CONSTRUCTION REQUEST FOR PROPOSAL

PARKING STRUCTURES RESTORATION 2024

Ann Arbor DDA

Due Date: May 14, 2024, 2:00 p.m. (local time)

Issued By:

Ann Arbor
Downtown Development Authority (DDA)
150 South Fifth Avenue, Suite 301
Ann Arbor, MI 48104

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PROJECT MANUAL
FOR
ANN ARBOR
DOWNTOWN DEVELOPMENT AUTHORITY

PARKING STRUCTURES RESTORATION 2024
ANN ARBOR, MICHIGAN

April 19, 2024
Project Number 211744

ENGINEER

FISHBECK
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Kalamazoo, Michigan 49008
269.375.3824

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SECTION 00 11 16 - INVITATION TO BID

1.1 PROJECT INFORMATION

A. Notice to Bidders: Qualified bidders are invited to submit bids for Project as described in this Document according to the Instructions to Bidders.

B. Project Identification: Ann Arbor DDA Parking Structures Restoration 2024.
   1. Project Location: Ann Arbor, Michigan.

C. Owner: Ann Arbor Downtown Development Authority
   150 South Fifth Street, Suite 301
   Ann Arbor, MI 48104.

   1. Owner's Representative: Jada Hahlbrock, Manager of Parking Services

D. Engineer: Fishbeck is the lead designer, references to “Architect” within the project specifications will generally refer to Fishbeck.

E. Project Description: Project primarily consists of concrete repairs, masonry repairs, waterproofing, painting, and plumbing at the Fourth & Washington and/or Liberty Square Parking Structures. Project work is indicated on the drawings, and includes, but is not limited to:
   1. Horizontal, vertical, and overhead concrete repairs
   2. Installation of precast capstone with stainless steel flashing
   3. Masonry repairs
   4. Joint sealant replacement
   5. Installation of deck coating and epoxy broadcast systems
   6. Installation of masonry sealer
   7. Painting of concrete and steel surfaces
   8. Installation of trench drains and storm drain/riser system
   9. Painting of pavement markings

F. Construction Contract: Bids will be received for the following Work:
   1. General Contract (all trades).

1.2 BID SUBMITTAL AND OPENING

A. Owner will receive electronic bids until the bid time and date at the e-mail addresses indicated below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
   1. Bid Due Date: May 14, 2024
   2. Bid Time: 2 p.m., local time
   3. E-mails: Jada Hahlbrock
      Ann Arbor Downtown Development Authority
      JHahlbrock@a2dda.org

      And

      Justin Thomson
      Fishbeck
      jthomson@fishbeck.com

B. Bids will be opened privately and reviewed by Owner and Engineer.

C. The Owner reserves the right to reject any or all Bids and to waive any informality of irregularity in the Bidding. The Owner also reserves the right to delete any item or portion of the work.

1.3 BID SECURITY

A. Bid security shall be submitted with each bid in the amount of 5 percent of the bid amount. No bids may be withdrawn for a period of 60 days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

1.4 PREBID CONFERENCE

A. A pre-bid conference for all bidders will be held at the Ann Arbor Downtown Development Offices on April 25, 2024 at 11 a.m., local time.

1.5 DOCUMENTS

A. Contract documents are available electronically to all prospective bidders at the following websites.
   1. MITN Purchasing Group
      https://www.bidnetdirect.com/mitn/
   2. Ann Arbor Downtown Develop Authority
      https://www.a2dda.org/who-we-are/doing-business-with-us/

1.6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

A. Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time. Work is subject to liquidated damages.

1.7 BIDDER'S QUALIFICATIONS

A. Bidders must have experience with similar work and must meet qualifications identified.

B. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, a separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

END OF SECTION 00 11 16

SECTION 00 25 13 - PREBID MEETINGS

1.1 PREBID MEETING

A. Architect will conduct a Prebid meeting as indicated below:
   1. Meeting Date: April 25, 2024
   2. Meeting Time: 11:00 a.m., local time
   3. Location: Ann Arbor Downtown Develop Authority
      150 South Fifth Street, Suite 301
      Ann Arbor, MI 48104

B. Attendance:
   1. Prime Bidders: Attendance at Prebid meeting is mandatory.
   2. Subcontractors: Attendance at Prebid meeting is recommended.
   3. Notice: Bids will only be accepted from prime bidders represented on Prebid Meeting sign-in sheet (virtual).

C. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.
   1. Sign-in Sheet: Minutes will include list of meeting attendees.

END OF SECTION 00 25 13

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SECTION 00 52 00 – AGREEMENT FORMS

A written Agreement will be executed on the City of Ann Arbor Downtown Development Contract. Included within this section is the following:

Instructions to Bidders	IB-1 to IB-6
Proposal	P-1 to P-4
Bid Form	BF-1 to BF-10
Contract	C-1 to C-10
Contractor Declaration	CD-1 to CD-2
Contractor Affidavit	CA-1 to CA-2
Standard Specifications	SS-1 to SS-2
DDA Vendor Conflict of Interest Disclosure Form	

END OF SECTION 00 52 00

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INSTRUCTIONS TO BIDDERS

Section 1 – Instructions to Bidders

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

The DDA shall make available to all prospective Bidders, prior to receipt of the Bids, access to the area in which the work is to be performed. Advance notice should be given to the Administering Department in cases where access to the site must be arranged by the DDA.

