification. The guarantee shall be submitted prior to final payment for the project. Unless otherwise noted all repair work shall be guaranteed free from defects in material and workmanship for a period of five years from the date of final completion.
- N. Clean Up:
  - 1. During construction the Contractor shall do the following:
    - a. Oversee cleaning and ensure that the building and grounds are maintained free from accumulations of waste materials and rubbish.
    - b. At as many intervals as required during the progress of the work, clean up work area and dispose of waste materials, rubbish and debris.
    - c. Provide one container for use by each Sub-Contractor for collection of waste materials, rubbish and debris.
    - d. Do not allow waste materials, rubbish and debris to accumulate and become an unsightly or hazardous condition.
    - e. Legally dispose of all waste materials in public or private dumping areas.
    - f. Schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly installed surfaces and materials.
    - g. The Work will be competing with an operational public garage, therefore clean up must be complete at the end of each work day in order to minimize interruption with garage operations.

2. During final cleaning, the Contractor shall do the following:
  - a. Use experienced workmen, or professional cleaners for final cleaning.
  - b. At completion of construction and just prior to acceptance or occupancy, conduct a final inspection of exposed interior and exterior surfaces.
  - c. Remove grease, dust, stains, labels, fingerprints, and other foreign materials from interior and exterior surfaces.
  - d. Repair, patch, and touch-up marred surfaces to match adjacent finishes.
  - e. Wash both surfaces of all existing glass.
  - f. Clean any ductwork, light fixtures or piping exposed to construction dust.

- O. Jobsite Safety: Caution shall be exercised by the Contractor at all times for the protection of persons and property and all safety regulations and other provisions of applicable Federal, State and local laws, Building and Construction codes, including the requirements of the Occupational Safety and Health Administration shall be observed.

The Plans do not include standards or guidelines for construction safety. The Contractor shall be responsible for the adequacy and safety of all construction methods and the safe prosecution of the Work, including but not limited to forms, falsework, scaffolding, protective barricades, protective rails and warning lights. It is expressly stipulated that any examination and/or approval by the Engineer of the Contractor's plans for such items as well as for any other items needed for the prosecution of the work will cover only general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Contractor shall assume full and complete responsibility for safe prosecution of the Work at all times and for obtaining satisfactory results.

During the course of the performance of the Work under the Contract, if any operation, practice, or condition is deemed by the Engineer to be unsafe the Contractor, when notified verbally, later confirmed in writing by the Engineer, shall take such corrective action immediately as appropriate.

Nothing in the foregoing paragraphs shall be construed as relieving the Contractor from full responsibility of safe prosecution of the Work at all times. In the event the Owner, the Engineer or his representative are held by court of administrative body to be liable for personal injuries or damages to property arising from deficiencies in the jobsite safety, the Contractor shall promptly indemnify and hold them harmless.

- P. Parking:

1. Construction equipment and vehicles are limited to the construction area or off site. Any other required special areas shall be coordinated with the

Management.

2. Height limitations, number of spaces required and time of parking shall be coordinated with Management.

Q. Construction Personnel:

1. Sanitary facilities, water fountains and other facilities required for the Contractor's employees shall be provided by the Contractor and shall be located at a location acceptable to the owner.

**END OF SECTION**

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**SECTION 01026**  
**UNIT PRICES**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for unit prices.
  - 1. A unit price is an amount proposed by Bidders and stated on the accepted quote form as a price per unit of measurement for materials and/or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.
  - 2. Unit prices include all necessary labor, materials, equipment and incidentals, overhead, profit and applicable taxes.
  - 3. Refer to individual Specification Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- B. Schedule: Section 00300 of this project manual shall serve as the "Unit Price Schedule". Specification Sections referenced in the Schedule contain requirements for materials and methods described under each unit price.
  - 1. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.
  - 2. Unit prices will be used to adjust the contract amount for actual work completed when the completed quantity is different from the bid quantity.

**PART 2 - PRODUCTS** (Not Applicable).

**PART 3 - EXECUTION**

3.01 UNIT PRICE SCHEDULE

- A. Unit prices for all items are as shown in the Bid Form shall be considered an integral part of this Section.

### 3.02 PAYMENT FOR EXTRA WORK

- A. Extra work which results from any of the changes as specified and for which no unit price is provided in the Contract, shall not be started until receipt of a written authorization or work order from the Owner, which authorization shall state the items of work to be performed and the method of payment for each item. The Contractor shall not be entitled to payment for work performed without such authorization.
- B. If it is practicable to pay for Extra Work on the unit price, or lump sum basis, a fair and equitable sum shall be fixed by agreement of the parties and shown in an Extra Work Order Agreement. Work to be performed directly by the Contractor should be submitted showing a detailed breakdown of labor and material costs to which a 15 percent markup should be added for overhead and profit.
- C. Work to be performed by the subcontractor should be submitted showing a detailed breakdown of labor and materials by the subcontractor to which a five percent markup should be added by the Contractor for overhead and profit.
- D. When the Owner deems it impracticable to handle any Extra Work on the unit price or lump sum basis, or if agreement of the parties cannot be reached, the work may be ordered done and paid for on a Force Account basis, as follows:
  - 1. Labor: The Contractor will be paid the actual amount of wages for all labor and foremen who are actually engaged in such work, to which cost shall be added 10 percent of the sum of such wages. A foreman shall not be used when there are less than three laborers employed, except with the written consent of the Engineer.
  - 2. Welfare and Pension Fund: The Contractor will receive the actual additional amount of contributions paid for regular and uniform health and welfare benefits, pension fund benefits or other benefits, to which 10 percent shall be added, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the class of labor employed on the Work.
  - 3. Insurance and Tax: The Contractor will receive the actual cost or increase in cost of Contractor's Public Liability and Property Damage insurance, Workmen's Compensation tax, and Social Security tax required for Force Account work. The Contractor shall furnish satisfactory evidence of the cost or rates paid for such insurance and tax.
  - 4. Materials: The Contractor will receive the actual cost for all materials, including freight charges as shown by the original paid invoices, which become an integral part of the finished work, to which shall be added 10 percent of the sum thereof.

The Contractor will be reimbursed for any materials used in the construction of such work as sheeting, falsework, form lumber, etc., which are not an integral part of the finished work. The amount of reimbursement shall be agreed upon in writing before such work is begun, and no percent shall be

added. The salvage value of such materials shall be taken into consideration in the reimbursement agreed upon.

5. Equipment: For any machinery or special equipment (other than small tools), the use of which has been authorized by the Engineer, the Contractor will be paid as following:

- a. For his own equipment, he will be paid by the monthly rate in accordance with the latest edition of Means Construction Cost Data.
- b. For rental equipment, he will be paid for the actual invoice amount as shown by the original paid invoices.

The equipment shall be of a type and size reasonably required to complete the Extra Work. Compensation will not be allowed for transportation to or from The Work or for the time required for setting up and removing the equipment from The Work or for equipment of a type, size or condition unsuitable for The Work.

### 3.03 CANCELED ITEMS

- A. It shall be in the sole judgment and sole discretion of the Engineer or the Owner to cancel or alter any or all portions of the Contract due to circumstances either unknown at the time of bidding or arising after the Contract was entered into. Should such actions result in elimination or non-completion of any portion of the Contract, payment shall be made as follows:
1. For the canceled work completed by the Contractor, payment shall be made to the Contractor for the actual number of units or items completed at the Contract unit or lump sum prices. For canceled work partially completed by the Contractor, payment shall be made to the Contractor for the partially completed units or items as specified in Payment for Extra Work.
  2. For materials obtained by the Contractor for the unfinished (uncompleted) portions of the canceled work, that have been inspected, tested and accepted by the Engineer, and that have not been incorporated in the canceled work, payment shall be made to the Contractor for the actual costs for all such materials, including freight charges, as shown by the original paid invoices, to which shall be added 10 percent of the sums thereof. The materials, when so paid for by the Owner, shall become the property of the Owner.

### 3.04 PARTIAL PAYMENTS

- A. The Engineer shall review the Contractor's pay request for materials in-place and completed, the amount of work performed, and the value thereof, at the Contract Unit Prices. From the amount so determined there shall be deducted ten percent to be retained until after the completion of the entire work to the satisfaction of the Engineer, and the balance certified to the Owner for payment.
- B. If stored matter is lost or damaged prior to incorporation in The Work, the materials shall be replaced or satisfactory repaired at the Contractor's expense. Where

payment is made for materials in storage and not yet incorporated into The Work, the Contractor shall provide to the Owner, satisfactory evidence of insurance against loss by damage or disappearance. The Contractor shall pay and be responsible for cost of storage, if any, of said materials.

**END OF SECTION**

**SECTION 01027**  
**APPLICATIONS FOR PAYMENT**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

1.03 SCHEDULE OF VALUES

- A. Applications for Payment will be submitted in accordance with the Schedule of Values with preparation of the Contractor's Construction Schedule as approved by DESMAN.
- B. Format and Content: The Schedule of Values shall generally consist of the bid items listed in Section 00300 of the Project Manual.
  - 1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Name of the Engineer.
    - c. Project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  - 2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
    - a. Bid Item
    - b. Description of work
    - c. Scheduled quantity
    - d. Unit of work
    - e. Dollar value
    - f. Previous value completed
    - g. Quantity and value for current period
    - h. Percentages complete and remaining balance
    - i. Change Orders (numbers) that have affected value

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.
  - a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
7. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.
  1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.
- D. Transmittal: Submit 3 executed copies of each Application for Payment to the Engineer by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.
  1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Engineer.