Any proposal that does not conform fully to these instructions may be rejected.

Proposals

Proposals must be submitted on the "Proposal Forms" and "Bid Forms" provided, with each blank properly filled in. Electronic proposals will be received via e-mail by the City of Ann Arbor DDA and Fishbeck at the time stipulated in the Advertisement.

Selection committee will evaluate each proposal by the criteria and point system described in this document. The DDA may also utilize discounts offered in the Bid Forms, if any, to determine the lowest responsible Bidder, so that the lowest total cost is achieved for the DDA. For unit price bids, the contract will be awarded based upon the lump sum and unit prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the DDA. If the DDA determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the DDA, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing proposals, the DDA will give consideration to alternate proposals for items listed in the forms, or other alternates which the Bidder may wish to submit, but preference will be given to Base Bid Proposals.

Reservation of Rights

1. The DDA reserves the right in its sole and absolute discretion to accept or reject any or all proposals, or alternative proposals, in whole or in part, with or without cause.
2. The DDA reserves the right to waive, or not waive, informalities or irregularities in terms or conditions of any proposal if determined by the DDA to be in its best interest.
3. The DDA reserves the right to request additional information from any or all bidders.
4. The DDA reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested within RFP.

5. The DDA reserves the right to determine whether the scope of the project will be entirely as described in the RFP, a portion of the scope, or a revised scope be implemented.
6. The DDA reserves the right to select one or more contractors or service providers to perform services.
7. The DDA reserves the right to retain all proposals submitted and to use any ideas in a proposal regardless of whether that proposal is selected. Submission of a proposal indicates acceptance by the firm of the conditions contained in this RFP, unless clearly and specifically noted in the proposal submitted.
8. The DDA reserves the right to disqualify proposals that fail to respond to any requirements outlined in the RFP, or failure to enclose copies of the required documents outlined within the RFP.

Bid Security

Each proposal must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of days specified in the Advertisement.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated in Section II of the Contract. If these time requirements cannot be met, or if schedule improvements can be provided, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given in the Contract, provides that the Contractor shall pay the DDA as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the DDA shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages or of a living wages to employees providing service to the DDA under this contract. The successful bidder must comply with all applicable requirements and may be required to provide documentary proof of compliance.

Major Subcontractors

The Bidder shall identify each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor.

Cost Liability

The DDA assumes no responsibility or liability for costs incurred by the bidder prior to the execution of a Professional Services Agreement. The liability of the DDA is limited to the terms and conditions outlined in the Agreement. By submitting a proposal, bidder agrees to bear all costs incurred or related to the preparation, submission, and selection process for the proposal.

Environmental Commitment

The DDA recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The DDA further recognizes that the products and services the DDA buys have inherent environmental and economic impacts and that the DDA should make procurement decisions that embody, promote, and encourage the DDA's commitment to the environment.

The DDA encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the DDA's environmental principles.

Disclosures

Under the Freedom of Information Act (Public Act 442), the DDA is obligated to permit review of its files, if requested by others. All information in a proposal is subject to disclosure under this provision. This act also provides for a complete disclosure of contracts and attachments thereto.

INSTRUCTIONS TO BIDDERS

Section 2 – Minimum Information Required

Proposal Format

The following describes the elements that should be included in each of the proposal sections and the weighted point system that will be used for evaluation of the proposals.

Bidders should organize Proposals into the following Sections:

A. Qualifications, Experience and Accountability
B. Workplace Safety
C. Workforce Development
D. Social Equity and Sustainability
E. Schedule of Pricing/Cost

Bidders are strongly encouraged to provided details for all of the information requested below within initial proposals. Backup documentation may be requested at the sole discretion of the DDA to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the proposal being considered non-responsive and will not be considered for award.

Bidders should submit the following:

A. Qualifications, Experience and Accountability - 20 Points

1. Qualifications and experience of the bidder and of key persons, management, and supervisory personnel to be assigned by the bidder.
2. References from four individuals or entities the bidder has worked for within the last five (5) years including information regarding records of performance and job site cooperation. DDA may be included but will not count towards four (4) references.
3. Evidence of any quality assurance program used by the bidder and the results of any such program on the bidder's previous projects.
4. A statement from the bidder as to any major subcontractors it expects to engage including the name, work, and amount.

B. Workplace Safety – 20 Points

1. Provide a copy of bidder's safety program, and evidence of a safety-training program for employees addressing potential hazards of the proposed job site. Bidder must identify a designated qualified safety representative responsible for bidder’s safety program who serves as a contact for safety related matters.