- E. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.
- F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of subcontractors.
  2. List of principal suppliers and fabricators.
  3. Schedule of Values.
  4. Contractor's Construction Schedule (preliminary if not final).
  5. Schedule of principal products.
  6. Schedule of unit prices.
  7. Submittal Schedule (preliminary if not final).
  8. List of Contractor's staff assignments.
  9. List of Contractor's principal consultants.
  10. Copies of building permits
  11. Copies of authorizations and licenses from governing authorities for performance of the Work.
  12. Initial progress report.
  13. Report of pre-construction meeting.
  14. Certificates of insurance and insurance policies.
  15. Performance and payment bonds (if required).
  16. Data needed to acquire Owner's insurance.
  17. Initial settlement survey and damage report, if required.
- G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- H. Administrative actions and submittals that shall proceed or coincide with this application include:
1. Occupancy permits and similar approvals.
  2. Warranties (guarantees) and maintenance agreements.
  3. Test/adjust/balance records.
  4. Maintenance instructions.
  5. Meter readings.
  6. Start-up performance reports.
  7. Change-over information related to Owner's occupancy, use, operation and maintenance.
  8. Final cleaning.
  9. Application for reduction of retainage, and consent of surety.
  10. Advice on shifting insurance coverages.
  11. Final progress photographs.

12. List of incomplete Work, recognized as exceptions to Engineer's Certificate of Substantial Completion.
- I. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
1. Completion of Project closeout requirements.
  2. Completion of items specified for completion after Substantial Completion.
  3. Assurance that unsettled claims will be settled.
  4. Transmittal of required Project construction records to Owner.
  5. Proof that taxes, fees and similar obligations have been paid.
  6. Removal of temporary facilities and services.
  7. Removal of surplus materials, rubbish and similar elements.

**PART 2 - PRODUCTS** (Not Applicable)

**PART 3 - EXECUTION** (Not Applicable)

**END OF SECTION**

**SECTION 01040**  
**PROJECT COORDINATION**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
  - 1. Coordination.
  - 2. Administrative and supervisory personnel.
  - 3. General installation provisions.
  - 4. Cleaning and protection.
- B. Requirements for the Contractor's Construction Schedule are included in Section "Submittals".

1.03 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
  - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
  - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
  - 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of schedules.
  2. Installation and removal of temporary facilities.
  3. Delivery and processing of submittals.
  4. Progress meetings.
  5. Project Close-out activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.
- E. Building Management Personnel: Coordinate all work with on-site building management on a regular basis to ensure that management is familiar with the ongoing repairs.

#### 1.04 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
1. Show the interrelationship of components shown on separate Shop Drawings.
  2. Indicate required installation sequences.
  3. Comply with requirements contained in Section "Submittals."
- B. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.
1. Post copies of the list in the management office

#### **PART 2 - PRODUCTS** (Not Applicable).

## **PART 3 - EXECUTION**

### **3.01 GENERAL INSTALLATION PROVISIONS**

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Engineer for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Consultant for final decision.

### **3.02 CLEANING AND PROTECTION**

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessively high or low temperatures.
3. Air contamination or pollution.
4. Water or ice.
5. Solvents.
6. Chemicals.
7. Puncture.
8. Abrasion.
9. Heavy traffic.
10. Soiling, staining and corrosion.
11. Bacteria.
12. Combustion.
13. Electrical current.
14. Unusual wear or other misuse.
15. Contact between incompatible materials.
16. Destructive testing.
17. Misalignment.
18. Excessive weathering.
19. Unprotected storage.
20. Improper shipping or handling.
21. Theft.
22. Vandalism.

**END OF SECTION**

**SECTION 01300**  
**SUBMITTALS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;
  - 1. Contractor's construction schedule.
  - 2. Submittal schedule.
  - 3. Daily construction reports.
  - 4. Product Data.
  - 5. Samples.
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
  - 1. Permits.
  - 2. Applications for payment.
  - 3. Performance and payment bonds.
  - 4. Insurance certificates.
  - 5. List of Subcontractors.
- C. The Schedule of Values submittal is included in Section "Applications for Payment."
- D. Inspection and test reports are included in Section "Quality Control Services."

1.03 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

- a. The Consultant reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.
  - a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Consultant will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
  - b. If an intermediate submittal is necessary, process the same as the initial submittal.
  - c. Allow two weeks for reprocessing each submittal.
  - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Consultant sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
  1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
  2. Include the following information on the label for processing and recording action taken.
    - a. Project name.
    - b. Date.
    - c. Name and address of Consultant.
    - d. Name and address of Contractor.
    - e. Name and address of subcontractor.
    - f. Name and address of supplier.
    - g. Name of manufacturer.
    - h. Date product was manufactured.
    - i. Number and title of appropriate Specification Section.
    - j. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Consultant using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
  1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include

Contractor's certification that information complies with Contract Document requirements.

2. Transmittal Form: Use AIA Document G 810.

#### 1.04 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.
- B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.
- C. Distribution: Following response to the initial submittal, print and distribute copies to the Consultant, Owner, subcontractors, and other parties required to comply with scheduled dates.
  1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

#### 1.05 SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.
  1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
  2. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
    - a. Scheduled date for the first submittal.
    - b. Related Section number.
    - c. Submittal category.
    - d. Name of subcontractor.
    - e. Description of the part of the Work covered.
    - f. Scheduled date for re-submittal.
    - g. Scheduled date the Consultant's final release or approval.
- B. Distribution: Following response to initial submittal, print and distribute copies to the Consultant's, Owner, subcontractors, and other parties required to comply with submittal dates indicated.
  1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their

assigned portion of the Work and are no longer involved in construction activities.

- C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

## 1.06 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
    - a. Manufacturer's printed recommendations.
    - b. Compliance with recognized trade association standards.
    - c. Compliance with recognized testing agency standards.
    - d. Application of testing agency labels and seals.
    - e. Notation of dimensions verified by field measurement.
    - f. Notation of coordination requirements.
    - g. Date product was manufactured.
  2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
  3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.
  4. Submittals: Submit 2 copies of each required submittal; submit 4 copies where required for maintenance manuals. The Consultant will retain one, and will return the other marked with action taken and corrections or modifications required.
    - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
  5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
    - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
    - b. Do not permit use of unmarked copies of Product Data in connection

with construction.

## 1.07 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Consultant's Sample. Include the following:
    - a. Generic description of the Sample.
    - b. Sample source.
    - c. Product name or name of manufacturer.
    - d. Compliance with recognized standards.
    - e. Availability and delivery time.
  2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
    - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
    - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
    - c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
  3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
    - a. Preliminary submittals will be reviewed and returned with the Consultant's mark indicating selection and other action.
  4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.
  5. Maintain sets of Samples, as returned, at the Project site, for quality

comparisons throughout the course of construction.

- a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
  - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
    - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

#### 1.08 ENGINEER'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Consultant will review each submittal, mark to indicate action taken, and return promptly.
1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Consultant will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
1. Final Unrestricted Release: Where submittals are marked "Accepted," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
  2. Final-But-Restricted Release: When submittals are marked "Accepted as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
  3. Returned for Re-submittal: When submittal is marked "Not Accepted, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
    - a. Do not permit submittals marked "Not Accepted, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is

in progress.

4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required."

**PART 2 - PRODUCTS** (Not Applicable).

**PART 3 - EXECUTION** (Not Applicable).

**END OF SECTION**

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**SECTION 01310**  
**PROSECUTION AND PROGRESS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 DATE FOR COMPLETION

- A. The Contractor shall complete The Work according to their approved schedule unless that date or time is duly extended according to the Contract.
- B. If the Contract is revised in any material respect, or, in the event, in the sole judgment of the Engineer or his representative, changes become necessary, in the best interests of the project, due to circumstances not known at the time the Contract was entered into or arising thereafter, and the Engineer determines that such revision or revisions will cause a delay in the completion of The Work, the Engineer will extend the completion date by the number of days he determines to be equitable.
- C. When a delay occurs due to unforeseen causes beyond the control and without the fault or negligence of the Contractor, the time of completion shall be extended for whatever period is determined by the Engineer to have resulted from such causes. No extension of time on account of a delay due to unforeseen causes will be granted if written application therefore is not filed with the Engineer within ten days of the date of termination of the delay or prior to the completion date of the Contract, whichever shall be sooner. Such request for extension of time, if timely filed, will be considered and ruled on by the Engineer promptly after the satisfactory completion of the Contract.

1.03 PROGRESS SCHEDULE

- A. The Contractor shall submit to the Engineer for approval by the Owner, within seven (7) calendar days following the award of contract, a detailed progress schedule based on any alternates accepted and showing the order in which the Contractor proposes to carry on the Work, the dates on which he will start controlling items, and the contemplated dates for completing. The Contractor's submission may be a critical path flow chart, bar graph, or other appropriate device of the Contractor's choice, and shall clearly indicate the various types of work to be in progress and show progress of the completed work at any point through the term of the Contract. The Progress Schedule shall show that each of the Stages of the Contract will be substantially completed within the times

provided in the Contract Documents.

- B. If the Contractor's progress is materially affected by changes in the Plans or in the amount of The Work, or, in the event, in the sole judgment of the Engineer or its representative such changes become necessary in the best interests of the project due to circumstances not known at the time the contract has failed to comply with its approved Progress Schedule, he shall submit a revised Progress Schedule if requested by the Engineer, which schedule shall show how he proposes to prosecute the balance of The Work and the calendar days after the date of the request by the Engineer. The Contractor shall make every effort to comply with the Progress Schedule submitted by him consistent with all Contract requirements, including the order of performance of specified portions of The Work. No payment will be made to the Contractor while he is delinquent in the submission of any Progress Schedule.

**PART 2 - PRODUCTS** (Not Applicable)

**PART 3 - EXECUTION** (Not Applicable)

**END OF SECTION**

**SECTION 01400**  
**QUALITY CONTROL SERVICES**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. If there is a conflict between the contract, drawings or project manual with respects to Quality of Work, then the highest quality of work will govern.
- B. This Section specifies administrative and procedural requirements for quality control services.
- C. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include contract enforcement activities performed by the Engineer.
- D. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- E. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
  - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
  - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
  - 3. Requirements for the Contractor to provide quality control services required by the Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.03 RESPONSIBILITIES

- A. The Owner will engage and pay for the services of an independent agency to perform inspections and tests specified as the Owner's responsibilities.

1. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and if the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
  2. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
    - a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
  3. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
    - a. Providing access to the Work and furnishing labor and facilities necessary to facilitate inspections and tests.
    - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
    - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
    - d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
    - e. Security and protection of samples and test equipment at the Project site.
- B. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity.
1. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility from the allowance set aside for testing in the contract sum.
- C. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Engineer and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
  3. The agency shall not perform any duties of the Contractor.
- D. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

#### 1.04 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Engineer, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.
1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
  2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
    - a. Date of issue.
    - b. Project title and number.
    - c. Name, address and telephone number of testing agency.
    - d. Dates and locations of samples and tests or inspections.
    - e. Names of individuals making the inspection or test.
    - f. Designation of the Work and test method.
    - g. Identification of product and Specification Section.
    - h. Complete inspection or test data.
    - i. Test results and an interpretations of test results.
    - j. Ambient conditions at the time of sample-taking and testing.
    - k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
    - l. Name and signature of laboratory inspector.
    - m. Recommendations on retesting.

#### 1.05 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies,

including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

## **PART 2 - PRODUCTS** (Not Applicable)

## **PART 3 - EXECUTION**

### 3.01 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

**END OF SECTION**

**SECTION 01600**  
**MATERIALS AND EQUIPMENT**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."
- C. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.
  - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. Note that some product specifications require job specific purchase of the materials versus use from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
    - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
  - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
  - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

## 1.04 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Engineer. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
  2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:
    1. Related Specification Section number.
    2. Generic name used in Contract Documents.
    3. Proprietary name, model number and similar designations.
    4. Manufacturer's name and address.
    5. Supplier's name and address.
    6. Installer's name and address.
    7. Projected delivery date, or time span of delivery period.
  3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
    - a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
  4. Completed Schedule: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
  5. Engineer's Action: The Engineer will respond in writing to the Contractor within 2 weeks of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Engineer's response will include the following:
    - a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

## 1.05 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Engineer for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
  1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
  3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
  4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
  5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
  6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
  7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

### **PART 2 - PRODUCTS**

#### 2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
  2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
  2. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
    - a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
  3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
  4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
  5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
    - a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
  6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, the Engineer's decision will be final on whether a proposed product matches satisfactorily.
  - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Engineer will select the color, pattern and texture from the product line selected.
9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division-1 for allowances that control product selection, and for procedures required for processing such selections.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION OF PRODUCTS**

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
  1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

#### **END OF SECTION**

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**SECTION 01631**  
**PRODUCT SUBSTITUTIONS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."
- C. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
  - 1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
  - 2. Revisions to Contract Documents requested by the Owner or Engineer.
  - 3. Specified options of products and construction methods included in Contract Documents.
  - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within 15 days after commencement of the Work. Requests received more than 15 days after commencement of the Work may be considered or rejected at the discretion of the Engineer.
  - 1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change

Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
  - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
  - b. Samples, where applicable or requested.
  - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
  - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
  - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
  - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
  - g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.
3. Engineer's Action: Within one week of receipt of the request for substitution, the Engineer will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the Engineer will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

## **PART 2 – PRODUCTS**

### **2.01 SUBSTITUTIONS**

- A. Conditions: The Contractor's substitution request will be received and considered by the Engineer when one or more of the following conditions are satisfied, as determined by the Engineer; otherwise requests will be returned without action

except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Engineer for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

- B. The Contractor's submittal and Engineer's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

**PART 3 - EXECUTION** (Not Applicable)

**END OF SECTION**

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**SECTION 01700**  
**PROJECT CLOSEOUT**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
  - 1. Inspection procedures.
  - 2. Project record document submittal.
  - 3. Submittal of warranties.
  - 4. Final cleaning.

1.03 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
  - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
  - 2. Advise Owner of pending insurance change-over requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
  - 4. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
  - 5. Complete final clean up requirements, including touch-up painting, if required.
- B. Inspection Procedures: On receipt of a request for inspection, the Engineer will either proceed with inspection or advise the Contractor of unfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or

corrected before the certificate will be issued.

1. The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

#### 1.04 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
  2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
  3. Submit a certified copy of the Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Engineer.
  4. Submit consent of surety to final payment.
- B. Re-inspection Procedure: The Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Engineer.
1. Upon completion of re-inspection, the Engineer will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
  2. If necessary, re-inspection will be repeated.

#### 1.05 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Engineer's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
  2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
  3. Note related Change Order numbers where applicable.
  4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
1. Upon completion of the Work, submit record Specifications to the Engineer for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.
1. Upon completion of mark-up, submit complete set of record Product Data to the Engineer for the Owner's records.
- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Engineer and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Engineer for the Owner's records.

**PART 2 - PRODUCTS** (Not Applicable)

**PART 3 - EXECUTION**

3.01 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
  - 1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
    - a. Remove labels that are not permanent labels.
    - b. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
    - c. Clean the site impacted by work, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
  - 1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

**END OF SECTION**

**SECTION 01740**  
**WARRANTIES AND BONDS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
  - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
  - 2. General closeout requirements are included in Section "Project Closeout."
  - 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 2 through 7.
  - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.03 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.04 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
  - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

#### 1.05 SUBMITTALS

- A. Submit written warranties to the Engineer prior to the date certified for Substantial Completion. If the Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Engineer.
  - 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Engineer within fifteen days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Engineer for approval prior to final execution.
- C. Forms for special warranties are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the

Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Engineer for approval prior to final execution.

1. Refer to individual Sections of Divisions 2 through 15 for specific content requirements, and particular requirements for submittal of special warranties.
- D. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- E. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
  2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.
  3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

## **PART 2 - PRODUCTS** (Not Applicable)

## **PART 3 - EXECUTION**

### 3.01 SCHEDULE OF WARRANTIES

- A. Schedule: Provide warranties on products and installations as specified below:
1. The Contractor shall provide a 5-year warranty for all repairs performed to conform with the specifications in addition to specific warranties for individual products.
  2. Concrete Work (Division 3)

The Contractor shall provide a 5 year warranty for quality workmanship and materials to conform with specifications.

3.     Waterproofing (Division 7)
  - a.     Section 07900 – Sealants and caulking. The contractor shall provide a single source materials and performance warranty that the crack and joints repaired, including related work in the slab will not leak water or debond from adjacent concrete for a period of 5 years.
  - b.     Section 07910 – Expansion Joints. The contractor shall provide a single source materials and performance warranty that the expansion joints seals will not leak water or debond from adjacent concrete for a period of 5 years.

**END OF SECTION**

**SECTION 02070**  
**SELECTIVE DEMOLITION**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. DESCRIPTION

1. Furnish labor, materials, equipment and transportation necessary to do all demolition, as shown on drawings and as specified herein, including but not necessarily limited to the following:
  - a. Removal of existing deteriorated concrete as noted on plans or directed by the Engineer.
  - b. Removal of existing vertical and overhead concrete where directed by the Engineer.
  - c. Removal of existing joints and sealants noted on plans or as directed by the Engineer.
  - d. Dust and water control.
  - e. Removal and disposal of all debris.
  - f. Disconnecting and relocating/reinstalling any existing utility lines on the site, which interfere with the repairs.
  - g. Protection of all existing electrical systems, mechanical equipment, light fixtures, overhead piping, fire protection system etc. scheduled to remain.
2. Contractor shall provide barricades with warning lights, enclose the construction area and take all precautions necessary to ensure public and employee safety.
3. All work shall be done in accordance with the requirements of all local and state agencies.

B. QUALITY ASSURANCE

1. Demolition Contractor's Qualifications: Minimum of 5 years experience on comparable projects.
2. Comply with all pertinent codes and regulations which apply to this type of work and with requirements of insurance carriers providing coverage for this work. Dispose of debris in a legal manner off site daily. Do not allow to accumulate on site.

C. JOB CONDITIONS

1. Dust and Water Control: Contractor shall contain particular debris generated by his work activities from polluting the atmosphere or waterways.
2. On-site burning shall not be permitted.
3. Use all means necessary to protect existing facilities, utilities, and appurtenances within the project areas.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
1. Schedule indicating proposed sequence of operations for selective demolition work to the engineer for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise control protection.
    - a. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
    - b. Coordinate with Owner's continuing use of portions of existing surrounding buildings as necessary.
  2. Photographs of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. File with engineer prior to start of work.

1.04 JOB CONDITIONS

- A. Occupancy: Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's normal operations.
- B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.
1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations within structure may occur prior to start of selective demolition work.
- C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.
1. Storage or sale of removed items on site will not be permitted.
- D. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to selective demolition work.

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of the project.
  2. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.
  3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
  4. Protect floors with suitable coverings when necessary.
  5. Construct temporary dust resistant partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dust resistant doors and security locks.
  6. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
  7. Remove protections at completion of work.
- E. Damages: Promptly repair damages caused to adjacent facilities by demolition work.
- F. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- G. Flame Cutting: Do not use cutting torches for removal work.
- H. Utility Services: Maintain existing utilities in service and protect them against damage during demolition operations.
1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
  2. Maintain fire protection services during selective demolition operations.
- I. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS AND EQUIPMENT**

- A. Use appropriate materials and proper equipment to complete the work of this Section. Provide all necessary barricades, warning devices, enclosures, etc. as required to comply with governing safety regulations.
- B. Schedule of demolition Equipment:
  - 1. 25 lb or smaller chipping hammers

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.
  - 1. Cease operations and notify engineer immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
  - 2. Cover and protect equipment, and fixtures from soilage or damage when demolition work is performed in areas where such items have not been removed.