2. Provide the bidder's Experience Modification Rating ("EMR") for the last three consecutive years. Preference within this criterion will be given to an EMR of 1.0 or less based on a three-year average.
3. Evidence that all craft labor that will be employed by the bidder for the project has, or will have prior to project commencement, completed at least an authorized 10-hour OSHA Construction Safety Course.
4. For the last three years provide a copy of any documented violations and the bidder's corrective actions as a result of inspections conducted by the Michigan Occupational Safety & Health Administration (MIOSHA), US Department of Labor – Occupational Safety and Health Administration (OSHA), or any other applicable safety agency.

C. Workforce Development – 20 Points

1. Documentation as to bidder's pay rates, health insurance, pension or other retirement benefits, paid leave, or other fringe benefits to its employees.
2. Documentation that the bidder participates in a Registered Apprenticeship Program that is registered with the United States Department of Labor Office of Apprenticeship or by a State Apprenticeship Agency recognized by the USDOL Office of Apprenticeship. USDOL apprenticeship agreements shall be disclosed to the DDA in the solicitation response.
3. Bidders shall disclose the number of non- craft employees who will work on the project on a 1099 basis, and the bidders shall be awarded points based on their relative reliance on 1099 work arrangements with more points assigned to companies with fewer 1099 arrangements. Bidders will acknowledge that the DDA may ask them to produce payroll records at points during the project to verify compliance with this section.

D. Social Equity and Sustainability – 20 Points

1. A statement from the bidder as to what percentage of its workforce resides in the City of Ann Arbor and in Washtenaw County, Michigan. The DDA will consider in evaluating which bids best serve its interests, the extent to which responsible and qualified bidders are able to achieve this goal.
2. Evidence of Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses.
3. Evidence that the bidder is an equal opportunity employer and does not discriminate on the basis of race, sex, pregnancy, age, religion, national origin, marital status, sexual orientation, gender identity or expression, height, weight, or disability.
4. The bidder's proposed use of sustainable products, technologies, or practices for the project, which reduce the impact on human health and the environment, including raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and waste management.
5. The bidder's environmental record, including findings of violations and penalties imposed by government agencies.

E. Schedule of Pricing – 20 Points

1. Completed "Bid Forms".

Proposal Evaluation

1. The selection committee will evaluate each proposal by the above-described criteria and point system. The DDA reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested for evaluation. A proposal with all the requested information does not guarantee the proposing firm to be a candidate for an interview if interviews are selected to be held by the DDA. The committee may contact references to verify material submitted by the bidder.

2. The committee then will schedule interviews with the selected firms if necessary. The selected firms will be given the opportunity to discuss in more detail their qualifications, past experience, proposed work plan (if applicable) and pricing.

3. The interview should include the project team members expected to work on the project, but no more than six members total. The interview shall consist of a presentation of up to thirty minutes (or the length provided by the committee) by the bidder, including the person who will be the project manager on this contract, followed by approximately thirty minutes of questions and answers. Audiovisual aids may be used during the oral interviews. The committee may record the oral interviews.

4. The firms interviewed will then be re-evaluated by the above criteria and adjustments to scoring will be made as appropriate. After evaluation of the proposals, further negotiation with the selected firm may be pursued leading to the award of a contract by the DDA Board, if suitable proposals are received.

The DDA reserves the right to waive the interview process and evaluate the bidder based on their proposal and pricing schedules alone.

The DDA will determine whether the final scope of the project to be negotiated will be entirely as described in this RFP, a portion of the scope, or a revised scope.

Work to be done under this contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents.

Any proposal that does not conform fully to these instructions may be rejected.

PROPOSAL

Ann Arbor DDA
150 South Fifth Avenue, Suite 301
Ann Arbor, Michigan 48104

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including Advertisement, Notice of Pre-Bid Conference, Instructions to Bidders, Proposal, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the DDA, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this proposal is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the DDA and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Proposal shall become due and payable to the DDA.

If the Bidder enters into the Contract in accordance with this Proposal, or if this Proposal is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the DDA to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the DDA believes to be in its best interest.

SIGNED THIS _____DAY OF _____, 2024.

_____
Bidder's Name

_____ _____
Official Address Authorized Signature of Bidder

_____ _____
Telephone Number (Print Name of Signer Above)

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other two.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the state of _____, for whom _____, bearing the office title of_____, whose signature is affixed to this proposal, is authorized to execute contracts.