### **3.02 DEMOLITION**

- A. General: Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.
  - 1. Demolish concrete in small sections. Cut concrete at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
  - 2. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors, or framing.
  - 3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
- B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit written report to engineer, accurate in detail. Pending receipt of directive from engineer, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

### 3.03 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.
  - 1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
  - 2. Burning of removed materials is not permitted on project site.

### 3.04 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and clean project site per Section 01700.
  - 1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations.
  - 2. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

**END OF SECTION**

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**SECTION 03200**  
**CONCRETE REINFORCEMENT**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

- A. Furnish, fabricate and install reinforcement and associated items required or indicated on the drawings for cast-in-place concrete, including, but not necessarily limited to, conventional and epoxy-coated bars, welded wire fabric, ties, and supports.

1.03 WORK SPECIFIED ELSEWHERE

- A. Furnishing and placement of inserts, anchorages, and other embedded items as specified in other sections.

1.04 QUALITY ASSURANCE

- A. Unless otherwise shown or specified, fabrication and placement of all concrete reinforcement and related items shall conform to the following codes and standards:
  - 1. American Concrete Institute, ACI 318, "Building Code Requirement for Reinforced Concrete."
  - 2. American Concrete Institute, ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
  - 3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

1.05 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures." Show bar schedule, stirrup spacing, diagrams of bent bars, arrangements and assemblies, for the fabrication and placement of concrete reinforcement.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver reinforcement to the Project Site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

- B. Protection: Use all means necessary to protect concrete reinforcement before, during, and after installation and to protect the materials and installed work of all trades. Take all necessary precautions to maintain identification of fabricated bars after bundles are broken.
- C. Storage: Store concrete reinforcement materials at the site to prevent damage and accumulation of dirt or excessive rust. Epoxy-coated reinforcing bars shall be stored on protective cribbing.
- D. Epoxy-coated reinforcing bars: Coating damage due to handling, shipment and placing need not be repaired where the damaged area is 0.1 square inches or smaller; damaged areas larger than 0.1 square inches shall be repaired with Section 2.01 C; the maximum amount of damage including repaired and unrepaired areas shall not exceed 2 percent of the surface area of each bar.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Reinforcing Bars: ASTM A615, Grade 60, deformed.
- B. Welded Wire Fabric: ASTM A82 and ASTM A185. (EPOXY COATED)
- C. Epoxy-Coated Reinforcing Bars: ASTM A775. When required, damaged epoxy coating shall be repaired with patching material conforming to ASTM A775 and done in accordance with the material manufacturer's recommendations. Reinforcing bars to be coated shall conform to Section 2.01-A.
- D. Bar Supports: Bar supports and spacing of same shall be per recommendations set forth by Chapter 3 of the "CRSI Manual of Standard Practice." Epoxy coated reinforcing bars supported from formwork shall rest on coated wire bar supports, or on bar supports made of dielectric material or other acceptable materials. Wire bar supports shall be coated with dielectric material, compatible with concrete, for a minimum distance of 2 inches from the point of contact with epoxy-coated reinforcing bars. Reinforcing bars used as support bars shall be epoxy-coated.
- E. Tie Wire: Wire shall be 16 gauge or heavier, black-annealed. Epoxy-coated reinforcing bars shall be tied with plastic coated, epoxy coated, or nylon-coated tie wire or other acceptable materials.
- F. For epoxy grouting reinforcing steel use the Hilti "HIT RE 500 System" supplied by Hilti Fastening Systems, "Dowel Fast" System by Powers Fasteners, or approved equal. Follow manufacturer's directions for installation and required surface preparation.

### **2.02 FABRICATION**

- A. General Requirements: Fabricate reinforcing bars to conform to required shapes and

dimensions, with fabrication to tolerances complying with CRSI Manual of Standard Practice. In case of fabricating errors, do not rebend or straighten reinforcement in a manner that will injure or weaken the material.

- B. Unacceptable Workmanship: Reinforcement with any of the following defects will not be permitted in the work:
  - 1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
  - 2. Bends or kinks not indicated on drawings or final shop drawings.
  - 3. Bars with reduced cross-section due to excessive rusting or other cause.
- C. When epoxy-coated reinforcing bars are cut in the field, the ends of the bars shall be coated with the same material used for repair of coating damage.

### **PART 3 - EXECUTION**

#### **3.01 PLACING REINFORCEMENT**

- A. General Requirements:
  - 1. All reinforcing bars shall be placed in accordance with CRSI "Recommended Practice for Placing Reinforcing Bars."
  - 2. Bars shall be placed to the tolerance specified in ACI 318-99.
  - 3. Place all reinforcement according to the approved placement drawings. Use sufficient bar supports, tie anchors, additional reinforcing bars, if required, and other accessories to hold all bars securely in place.
- B. Concrete Coverage: Place reinforcement to obtain the minimum coverages specified on the drawings for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operation. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.
- C. Cleaning Reinforcement: Steel reinforcement, at the time concrete is placed around it, shall be free from loose rust and mill scale, oil, grease, paint, earth, ice and all coatings, which would reduce or destroy bond between steel and concrete. Clean reinforcement as necessary prior to, during, or after placement to achieve this result. When bars project from construction joints, all cement mortar clinging to the bars from previous concreting shall be removed before the ensuing enveloping concrete is placed.

#### **3.02 REINFORCING BAR LAP SPLICES**

- A. New slab reinforcing bars may be spliced to existing bars by lapped splices if adequate lengths of exposed existing bars are available. Provide reinforcement lap splices by placing bars in contact and tying with wire tightly. Comply with the requirements of Engineering Data Report Number 45, 'Tension Development and Lap Splice Lengths of Reinforcing Bars Under ACI 318-99' for minimum required

length of bar for lap splices. Alternatively, the Contractor can follow the values provided below for lap splice lengths based on the following guidelines:

**LAP SPLICE LENGTHS FOR BARS IN TENSION (IN INCHES)**

<u>Bar Size</u>	<u>Uncoated Reinforcement</u>	<u>Epoxy-Coated Reinforcement</u>
3	16	17
4	16	22
5	22	33
6	31	46
7	50	74
8	62	93

- Note 1. Based on Class B splice =  $1.3 l_d$  ( $l_d$  = tensile development length) Normal weight concrete  
 $f'_c$  = 4,000 psi min.  
Grade 60 reinforcement  
Concrete cover = 1.00 in. or greater  
Bars have less than 12 in. concrete cast below them.
- Note 2. Lap splice lengths for epoxy-coated steel based on concrete cover equal to or greater than 3 bar diameters and clear spacing between bars equal to or greater than 6 bar diameters.
- Note 3. For lightweight aggregate concrete, multiply the tabulated values by 1.3.

- B. Do not make splices at points of maximum stress if possible.
- C. Stagger top splices, and in horizontal wall reinforcement separate at least five feet longitudinally in alternate bars of opposite tiers.
- D. Stubs and dowels required to receive and engage subsequent work shall extend a sufficient length to develop the strength of the bar. Place dowel and stub bars in the forms and secure against displacement during the placing of concrete. Where stub steel and dowels extend through construction joints in walls, they shall be thoroughly cleaned of adhering particles of concrete, before continuing the placing of any subsequent concrete.
- E. Where splicing length is insufficient either additional concrete removal or mechanical bar splicing shall be implemented at the direction of the Engineer.

**3.03 REINFORCING BAR MECHANICAL SPLICES**

- A. Bars to be spliced by the mechanical splicing process shall be free of paint, oil, rust, scale or other foreign material. The splice shall be done in accordance with the manufacturer's recommendations which shall be submitted to the Engineer for approval.

The mechanical splice shall meet full tension requirement of 100% of the yield strength ( $f_y$ ). The mechanical splices shall be performed using the Quick Wedge

system manufactured by Erico Products, Inc. (800)248-2677, MBT Bar Lock System (800) 755-4888, or approved equal.

Test assemblies shall include the same bars, couplers and anchors. The same equipment shall be used to make these assemblies as to be used on the project.

- B. Unskilled operators must be trained and indoctrinated by an authorized representative of the system manufacturer. Upon satisfactory completion of the training, a certificate will be issued by the system manufacturer to show the splicer's name, badge, number/Social Security Number and date certified.
- C. Test splices should be made on the size, type and grade of rebar to be used in production. If a change of size, type of grade or rebar occurs, new test results should be obtained.

Minimum rebar deformation heights and spacing within the splice must conform to the requirements of ASTM A625, or ASTM A706 as appropriate. If minimum deformation heights and spacing requirements cannot be satisfied, the system's manufacturer may at its option offer and get an approval for alternate splicing procedure to meet the specified splicing strength requirements.

- D. The frequency of test splices shall be as follows:

First Fifty (50) - One Test  
Next Fifty (50) - One Test  
Thereafter, every one hundred (100) - One Test

The test splice shall be a SISTER SPLICE (removable splice made in-place and in sequence adjacent to production splices by the same operator and under same conditions.)

Separate test frequencies are not necessary to horizontal, vertical and diagonal splices.

- E. If any splice used for testing fails to meet the design code strength requirements, two splices in-place shall be cut from the previous lot and tested. If these sister splices fail, the Contractor shall at his own expense, test as many splices as directed by the Engineer and re-splice all test and failed splices.

**END OF SECTION**

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**SECTION 03240**  
**FIBROUS REINFORCEMENT IN CONCRETE**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SCOPE OF WORK

- A. All concrete work used in this project shall be fiber reinforced as specified herein.

1.03 STANDARDS

A. Testing:

- 1. Slump - Perform conventional slump test in accordance with A.S.T.M. C143 prior to adding the fibrous reinforcement.
- 2. Test Specimens - Fiber-reinforced concrete test specimens prepared for quality control/material acceptance shall be vibrated externally as opposed to internal rodding per the recommendations of ACI 544.