* A partnership, list all members and the street and mailing address of each:

_____
_____
_____
_____

Also identify the County and State where partnership papers are filed:

County of _____, State of _____

* An individual, whose signature with address, is affixed to this proposal: _____
(initial here)

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BID FORM

Section 1 - Schedule of Prices

Base Bid

BASE BID - FOURTH & WASHINGTON

Work Item No.	Work Item Description	Reference Spec or Detail	Units	Estimated Quantity	Unit Cost	Cost
Division 0 & 1 - General Conditions						**(Fourth & Washington)**
A1.1	Contractor Mobilization	Div. 0 and 1	L.S.	1	n/a	
A1.2	Contractor General Requirements	Div. 0 and 1	L.S.	1	n/a	
Division 3 - Concrete						**(Fourth & Washington)**
A3.1	Slab Repair	5/SR501	S.F.	80		
A3.2	Tee Flange (Ceiling) Repair	6/SR501	S.F.	10		
A3.3	Shear Connector Repair	7/SR501	EA.	5		
A3.4	Beam Repair	10/SR501	S.F.	10		
A3.5	Column Repair	8/SR501	S.F.	20		
A3.6	Wall Repair	9/SR501	S.F.	20		
Division 5 - Metals						**(Fourth & Washington)**
A5.1	Install Pipe Guard	1/SR502	EA.	6		
Division 7 - Waterproofing						**(Fourth & Washington)**
A7.1	Remove & Replace Routed Joint Sealant	2/SR511 SIM	L.F.	800		
A7.2	Rout & Seal Cracks at Slab/Curb	2/SR511	L.F.	3,000		
A7.3	Remove & Replace Tee-to-Tee Joint Sealant	19/SR511	L.F.	7,200		

A7.4	Remove & Replace Control Joint Sealant	3-4/SR511	L.F.	650		
A7.5	Remove & Replace Cove Joint Sealant	6/SR511	L.F.	9,800		
A7.6	Remove & Replace Exterior Cove Joint Sealant (Silicone)	7/SR511	L.F.	120		
A7.7	Install Wall Sealant (Silicone)	8/SR511	L.F.	10		
A7.8	Remove & Replace Wall Sealant (Silicone)	9/SR511	L.F.	20		
A7.9	Install Deck Coating (Urethane Full System)	10-11/SR511	S.F.	73,600		
A7.10	Install Deck Coating at Stair #1 (Urethane Full System)	12/SR511	S.F.	2,900		
A7.11	Install Deck Coating at Stair #2 (Urethane Full System)	13/SR511	S.F.	1,900		
A7.12	Deck Coating Repair (Urethane Full System)	14-15/SR511	S.F.	400		
A7.13	Epoxy Broadcast System Repair	07 18 13	S.F.	760		
A7.14	Scaling Repair (Epoxy/Sand Fill)	07 18 13	S.F.	9,600		
Division 9 - Finishes						**(Fourth & Washington)**
A9.1	Clean & Paint Fire Protection Piping	2/SR502	L.S.	1	n/a	
A9.2	Clean & Paint Precast Connection	3/SR502	EA.	70		
Division 22 - Plumbing						**(Fourth & Washington)**
A22.1	Install New Trench Drain	4/SR502	EA.	6		
A22.2	Install New Risers & Drain Piping	5-6/SR502	L.S.	1	n/a	
A22.3	Scope Floor Drain System Below Grade	G002	L.S.	1	n/a	

Division 32 - Exterior Improvements						**(Fourth & Washington)**
A32.1	Repaint Pavement Markings	32 17 25	L.S.	1	n/a	
A32.2	Paint Pavement Markings at Stair #1	12/SR511	L.S.	1	n/a	
					SUBTOTAL BASE BID - FOURTH & WASHINGTON	

BASE BID - LIBERTY SQUARE

Work Item No.	Work Item Description	Reference Spec or Detail	Units	Estimated Quantity	Unit Cost	Cost
Division 0 & 1 - General Conditions						**(Liberty Square)**
B1.1	Contractor Mobilization	Div. 0 and 1	L.S.	1	n/a	
B1.2	Contractor General Requirements	Div. 0 and 1	L.S.	1	n/a	
Division 2 - Existing Conditions						**(Liberty Square)**
B2.1	Remove Existing Fencing at Roof Level	SR112	L.S.	1	n/a	
B2.2	Install & Maintain Construction Barriers at Roof Level	01 56 00	L.S.	1	n/a	
Division 3 - Concrete						**(Liberty Square)**
B3.1	Column Delamination Repairs	8/SR501	S.F.	10		
B3.2	Exterior Spandrel Panel Repair	6/SR503	EA	1		
B3.3	Interior Spandrel Panel Repair	7/SR503	EA	1		
B3.4	Remove Existing Coping & Install New PCC Capstones w/ Stainless Steel Flashing - 24" WIDE	4-5/SR503	L.F.	260		
B3.5	Remove Existing Coping & Install New PCC Capstones w/ Stainless Steel Flashing - 12.5" WIDE	4-5/SR503	L.F.	442		