B. Submittals:

- 1. Sufficient data shall be submitted verifying all fibrous reinforcement physical properties as specified in Section 2.01.C inert polypropylene, twisted fibrillated bundles, length, specific gravity, modulus of elasticity, tensile strength as well as volume used as specified.
- 2. Acceptable submittals shall be manufacturer's Sweets Engineering Catalogue and/or C.S.I. Spec-Data covering all data as specified.

C. Acceptable Manufacturers:

- 1. "FORTA CR" as manufactured by the FORTA Corporation.
- 2. "FIBERMESH" as manufactured by Master Builders Technologies.
- 3. "Grace Microfiber" as manufactured by Grace Construction Products.

**PART 2 - PRODUCTS**

2.01 MATERIAL

- A. General Description - Synthetic fibrous reinforcement to be used as secondary/temperature reinforcement in the Portland cement concrete.
- B. Areas of Use - Fibrous reinforcement to be used in new ready-mixed concrete.

C. Physical Properties

1. Chemical: Fibrous reinforcement shall be chemically and alkali inert, virgin polypropylene.
2. Configuration: Fibrous reinforcement shall be in collated fibrillated (connected screen) form and also in twisted bundle form.
3. Length: The fibrous bundle length shall be a minimum of 0.75".
4. Specific Gravity: 0.91
5. Modulus of Elasticity:  $0.70 \times 10$  to the 6th p.s.i.
6. Tensile Strength: 70,000 p.s.i. minimum

**PART 3 - EXECUTION**

3.01 INSTALLATION

- A. Volume - The fibrous reinforcement shall be used at the rate of 1.5 pounds (minimum) per cubic yard of concrete.
- B. Addition and Mixing - The fibrous reinforcement shall be added directly into the concrete either at the batch plant or at the job site. If added at the batch plant with the aggregates, typically no additional site mixing time is required. If a superplasticizer is used, the fibrous reinforcement shall be added first. If the mixing drum contains less than 50% of capacity (i.e. 4 cubic yards in a 10 cubic yard capacity drum), back the concrete up to the top of discharge and empty the fibrous reinforcement directly on top of the concrete before mixing.
- C. Placement - Fibrous reinforced concrete shall be moved and placed per standard A.C.I. recommendations. Tined rakes are prohibited as a means of moving the fibrous concrete. If pumping or shooting fibrous concrete, elevate ready mix discharge chute approximately 12" (or higher) above the pump grate or screen to improve the fibrous concrete flow into the pump.
- D. Finishing - Standard A.C.I. recommended finishing practices apply for fibrous concrete with the following additional considerations:
1. Hard-Trowel Finish - Avoid Wood trowels and floats which are abrasive to the surface - use steel/magnesium tools.
  2. Textured Finish - use stiff-bristled broom (bristles stiffer than the fibers themselves) and brush in only one direction.
  3. Cure and joint properly per A.C.I. standard recommendations.
- E. It should be noted that fibrous reinforced concrete bleeds less and slightly slower than unreinforced concrete which should be considered during the finishing process.

**END OF SECTION**

**SECTION 03300**  
**CONCRETE WORK**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies cast-in-place concrete, including formwork, mix design, placement procedures and finishes.

1.03 SCOPE OF WORK

- A. This work shall consist of partial and full depth removal of concrete slabs at locations indicated on the drawings and placing new, low water/cement ratio, fiber-reinforced, air-entrained structural concrete according to the specifications.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for proprietary materials and items, including forming accessories, admixtures, patching compounds, bonding grout/agent, joint systems, curing compounds, and others as requested by Consultant.
- C. The Contractor shall submit trial mix proportion with compressive strength test results to the Consultant for approval.
- D. The Testing Agency shall submit test results of cylinders for each day's testing.
- E. The Contractor shall submit the proposed pouring sequence and construction joint layout for approval by the Consultant.
- F. Minutes of pre-construction conference.

1.05 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:
  - 1. ACI 318-99, "Building Code Requirements for Structural Concrete," or AASHTO specifications.

- B. Materials and installed work may require testing and retesting at any time during progress of work. Retesting of rejected materials for installed work, shall be done at Contractor's expense.
- C. Pre-Construction Conference: Conduct conference at Project site to comply with requirements of Division 1 Section 01300 - Submittals, and Section 01400 - Quality Control Services.
- D. At the onset of the project start or at least 30 days prior to the first concrete pour, the contractor shall conduct a meeting to review the proposed mix designs and to discuss the required methods and procedures necessary to achieve the required concrete quality. The meeting will review requirements for submittals, status of coordinating work, and availability of materials. It will also establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications. Representatives of each entity directly concerned with cast-in-place concrete should attend the meeting, including, but not limited to, the following:
  - 1. Contractor's superintendent.
  - 2. Laboratory responsible for concrete design mixes.
  - 3. Laboratory responsible for field quality control.
  - 4. Ready-mix concrete producer.
  - 5. Concrete subcontractor, if any.
  - 6. Primary admixture manufacturers.
  - 7. Consultant or Owner's representative.

The minutes shall include a statement by the concrete contractor indicating that the proposed mix design and placing techniques will produce the concrete quality required by these specifications.

#### 1.06 APPLICATOR'S QUALIFICATIONS

- A. The Contractor shall have a minimum of five years of experience in performing work similar to that shown in the drawings and specifications.
- B. The Contractor may be requested to submit a list of five projects in which similar work to that specified was successfully completed. This list shall contain the following for each of the five projects.
  - 1. Project Name
  - 2. Owner of Project
  - 3. Owner's Representative, Address and Telephone Number
  - 4. Brief Description of Work
  - 5. Cost of Portion of Work Similar to that Specified in this Section
  - 6. Total Restoration Cost of Project
  - 7. Date of Completion

## **PART 2 - PRODUCTS**

### **2.01 FORM MATERIALS**

- A. Forms for Exposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- B. Forms for Unexposed Finish Concrete: N/A
- C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to exposed surface.
  - 1. Provide ties that, when removed, will leave holes not larger than 1-inch diameter in concrete surface.

### **2.02 CONCRETE MATERIALS**

- A. Portland Cement: ASTM C 150, Type I, non air-entraining, of recent manufacture and free of lumps.
  - 1. Use one brand of cement throughout project unless otherwise acceptable to Consultant.
  - 2. Pozzolanic materials (fly ash or slag) may be substituted for a portion of the cement when reviewed and approved by the Consultant or Owner's representative. Submittals must indicate testing to prove its suitability in combination with the intended cement and aggregate.
  - 3. Additional, sustained moist curing of the concrete is required when pozzolans are used.
- B. Normal Weight Aggregates: ASTM C-33 and as herein specified. Provide aggregates from a single source for exposed concrete. Coarse aggregates shall be clean, sound crushed stone or crushed gravel. Maximum size of coarse aggregate shall be 3/4 inch. No chert shall be permitted.
- C. Water: Potable water.
- D. Sand: ASTM C-33. Sand shall be clean and sharp.
- E. Admixtures, General: Provide admixtures for concrete that are free from chloride ions.
- F. Air-Entraining Admixture: ASTM C-260, certified by manufacturer to be

compatible with other required admixtures.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
  - a. "Air-Mix" or "AEA-92," Euclid Chemical Co.
  - b. "Darex AEA" or "Daravair," W.R. Grace & Co.
  - c. "MasterAir VR10 (MB-VR STD)" or "MasterAir AE200 (Micro-Air)," Master Builders, Inc.
  - d. "Sealtight AEA," W.R. Meadows, Inc.
  - e. "Sika AER," Sika Corp.

G. Water-Reducing Admixture: ASTM C 494, Type A.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
  - a. "Eucon WR-75," "WAR-91" or "Eucon MR," Euclid Chemical Co.
  - b. "WRDA with Hycol," or "Daracem 65," W.R. Grace & Co.
  - c. "Master Pozzoloth 322 (Pozzoloth 322 N)" or "MasterPolyheed 997 (Polyheed 997)," Master Builders, Inc.
  - d. "Plastocrete 161," Sika Corp.

H. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
  - a. "Eucon 37," "Eucon 1037," or "Plastol 5000," Euclid Chemical Co.
  - b. "WRDA 19" or "Daracem 100," W.R. Grace & Co.
  - c. "MasterRheobuild 1000 (Rheobuild 1000)," Master Builders, Inc.
  - d. "Sikament 300," Sika Corp.

I. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:
  - a. "Eucon Retarder 75," Euclid Chemical Co.
  - b. "Daratard-17," W.R. Grace & Co.
  - c. "MasterSet R100 (Pozzolith 100XR)," Master Builders, Inc.
  - d. "Plastiment," Sika Corporation.
- J. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of admixtures will be required from the admixture manufacturer prior to mix design review by the Engineer.
- K. Fibrous Reinforcement:
  1. Subject to compliance with requirements, provide fibrous reinforcement as per specification Section 03240.

## 2.03 RELATED MATERIALS

- A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Moisture-Retaining Cover: Burlap and plastic complying with ASTM C 171.
- C. Moist Curing: Curing shall be accomplished by wet curing only. A curing membrane shall only be used in floor areas if approved in writing by the Consultant or Owner's representative.

## 2.04 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for concrete by laboratory trial batch or field experience methods as specified in ACI 301, Section 4.2.3. Use an independent testing facility acceptable to the Consultant for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.
- B. Submit written reports to the Consultant of each proposed mix at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed and approved by the Consultant. All mix designs shall be submitted on a Mix Design Submittal Form.
- C. Design mix to provide structural concrete with the following properties;
  1. 5,000-psi, 28-day compressive strength, structural normal weight 145 pcf; W/C ratio, 0.38 maximum; fiber reinforcement as per Section 03240.