Division 4 - Masonry						**(Liberty Square)**
B4.1	Brick Masonry Rebuild	04 01 13	S.F.	40		
B4.2	Brick Masonry Replacement (Individual)	1/SR503	EA.	20		
B4.3	Re-Point Deteriorated Mortar Joints	3/SR503	S.F.	450		
B4.4	CMU Block Replacement (Individual)	2/SR503	EA.	10		
B4.5	Repair Brick Mortar Patch at Railing Post Installation	04 01 13	EA.	20		
B4.6	Stair Tower Corner Repair	8/SR503	EA.	1		
Division 7 - Waterproofing						**(Liberty Square)**
B7.1	Remove & Replace Construction Joint Sealant - North, South & West Elevations	9/SR511	L.F.	1,500		
B7.2	Remove & Replace Construction Joint Sealant - East Elevation (SR116)	9/SR511	L.F.	625		
B7.3	Remove & Replace Exterior Cove Joint Sealant - North, South & West Elevations	7/SR511	L.F.	525		
B7.4	Remove & Replace Exterior Cove Joint Sealant - East Elevation (SR116)	7/SR511	L.F.	215		
B7.5	Clean Brick Masonry & Install Penetrating Sealer - North, South & West Elevations	07 19 16	S.F.	47,000		
B7.6	Clean Brick Masonry & Install Penetrating Sealer - East Elevation (SR116)	07 19 16	S.F.	19,000		
Division 9 - Finishes						**(Liberty Square)**
B9.1	Clean & Paint Steel Lintels	09 91 33	EA.	1		
					SUBTOTAL BASE BID - LIBERTY SQUARE	

1. Bidder will complete the work for the following price as outlined in these documents, complete as specified, using equipment and materials only of the type and manufacturers where specifically named:

   Subtotal Base Bid – Fourth & Washington $_____

   Subtotal Base Bid – Liberty Square $_____

   Total Base Bid – All Parking Structures $_____

2. Description of Abbreviations:
   a. L.F. = Lineal Feet
   b. S.F. = Square Feet
   c. L.S. = Lump Sum
   d. EA. = Each
   e. N.A. = Not Applicable

3. Total contract price shall include the summation of lump sum items, plus the summation of unit prices multiplied by the estimated quantities listed above.

4. Contractor shall submit a lump sum Contract price for all work included in the Drawings and Specifications except as modified herein. Costs for sealants and deck coating indicated in details should not be included in lump sum cost, unless noted. Lump sum price shall include all costs to provide, install, and/or repair work items including, but not limited to, labor, material, equipment, supervision, overhead, profits, etc. Specific lump sum work is described below:
   a. Project mobilization shall include General Contractor and Subcontractor mobilization costs. Include permits, temporary offices, etc. Provide itemized breakdown.
   b. Project General Requirements and all miscellaneous costs associated with completion of work in accordance with the Construction Documents. This shall include, but not be limited to, shoring, barricades, cleanup, dust and fume control, layout, equipment, waste disposal, documentation, obstruction removal and replacement, etc.

5. Provide unit prices for items listed above. These items shall be included in the total contract price. Unit prices shall include all costs to provide, install, and/or repair work item including, but not limited to, labor, materials, equipment, supervision, overhead, profits, etc.
   a. Quantities beyond those estimated shall be paid at the stated unit price, quantities less than estimated will be deducted from the Contract. Quantities may be distributed throughout the project, not necessarily in a single location.
   b. All prices to include demolition, unless noted.

6. The quantities appearing in the preceding Schedule are approximate. Payment to the Contractor will be made only for the actual quantities of Work performed and accepted in accordance with the contract unit prices. Any item and/or section within the Work may be deleted by the Owner.
   a. Refer to Drawings and Specifications for other Work required as part of this Contract but not listed in the above schedule.

7. The terms used in this Contract which are defined in the General Conditions of the Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.
   a. The quantities appearing in the preceding Schedule have been measured or estimated by the Supervising Professional. Contractor may rely upon these quantities in preparation of their pricing.
   b. Note that the items provided in the above list do not represent all of the General Requirement Work required by this Contractor.

BID FORM

Section 2 - Material and Equipment Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the DDA, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the contract.

_____

Signature of Authorized Representative of Bidder

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article II of the Contract, Duration, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the contract.

_____

Signature of Authorized Representative of Bidder

BID FORM

Section 4 - Major Subcontractors

For purposes of this contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

Subcontractor (Name and Address)	Work	Amount

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the contract.

_____

Signature of Authorized Representative of Bidder

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ANN ARBOR DOWNTOWN DEVELOPMENT SERVICE AGREEMENT

SERVICE AGREEMENT BETWEEN

_____ AND
ANN ARBOR DOWNTOWN DEVELOPMENT AUTHORITY

The Ann Arbor Downtown Development Authority, a Michigan municipal corporation, having its offices at 150 S Fifth Avenue, Suite 301, Ann Arbor, Michigan 48104 ("DDA") and

,_____a_____, having its offices at
("CONTRACTOR"), Type of Business

_____ agree as follows on this day of_____, 2024.
Address

The Contractor agrees to provide services to the DDA under the following terms and conditions:

I. DEFINITIONS

Ann Arbor Downtown Development Authority, also referred to as the DDA or the Owner.

Contract Administrator means the DDA representative authorized by the Ann Arbor Downtown Development Authority to act on the behalf of the Ann Arbor Downtown Development Authority.

Supervising Professional as defined in the General Conditions shall mean the Contract Administrator.

Design Professional means Fishbeck. Fishbeck is the lead designer, references to "Architect" or "Engineer" within the project specifications will generally refer to Fishbeck or a consultant to Fishbeck.

Project means The Ann Arbor DDA Parking Structures Restoration 2024.

II. DURATION

This Agreement shall become effective on_____, 2024, and shall remain in effect until satisfactory performance of all services or_____, whichever occurs first, unless terminated for breach or as provided in this agreement.

A. Successful bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time.

B. The entire work for this Contract shall be completed within the time period shown below. Shorter completion times for certain portions of the work are specified in the Detailed Specifications.

1. Anticipated Contract Notice to Proceed: June 21, 2024 *(Subject to DDA Approval)*
2. Construction: July 1, 2024 through October 25, 2024

C. Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the DDA, as liquidated damages and not as a penalty, an amount equal to $500.00 for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the DDA shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Liquidated damages under this section are in addition to any liquidated damages due under Section 19 of the General Conditions.

III. SERVICES

A. General Scope: The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the Project in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

1. Contract and Exhibits
2. Construction Documents, dated ___
3. Bid No. and Addenda (if applicable)
4. Bid Proposal of Contractor, dated _____

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the Project. Materials or work described in words that so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed above in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

B. Quality of Services: The Contractor's standard of service under this agreement shall be of the level of quality performed by businesses regularly rendering this type of service. Determination of acceptable quality shall be made solely by the Contract Administrator.

C. Compliance with Applicable Law: The Contractor shall perform its services under this Agreement in compliance with all statutory, regulatory and contractual requirements now or hereafter in effect as may be applicable to the rights and obligations set forth in the Agreement.

D. Location: The Contractor shall provide all of these services at the locations specified.

E. Reports/Surveys: The Contractor may rely upon the accuracy of reports and surveys provided to it by the DDA except when defects should have been apparent to a reasonably competent contractor or when it has actual notice of any defects in the reports and surveys.

IV. RELATIONSHIP OF PARTIES

A. The parties to this agreement agree that it is not a contract of employment but is a contract to accomplish a specific result. Contractor is an independent contractor performing services for the DDA. Nothing contained in this agreement shall be deemed to constitute any other relationship between the DDA and the Contractor.

B. The Contractor certifies that it has no personal or financial interest in the project other than the fee it is to receive under this agreement. The Contractor further certifies that it shall not acquire any such interest, direct or indirect, which would conflict in any manner with the performance of services under this agreement. Further Contractor agrees and certifies that it does not and will not employ or engage any person with a personal or financial interest in this agreement.

C. Contractor does not have any authority to execute any contract or agreement on behalf of the DDA, and is not granted any authority to assume or create any obligation or liability on the DDA's behalf, or to bind the DDA in any way.

D. Contractor certifies that it is not, and shall not become, overdue or in default to the City of Ann Arbor for any contract, debt, or any other obligation to the City including real or personal property taxes. The DDA shall have the right to set off any such debt against compensation awarded for services under this agreement.

V. COMPENSATION OF CONTRACTOR

The Contractor shall be paid on the basis of the bid price in the manner set forth in the Bid. The total fee to be paid the Contractor for the services shall not exceed_____($_____). Payment shall be made within 30 days of acceptance of the work by the Contract Administrator. It is understood and agreed between the parties that the compensation stated above is inclusive of any and all remuneration to which the Contractor may be entitled.

VI. INSURANCE; INDEMNIFICATION

A. The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself, the DDA, PCI Municipal Services, and the Design Professional from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The insurance coverage afforded by the contractor to the DDA and the Design Professional shall be primary and not excess or contributory to any insurance the DDA or Design Professional may have on its own. The following insurance policies are required:

1. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

   Bodily Injury by Accident - $500,000 each accident
   Bodily Injury by Disease - $500,000 each employee
   Bodily Injury by Disease - $500,000 each policy limit

2. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor, the Ann Arbor DDA, PCI Municipal Services, and the Design Professional shall be named as an additional insured. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, the following minimum limits of liability are required:

   $2,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.

   $4,000,000 Per Job General Aggregate

   $2,000,000 Personal and Advertising Injury

   $4,000,000 Products and Completed Operations Aggregate

3. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor, the Ann Arbor DDA, PCI Municipal Services, and the Design Professional shall be named as an additional insured. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

4. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

B. Insurance required under VI.A.2 and A.3 of this Contract shall be considered primary as respects any other valid or collectible insurance that the DDA or the City of Ann Arbor may possess, including any self-insured retentions the DDA or City of Ann Arbor may have; and any other insurance the DDA or the City of Ann Arbor does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the DDA or the City of Ann Arbor.

C. In the case of all Contracts involving on-site work, the Contractor shall provide to the DDA before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the DDA. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the DDA. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the DDA at least ten days prior to the expiration date.