## 2.05 ADMIXTURES

- A. Use high-range water-reducing admixture (Superplasticizer) in concrete for placement and workability.
- B. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content of 6.0% with a tolerance of plus or minus 1.0 percent.
- C. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.
- D. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
  - 1. 3 inches plus or minus ½ inch, prior to addition of superplasticizing admixture.
  - 2. Not more than 8 inches final slump after addition of superplasticizing admixture.

## 2.06 CONCRETE MIXING

- A. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
- B. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as specified.
  - 1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

## **PART 3 - EXECUTION**

### 3.01. PREPARATION

- A. Remove concrete members as indicated on the drawing. The removal of concrete shall be performed using approved methods and prepare the concrete surfaces to receive new concrete as shown on plans and as directed by the engineer in the field.

### 3.02 FORMS

- A. General:
  - 1. The Contractor shall submit detailed drawings for form work for examination by the Consultant. If such drawings are not satisfactory to the Consultant, the Contractor shall make such changes in them as may be

required, but it is understood that the Consultant's examination of the drawings as submitted or corrected shall in no way relieve the Contractor of responsibility for obtaining satisfactory results.

2. All forms shall be so constructed and maintained that the finished concrete will be true to line and grade and of the shape and dimensions shown on the Plans. The forms shall be constructed so that they can be removed without injury to the concrete.
3. Forms shall be mortar-tight, sufficiently rigid to prevent distortion due to the wet concrete mix and other loads incident to construction operations, including vibration, and so constructed and maintained to prevent warping and opening of the joints due to shrinkage of the form material. Molding strips shall be placed in the corners of forms so as to produce beveled edges on permanently exposed concrete corners.
4. The interior of forms shall be treated with a non-staining form oil before concrete is placed to prevent adhesion of the concrete to the form.
5. All lumber in contact with concrete shall be free from knot holes, loose knots, cracks, splits, warps or any other defects which would mark the appearance of the finished structure. Any lumber which had defects affecting its strength shall not be used.
6. In designing forms, concrete shall be considered as a liquid weighing 150 pounds per cubic foot for vertical loads and for computing the hydrostatic head for horizontal pressure. In addition, a live load allowance of 50 pounds per square foot shall be used on horizontal projections of surfaces. Forms shall be designed so that no member will develop a dead load deflection of more than 1/270th of the span.
7. Spreader blocks and non "stay-in-place" bracing shall be removed from forms before concrete is placed. In no case, shall any portion of wood be left in the concrete.

B. Forms for Permanently Exposed Surfaces:

1. Forms for concrete surfaces that will be permanently exposed to view shall be constructed of plywood or of metal panels. Wood or metal linings for forms shall be of such kind and quality, or shall be so treated or coated, that there will be no chemical deterioration or discoloration of the formed concrete surface. The type and condition of form linings, and the construction of the forms, shall be such that form surfaces will be even and uniform.
2. Plywood sheets less than five-eighth inch in thickness shall be placed against a solid wood backing of three-quarter inch sheathing. Plywood sheets five-eighth inch or more in thickness may be used without backing, provided the forms are constructed to withstand pressure developed during placing of concrete without producing visible waviness between studs. Plywood sheets shall be placed so that joints are tight and with the long dimension horizontal.
3. Metal for forms shall be of such thickness that the forms will remain true to shape. Clamps, pins, or other connecting devices shall be such that they will hold the forms rigidly together in place and allow removal without injury to

the concrete. Metal forms which do not present a smooth surface or line up properly shall not be used. All metal forms shall be kept free from rust, grease, or other foreign material which would discolor the concrete.

4. Form panels, either of wood or metal, shall be constructed and assembled so as to result in tight joints between the panels.

C. Form Anchorage:

1. Forms shall be securely tied together with approved rods, and braced in a substantial and unyielding manner. In general, tie rods shall be designed to also act as struts or spreader. Wood struts will not be permitted to remain in the concrete.
2. For concrete surfaces that will be permanently exposed to view, metal ties or anchorages within the forms shall be constructed so as to permit their removal to a depth of at least one and one-half inches from the face without injury to the concrete. The cavities on both sides of the concrete resulting from the removal of the end of form ties shall be filled with dry-pack Portland cement mortar having the same proportions of cement and sand as the mortar in the body of the concrete. The surface of the filling shall be left sound, smooth and even and shall match, insofar as practicable, the color of the surrounding concrete.
3. Devices which, when removed, will leave an opening entirely through the concrete will not be permitted. Wire ties shall not be used. Any parts of metal supports or spacers for reinforcement that are left in place within one and one-half inches of an exposed surface of the concrete shall be of non-rusting metal or have a non-rusting coating. If such parts are galvanized, the weight of zinc coating shall average not less than two ounces per square foot of actual surface.

D. Inspection of Forms:

1. All dimensions of forms in place shall be carefully checked before concrete is placed. Immediately prior to placing concrete, any warpings or bulging shall be corrected and all dirt, sawdust, shavings or other debris removed. In narrow walls where the bottom of the forms are otherwise inaccessible, the lower boards or panels shall be left loose on the back side so that extraneous material can be removed just prior to placing concrete.
2. If during placing of the concrete, the forms show signs of bulging or sagging, they shall be properly realigned and securely braced, and, if necessary to make proper correction, the portion of the concrete affected shall be removed.
3. When forms are unsatisfactory in any way, either before or during the placing of concrete, the placing shall be suspended until the defects are corrected.
4. If the forms develop any defects, such as bulging, sagging, leakage or irregular surfaces after the concrete has been poured, that portion of the work shall be removed, reconstructed or repaired as directed by the Consultant without additional compensation to the Contractor.

### 3.03 PLACING FINISHING AND CURING

#### A. Bonding Grout:

1. After the existing concrete surface has been cleaned, it shall be uniformly saturated by pre-wetting for 2 hours minimum. Surface must be wet to saturated surface dry (SSD) condition, and any freestanding water shall be completely removed prior to placing the bonding grout. Immediately before placing concrete, a thin coating of bonding grout shall be scrubbed into the properly prepared surface of the existing concrete. Proper workmanship shall be exercised to insure that all existing surfaces receive a thorough, even coating and that no excess grout is permitted to collect in pockets. The rate of progress in applying grout shall be limited so that the grout does not become dry before it is covered with new concrete.
2. Bonding grout for patching concrete to existing concrete shall consist of equal parts by weight of Portland Cement and sand mixed in a portable mechanical mixer with sufficient water to form a stiff slurry. The consistency of this slurry shall be such that it can be applied with a stiff brush or broom to the old concrete in a thin, even coating that will not run or puddle in low spots.
3. Should the bonding grout dry before the concrete is placed, the Contractor will remove the dried grout and sandblast clean the grouted surface, at his expense, before placing fresh bonding grout.
4. When the method of concrete removal includes hydromilling or hydrodemolition, the requirements for the use of bonding grout may be waived. Prepared surfaces shall be clean and free of laitance, foreign material and any debris encountered during surface preparation. Do not allow cement to dry and re-adhere on the surfaces. The surface shall be uniformly saturated by wetting for 4 hours (min.) Surface will be saturated surface dry (SSD) condition, and any free standing water shall be completely removed prior to concrete placement. No free moisture or puddles on the surface will be permitted or accepted.

- B. Placing and finishing: After the bonding grout has been applied, concrete shall be placed, consolidated by vibration, and shall be finished by screening and bull floating to bring the finished surface to specified elevation. The surface shall then receive a light broom finish, as directed by the Engineer. The reinforcing steel shall have a minimum concrete cover as shown on plans. The finished concrete shall be suitably protected, until the completion of the required curing period. Provide tooled joints between new and existing concrete surfaces.

- C. Curing: The recommendations of ACI 308 Standard Practice for Curing Concrete, shall be followed. When water is required to wet the surface of the newly placed concrete, it shall be applied as a fine spray so that it will not mark or pond on the surface. Except where otherwise specified, the curing period shall be at least 72 hours. If high early strength concrete is approved by the Consultant, the curing period may be reduced as directed by the Consultant. If fly ash or slag is approved in the mix by the Consultant, the curing time will be extended. Curing shall be

accomplished by wet curing only. The curing and sealing compound shall only be used on floor and slab areas approved by the Consultant.

1. The surface of the newly poured concrete shall be covered with wetted burlap as soon as the concrete has hardened sufficiently to prevent marring of the surface. The burlap shall overlap six inches. At least two layers of wetted burlap shall be placed on the finished surface. The burlap shall be kept saturated by means of a mechanically operated sprinkling system. In place of the sprinkling system, two layers of burlap may be substituted for one layer of burlap and impermeable covering.  
The burlap sheets shall be placed so that they are in contact with the vertical faces of concrete slabs after removal of slab forms, and that portion of the material in contact with those faces shall be kept saturated with water.
2. Membrane Curing Method. Membrane curing will not be permitted unless approved in writing by the Consultant. Concrete at these locations shall be cured by another method as specified above.  
After the concrete has been finished, the surface shall be cured with the specified curing compound. The seal shall be maintained for the specified curing period. The vertical faces of concrete slabs shall, likewise, be sealed immediately after the forms are removed. This high solids curing and sealing compound shall be applied at a maximum coverage rate of 250 square feet per gallon. These applications shall be made with mechanical equipment.  
At locations where the coating is discontinuous or where pin holes show or where the coating is damaged due to any cause and on areas adjacent to sawed joints, immediately after sawing is completed, an additional coating of membrane curing compound shall be applied at the rate of one gallon per 250 square feet.
3. The Consultant may order curing by another method specified herein if unsatisfactory results are obtained with a curing compound. Prior to starting The Work, the Contractor shall have available, at the site of The Work, supply of one of the other approved curing materials sufficient for curing one day's production.
4. The Contractor's construction operations including the management of traffic, shall be such as to avoid damage to the coatings of curing compound for period of not less than the curing period specified. Any curing compound that is damaged or that peels from the concrete surface within the curing period specified, shall be repaired by the Contractor without delay and in an approved manner. No additional compensation will be allowed to the Contractor for performance of this work.