D. Any insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the DDA.

E. To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City of Ann Arbor, PCI Municipal Services, the Design Professional, and the DDA its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this contract, by the Contractor or anyone acting on the Contractor's behalf under this contract. Contractor shall not be responsible to indemnify the DDA for losses or damages caused by or resulting from the DDA's sole negligence.

VII. COMPLIANCE REQUIREMENTS

A. Nondiscrimination. The Consultant agrees to comply and to require its subcontractor to comply, with the nondiscrimination provisions of Section 209 of the Elliot-Larsen Civil Rights Act MCL 37.2209). The Contractor further agrees to comply with the nondiscrimination provisions of Chapter 112 of the Ann Arbor City Code and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity

B. Wages: Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section." Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

Further, to the extent that any employees of the Contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with Section 1:319 of Chapter 14 of Title I of the Code of the City of Ann Arbor, the Contractor agrees to conform to Chapter 23, Living Wage, of Title I of the Code of the City of Ann Arbor, as amended. The Contractor agrees to pay those employees providing Services to the City under this Agreement a “living wage,” as defined in Section 1:815 of the Ann Arbor City Code; to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

VIII. WARRANTIES BY CONTRACTOR

A. The Contractor warrants that the quality of its services under this agreement shall conform to the level of quality performed by businesses regularly rendering this type of service. The Contractor warrants that the work performed shall be free of defects and guaranteed for a period of one year.

B. The Contractor warrants that it has all the skills and experience necessary to perform the services it is to provide pursuant to this agreement. Further that it has available, or will engage, at its own expense, sufficient trained employees or subcontractors to provide the services specified in this Agreement.

C. The Contractor warrants that it is not, and shall not become overdue or in default to the City of Ann Arbor for any contract, debt, or any other obligation to the City of Ann Arbor including real and personal property taxes.

IX. TERMINATION OF AGREEMENT; RIGHTS ON TERMINATION

A. This agreement may be terminated by either party in the case of a breach of this agreement by the other party, if the breaching party has not corrected the breach within 15 days after notice of termination is given in conformance with the terms of this agreement. Breach under this terms of this Agreement shall include but not be limited to the failure to deliver service on time, poor quality materials or workmanship, failure to follow specifications identified in Article III above, or the unauthorized substitution of articles other than those quoted and specified in the bid documents.

B. The DDA may terminate this Agreement, on at least ten (10) days advance notice, for any reason, including convenience, without incurring any penalty, expense or liability to the Contractor except the obligation to pay for services actually performed under the Agreement.

C. Contractor acknowledges that, if this Agreement extends for several fiscal years, continuation of this Agreement is subject to appropriation of funds for this Project. If funds to enable the DDA to effect continued payment under this Agreement are not appropriated or otherwise made available, the DDA shall have the right to terminate this Agreement without penalty at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of termination to the Contractor. The Contract Administrator shall give the Contractor written notice of such non-appropriation within thirty (30) days after it receives notice of such non-appropriation.

D. The remedies provided in this Agreement will be cumulative, and the assertion by a party of any right or remedy will not preclude the assertion by such party of any other rights or the seeking of any other remedies.

X. OBLIGATIONS OF THE DDA

A. The DDA agrees to give the Contractor access to staff and DDA managed properties as required to perform the necessary services under the agreement.

B. The DDA shall notify the Contractor of any defects in the services of which the DDA has actual notice.

XI. ASSIGNMENT

A. The Contractor shall not subcontract or assign any portion of the services without prior written consent to such action by the DDA. Notwithstanding any consent by the DDA to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under the Agreement unless specifically released from the requirement, in writing, by the DDA.

B. The Contractor shall retain the right to pledge payment(s) due and payable under the agreement to third parties.

XII. NOTICE

All notices and submissions required under this Agreement shall be delivered to the respective party in the manner described herein to the address stated in this Agreement or such other address as either party may designate by prior written notice to the other.

Notices given under this Agreement shall be in writing and shall be personally delivered, sent by next day express delivery service, certified mail, or first class U.S. mail postage prepaid, and addressed to the person listed below. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; (2) the next business day when notice is sent next day express delivery service or personal delivery; or (3) three days after mailing first class or certified U.S. mail.

If Notice is sent to the CONTRACTOR, it shall be addressed and sent to:

If Notice is sent to the DDA, it shall be addressed and sent to:

Ann Arbor DDA
150 S Fifth Avenue,
Suite 301
Ann Arbor, MI 48107-8647
Attn: Ms. Jada Hahlbrock, Manager of Parking Services

XIII. SEVERABILITY OF PROVISIONS

Whenever possible, each provision of this agreement will be interpreted in a manner as to be effective and valid under applicable law. However, if any provision of this agreement or the application of any provision to any party or circumstance will be prohibited by or invalid under applicable law, that provision will be ineffective to the extent of the prohibition or invalidity without invalidating the remainder of the provisions of this agreement or the application of the provision to other parties or other circumstances.