### 3.04 REMOVAL OF FORMS

- A. General: Formwork may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 72 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

### 3.05 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces except as acceptable to Consultant.

### 3.06 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with bonding grout or proprietary repair products immediately after removal of forms, when acceptable to Consultant.
  - 1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar before bonding grout has dried.
  - 2. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surface texture of surrounding concrete. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- B. Repair of Concrete Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Consultant. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry-pack mortar, or precast cement cone plugs secured in place with bonding agent.
  - 1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

### 3.07 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The Owner will employ a testing laboratory to perform tests and to submit test reports.
- B. Sampling and testing for quality control during placement of concrete may include

the following, as directed by Consultant.

- C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
1. Slump: ASTM C 143; one test at point of discharge for each truck delivering the concrete; additional tests when concrete consistency seems to have changed.
  2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each truck of air-entrained concrete.
  3. Concrete Temperature: Test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and each time a set of compression test specimens is made.
  4. Compression Test Specimen: ASTM C 31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cure test specimens are required.
  5. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. more than the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 3 days, two specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
  6. When frequency of testing will provide fewer than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
  7. When total quantity of a given class of concrete is less than 50 cu. yds., Consultant may waive strength test if adequate evidence of satisfactory strength is provided.
  8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
  9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.
- D. Test results will be reported in writing to the Consultant, Ready-Mix Producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for 7-day tests and 28-day tests.
- E. Nondestructive 3-day Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

- F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Consultant. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

**END OF SECTION**

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**SECTION 03320**  
**CONCRETE REPAIR USING HIGH STRENGTH, FAST-SETTING MATERIALS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to the work of this section

1.02 SCOPE OF WORK

- A. This work shall consist of the removal of existing delaminated concrete and the installation of a fast-setting, high-strength concrete at locations to be re-opened to traffic the following morning or designated by the Engineer. Materials in this specification may also be appropriate when the scope of concrete work is limited and it is not practical to use ready-mixed concrete.

**PART 2 - PRODUCTS**

2.01 MATERIALS

- A. The fast-setting concrete repairs must achieve a compressive strength of 3,500 psi or safely accept vehicular traffic within 3 hours of placement.
- B. The concrete shall resist freeze/thaw damage and scaling in compliance with ASTM Test Procedures C-666 and C-672. The products approved under this section shall be:
  - 1. SikaEmaco 1060 / 1060EX / 1061 / 430 by Sika USA
  - 2. HP Concrete by US Concrete Products
  - 3. Conproco Express Set

Note: Products related to those above with extended working times may be acceptable at the discretion of the Engineer.

**PART 3 - EXECUTION**

3.01 SURFACE PREPARATION

- A. The exact location of spalled concrete to be repaired will be determined in the field by tapping of slab with a sounding rod, chain drag or hammer. An outline of the area to be repaired will be marked with chalk.
- B. The areas of the spalled concrete to be removed will be outlined by making a sawcut around the perimeter of the spalled area. The nominal depth of sawcut shall be 1/2

inch. Do not, under any circumstances, cut existing reinforcing bars or post-tensioning strands.

- C. All loose unsound concrete shall be removed with pneumatic or electric jack hammer weighing no more than 15 lbs. may be used for removing concrete around mild steel reinforcement. Where unsound concrete is below reinforcement, removal to 3/4 inch below reinforcement is required.
- D. All deteriorated reinforcing steel bars which have lost more than 20% (or more) of their cross-sectional areas or selected by the Engineer shall be replaced. New reinforcing steel bars shall be furnished and placed in accordance with Section 03200 of the technical specifications and under the directions of the Engineer.
- E. The deck surface shall be blown clean with compressed air to assure that all loose or hollow concrete is removed. The reinforcing steel shall be sand blasted to remove all rust.

### 3.02 PLACING, FINISHING AND CURING

- A. Place and properly mixed concrete into the prepared area from one side to the other. Do not place concrete in lifts. Work the material firmly into the bottom and sides of the patch to assure good bond. Do not re-temper or finish material after initial set.
- B. For maximum performance and minimal shrinkage, wet curing shall be performed for a minimum of 3 hours followed by the application of an approved curing compound.

### 3.03 METHOD OF MEASUREMENT

This work will be measured for payment in square feet. The quantity of repair area will be computed from areas marked by the Contractor and approved by the Engineer.

**END OF SECTION**

**SECTION 03340**  
**CONCRETE REPAIR USING TROWEL APPLIED MORTAR**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

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

1.02 SCOPE OF WORK

- A. This work shall consist of the removal of existing unsound concrete to required depth and the installation of a trowel applied, fast-setting cement mortar at locations indicated on drawings and/or at other locations designated by the Engineer.

**PART 2 - PRODUCTS**

2.01 MATERIALS

- A. The fast-setting polymer repair mortar shall achieve a compressive strength of 5,000 psi in 28 days. The products approved under this section are as follows.
  - 1. Sika Emaco 425 / Sika Repair SHB by Sika USA
  - 2. V/O by US Concrete Products
  - 3. Conpro Set by Conproco

**PART 3 - EXECUTION**

3.01 SURFACE PREPARATIONS

- A. All loose and unsound concrete shall be removed with small chipping hammers. Remove concrete a minimum of 3/4" beyond the reinforcing steel.
- B. The surface shall be blown clean with compressed air to assure that all loose and hollow concrete is removed. The reinforcing steel shall be sandblasted to remove all rust.

3.02 PLACING, FINISHING AND CURING (Trowel Applied Mortar):

- A. Apply patching material as follows and in accordance with manufacturer's recommendations.
- B. Saturate the surface dry with water so that it maintains a dark gray color one half hour before placing.

- C. Scratch a base coat firmly into the dampened surface and apply the balance of the patch. Consolidate the mortar for density. For deep patches, add recommended filler and apply the material in lifts, allowing it to stiffen enough between lifts to support its own weight. For repairs over 4 inches deep, steel ties shall be provided to aid in weight support. Maximum filler addition to be 1 part filler to 2 parts by volume. The surface shall be troweled and brushed to match surrounding concrete.
- D. The finished patch shall be cured for at least forty eight hours. Keep damp with water or coat with a water-based curing and sealing compound conforming to ASTM C1315 as recommended by the polymer repair mortar manufacturer.
- E. In hot weather, the surface shall be kept cool by shading. Use cold liquid for mixing. Work material rapidly since heat accelerates set. Cure immediately. In cold weather, do not make repair if temperature is expected to fall below freezing within 48 hours of placing. The patches must be kept at a minimum of 60 degrees F. for seventy two hours for proper curing.

### 3.03 TESTING

- A. The patched areas shall be sounded with a chain drag and/or hammer after 7 days after concrete placement; any hollowness detected shall be corrected by the Contractor by removing and replacing the patch at no extra cost to the Owner.

### END OF SECTION

**SECTION 03345**  
**CONCRETE REPAIR USING FORM AND PUMP MATERIALS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and all Divisions of the Specifications apply to this Section.

1.02 SCOPE OF WORK

- A. This work shall consist of the removal of existing unsound concrete to required depth and the installation of a prepackaged pump and pour repair mortar at locations indicated on drawings and/or at other locations designated by the Engineer.

**PART 2 - PRODUCTS**

2.01 MATERIALS

- A. The pump and pour repair mortar shall achieve a minimum compressive strength of 5,000 psi in 28 days. The products approved under this section are as follows.
  - 1. SikaEmaco 440 / S 466 by Sika USA
  - 2. Deck Mix SCC / FP by US Concrete Products
  - 3. Forment by Conproco

**PART 3 - EXECUTION**

3.01 SURFACE PREPARATIONS

- A. Saw cut the perimeter of the repair area to a nominal depth of 1/2". Take precautions in areas likely to contain top reinforcing not to cut any reinforcing steel or post-tensioning strands.
- B. All loose and unsound concrete shall be removed with small chipping hammers to provide a minimum 1/4" substrate profile. Remove concrete a minimum of 3/4" beyond the reinforcing steel.
- C. The surface shall be blown clean with compressed air to assure that all loose and hollow concrete is removed. The reinforcing steel shall be sandblasted to remove all rust. All measures must be taken to prevent flash rusting from occurring to the reinforcing steel.
- D. Forms shall be watertight. Apply a suitable form release to the forms.

### 3.02 PLACING, FINISHING, AND CURING

- A. Apply patching material as follows and in accordance with manufacturer's recommendations.
- B. Mix the repair mortar according to manufacturer's recommendations. Follow the manufacturer's guidelines for extending the repair mortar by adding aggregate as required.
- C. Saturate the surface dry with water so that it maintains a dark gray color one half hour before placing.
- D. Vibrate form while pumping repair mortar using a variable pressure pump. Do not over pump so that the forms deflect.
- E. Cure the repaired area as recommended by the repair mortar manufacturer.

### 3.03 TESTING

- A. The patched areas shall be sounded with a hammer after 7 days after concrete placement; any hollowness detected shall be corrected by the Contractor by removing and replacing the patch at no extra cost to the Owner. The contractor shall provide access, at their expense, for the Engineer to sound all repaired areas.

**END OF SECTION**

**SECTION 07900**  
**CAULKING, SEALING AND JOINT FILLERS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to the work of this section

1.02 DESCRIPTION OF WORK

- A. The extent of sealant and caulking work is indicated on the Drawings or specified herein.
  - 1. Provide two component polyurethane non-sag sealant at vertical and horizontal joints.
  - 2. Provide two component polyurethane self-leveling sealant at joints subject to traffic conditions.

1.03 QUALITY ASSURANCE

- A. Obtain elastomeric materials from only manufacturers who will send a qualified technical representative to project site, for the purpose of advising the installer of proper procedures and precautions for the use of the materials.

1.04 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's specifications, recommendations and installation instructions for sealant, caulking compound and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown.
- B. Samples: Submit color samples of caulking from which the Architect will select color.

1.05 JOB CONDITIONS

- A. Examine all surfaces to receive work of this Section and report to the Architect any condition which is not acceptable. Commencement of work on any continuous run constitutes acceptance of conditions and places the responsibility of a sound installation on this section.
- B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of

high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures. Coordinate time schedule to avoid delay of project.

#### 1.06 DELIVERY AND STORAGE

- A. Materials shall be delivered and stored in original, unopened manufacturer's containers with brand marked clearly thereon. Materials shall be stored in a dry location, protected from adverse conditions.

#### 1.07 SPECIAL PROJECT WARRANTY

- A. Execute and submit a written warranty signed by the Contractor that the joints sealants will remain free of deterioration, bond failure and staining resulting from defective materials or workmanship for a period of five years from the date of acceptance by the Owner.
- B. Should defects in materials or workmanship be discovered within the warranty period, make satisfactory repairs thereto promptly without additional cost to the Owner.

### **PART 2 - PRODUCTS**

#### 2.01 CAULKING/SEALANT

- A. The joint sealant to be used for control/construction joints shall be two component polyurethane sealants of the chemically curing type containing no asphalt, coal tar, or plasticizers. The sealant shall be used with a compatible primer specified by the manufacturer. Approved products for use are:
  - 1. Sikaflex 2C-SL as manufactured by Sika Corporation ([www.sikausa.com](http://www.sikausa.com)).
  - 2. Vulkem 245/255 or THC-900 as manufactured by Tremco ([www.tremcosealants.com](http://www.tremcosealants.com)).
  - 3. Iso-Flex 880GB Sealant as manufactured by LymTal International, Inc. ([www.lymtal.com](http://www.lymtal.com)).
- B. The sealant to be used shall meet or exceed the requirements of Interim Federal Specification TT-S0027-E, Sealants Class A, Type 1 and 2. The sealant shall not de-bond or fail while elongated 25 percent in a water immersion test, according to Federal Specification TT-S-0027-E. When tested according to Paragraph 4.3.5. of Federal Specification TT-S-0027-E, weight loss shall not be greater than 5 percent. Shore A hardness under standard conditions shall be 25-30.
- C. The cove/wall sealant to be used shall be a non-sag, two component polyurethane sealants of the chemically curing type containing no asphalt, coal tar, or

plasticizers. The cove joint sealant shall comply with Federal Specification TT-S-00227E, Type II, Class A, Corporation of Consultants CRD-C-506-72; ASTM C-920-79, Type M, Grade NS, Class 25. Approved Cove Sealants are as follows:

1. "Sikaflex-2C-NS," as manufactured by Sika Corporation ([www.sikausa.com](http://www.sikausa.com))
2. "THC-901" as manufactured by Tremco ([www.tremcosealants.com](http://www.tremcosealants.com))
3. "Iso-Flex 881 NS Sealant" as manufactured by LymTal International, Inc. ([www.lymtal.com](http://www.lymtal.com))

## 2.02 PRIMER AND FILLERS

- A. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or caulking compound manufacturer, for the joint surfaces to be cleaned.
- B. Joint Primer/Sealer: Provide the type joint primer/sealer recommended by the sealant manufacturer, for the joint surfaces to be primed or sealed.
- C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.
- D. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when joint is compressed.

## **PART 3 – EXECUTION**

### 3.01 TYPICAL SURFACE PREPARATION

- A. The Contractor shall either grind the surface of all cracks and construction joints designated for repair with sealant to the shape of 1/2" x 1/2" v-groove, or sawcut a square 1/2" x 1/2" groove, grind sharp corner of groove and apply bond breaker to bottom horizontal surface. Edges of cracks or joints to be sealed shall be of sound concrete. Prior to installing sealant, surfaces shall be cleaned of foreign materials and debris, V-groove ground and primed.

### 3.02 CAULKING/SEALANT APPLICATION

- A. Joint Surface Preparation: Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or caulking compound.

1. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with Paragraph 4.3.9 of FS TT-S-00227E-70 has successfully demonstrated that sealant bond is not impaired by the coating or treatment. Submit lab test in writing.
  2. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Submit lab test in writing.
- B. Installation: Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
1. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
  2. Install sealant backer rod for liquid elastomeric sealants, except where recommended to be omitted by sealant manufacturer for the application shown.
  3. Install bond breaker tape wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
  4. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
  5. Install sealants to depths as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead.
  6. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer or the sealant/caulking compound.
  7. Remove excess and spillage of compounds promptly as the work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to the adjoining surfaces or finishes.
  8. Top off self-leveling sealant as necessary if there is any settlement.
- C. Cure and Protection:
1. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength,

- internal cohesive strength and surface durability.
2. Provide all procedures required for the protection of sealants and caulking compounds during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at the time of acceptance.

### 3.03 JOINT FILLERS

- A. Set units at proper depth or position in the joint to coordinate with other work, including the installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between the ends of joint filler units.

**END OF SECTION**

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**SECTION 07910**  
**EXPANSION JOINT SEALS**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

- A. Section 07900 – Caulking, Sealing and Joint Fillers

1.02 SCOPE OF WORK

- A. Furnish labor, materials, equipment and supervision to install watertight, traffic bearing expansion joint seals in accordance with these specifications and as shown on the drawings.

1.03 QUALITY ASSURANCE

- A. The manufacturer and approved applicator shall provide a 5 year guarantee that the joint seal will not leak or fail. Any type of failure of the new joint seal which occurs within the specified warranty period shall be repaired by the Contractor at no cost to the Owner.
- B. Consult the Manufacturer's representative and establish the minimum provisions required to ensure satisfactory work. A licensed applicator with a minimum of 5 years experience on similar joints shall install the specified joint seal.

1.04 SUBMITTALS BY THE CONTRACTOR

- A. The Contractor shall submit shop drawings showing all the expansion joint details required for this particular project for approval by the Consultant in addition to Manufacturer's literature with an applicable portions deleted.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered on the job and stored in a place protected from damage, moisture and exposure to the elements in exact accordance with manufacturer's instructions.

1.06 JOB CONDITIONS

- A. Weather Conditions: Do not proceed with installation of expansion joints and sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and strength development of the associated joint materials.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

A. The expansion joint seal system shall be a complete system of compatible materials designed by the manufacturer to produce a waterproof, traffic bearing expansion joint seal.

B. Expansion joint at supported floors:

1. The expansion joint seal system shall be a complete system of compatible materials designed by the manufacturer to produce a waterproof, traffic-bearing expansion joint seal. The system shall also meet or exceed any fire rating requirements set forth by the local building code requirements.

2. The gland elements shall be a continuous, factory extruded unit for the entire straight run length of the joint. Changes in direction or elevation shall be accomplished by factory molded elbows, tees, crosses and the like. The seal shall be turned up a minimum of 6 inches (vertically) unless otherwise shown on plans. The seal element shall not be mitered/jointed unless approved by the Consultant in writing and shall meet the following performance criteria.

Tensile Strength	ASTM D412	1,500 psi
Elongation at Break	ASTM D412	175 % (Min.)
Hardness, Type A durometer	ASTM D2240	64 ± 5

3. The premolded elements shall be a continuous, factory molded unit for the entire straight run length of the joint. Changes in direction or elevation shall be accomplished by factory molded elbows, tees, crosses and the like. The seal shall be turned up a minimum of 6 inches (vertically) unless otherwise shown on plans. The seal element shall be mitered/jointed at all changes in direction and shall meet the following performance criteria.

Tensile Strength	ASTM D412	250 psi
Elongation at Break	ASTM D412	500 % (min)
Hardness, Type A durometer	ASTM D2240	30+/-5

4. Expansion joint systems approved for use in one or more applications are provided in the master list below. Due to variations in specific details of the locations, expected movement, expected traffic exposure, availability, ease of installation and existing blockout geometry, all systems are not suitable for one particular project. The Contractor shall reference the specific expansion joint detail on the specific project drawings and list of approved products shown on the drawings, including gland size, etc. for the respective condition.

5. Approved Products
    - a. “Wabocrete/Membrane 201 system,” model as applicable, manufactured by Watson Bowman Acme, ([www.wbacorp.com](http://www.wbacorp.com)).
    - b. “Emseal Thermaflex,” model as applicable, manufactured by Emseal Joint Systems, Ltd. ([www.emseal.com](http://www.emseal.com)).
- Or equal

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

##### **A. Preparatory Work**

1. Expansion joint throat to be cleared of all existing sealants, joint fillers and other materials to a depth required for installation of new seal.
2. Vertical sides of expansion joint throat shall be ground clean of all contaminants and impurities immediately prior to the system installation to assure proper adhesion.
3. It is recommended that adjacent deck surfaces be taped off and protected to assure a clean, neat professional installation.

##### **B. Installation**

1. The entire installation shall be made in strict accordance with the manufacturer's written instruction.
2. Foam seal to be installed into manufacturer's standard field-applied epoxy adhesive. The seal is to be installed slightly recessed from the surface such that when the field-applied injection band of silicone is installed between the substrates and the foam-and-silicone-bellows, the system will be essentially flush with the substrate surface.
3. Follow standard manufacturer’s recommendation for installation of the material, taking into account joint dimensions, joint width and ambient temperature conditions.

#### **3.02 TESTING**

All new expansion joint seals shall be tested. Any leaking observed shall be rectified by the Contractor and the joint shall be re-tested until no leakage is observed. It is the

responsibility of the Contractor to absolutely make certain that the joints are totally waterproofed.

**END OF SECTION**