XIV. CHOICE OF LAW

This agreement shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the DDA agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this agreement. The parties stipulate that the venues referenced in this Agreement are convenient and waive any claim of non- convenience.

XV. EXTENT OF AGREEMENT

This agreement represents the entire understanding between the DDA and the Contractor and it supersedes all prior representations or agreements whether written or oral. Neither party has relied on any prior representations in entering into this agreement.

This agreement may be altered, amended or modified only by written amendment signed by the Contractor and the DDA.

FOR CONTRACTOR

By _____
Authorized Representative

FOR THE CITY OF ANN ARBOR DDA

By _____ DDA Board Chairperson

By _____ Maura Thomson, DDA Executive Director

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20___, to _____, 20___, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled_____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the DDA, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

_____ _____
Contractor Date

By: _____
(Signature)

Its: _____
(Title of Office)

Past due invoices, if any, are listed below.

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Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor,_____, represents that on _____, 20_____, it was awarded a contract by the Ann Arbor Downtown Development Authority, Michigan to _____ under the terms and conditions of a Contract titled_____.

The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the Ann Arbor Downtown Development Authority.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the Ann Arbor Downtown Development Authority.

This affidavit is freely and voluntarily given with full knowledge of the facts.

_____
Contractor
By_____
(Signature)
Its_____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 20__
_____ , _____ County, Michigan
Notary Public
My commission expires on:

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STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the City of Ann Arbor, Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Advertisement. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

An electronic copy of the Public Services Department Standard Specifications is available on the City of Ann Arbor, Engineering Department website.
https://www.a2gov.org/departments/engineering/pages/engineering-and-contractor-resources.aspx

A hardcopy of the Public Services Department Standard Specifications may be purchased from the Project Management Division, (Fourth Floor, City Hall, Ann Arbor, Michigan), for $35.00 per copy. In addition, a copy of these Standard Specifications is available for public viewing at the same office, for review Monday through Friday between the hours of 8:30 a.m. and 4:00 p.m.

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Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the Ann Arbor Downtown Development Authority (DDA) must complete and return the Vendor Conflict of Interest Disclosure Form to be eligible for a contract. Please note that all vendors are subject to comply with the DDA's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a DDA's official or employee, an immediate family member of a DDA's official or employee, the vendor shall disclose the information required below.

1. No DDA official or employee or DDA employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated DDA official or employee who has been retired or separated from the DDA for less than one (1) year has an ownership interest in vendor's Company.
3. No DDA employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any DDA employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of DDA employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	( ) Relationship to employee _____ ( ) Interest in vendor's company ( ) Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the DDA, vendor will be exempt from doing business with the DDA.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	**Vendor Phone Number**	
Signature of Vendor Authorized Representative	**Date**	**Printed Name of Vendor Authorized Representative**

Questions about this form? Contact Procurement Office of Ann Arbor DDA Phone: 734/567-8026, payables@a2dda.org

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SECTION 00 61 13 – PERFORMANCE AND PAYMENT BOND FORM

1.1 The successful Bidder will be required to furnish bonds, in form and substance satisfactory to the Owner, covering faithful performance of the Contract and payment of obligations arising thereunder.

1.2 Performance Bond and Payment Bond shall be executed on standard AIA Document A312 in accordance with the General and Supplementary Conditions.

END OF SECTION 00 61 13

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SECTION 00 72 00 – GENERAL CONDITIONS

The Ann Arbor Downtown Development Authority General Conditions of the Contract for Construction GC-1 to GC-16 included within this document are hereby made a part of the Contract Documents.

END OF SECTION 00 72 00

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GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the DDA and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied, have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Proposal.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the DDA upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Refer to Section VII of the Contract.

Section 5- Non-Discrimination

Refer to Section VII of the Contract.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the DDA harmless from loss on account of infringement except that the DDA shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the DDA has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The DDA shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to it's work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the DDA. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The DDA shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the DDA shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The DDA may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the DDA or of its employees or by other Contractors employed by the DDA;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month, shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. Submission shall be to the Owner Representative and Supervising Professional. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the DDA will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The DDA will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2. Contractor's Declaration is included as specification section CD-1

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the DDA and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the DDA may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the DDA may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the DDA the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the DDA under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the DDA within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the DDA:

(1) The consent of the surety to payment of the final estimate;
(2) The Contractor's Affidavit in the form required by Section 44. Contractor’s Affidavit is included as specification section CA-1

In case the Affidavit or consent is not furnished, the DDA may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the DDA except those arising from:

(1) unsettled liens;
(2) faulty work appearing within 12 months after final payment;
(3) hidden defects in meeting the requirements of the plans and specifications;
(4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The DDA may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the DDA to the Contractor to do so. The DDA shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the DDA does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and The DDA's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the DDA may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the DDA may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the DDA for any excess cost to the DDA. If the Contractor's right to proceed is terminated, the DDA may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the DDA, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The DDA may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the DDA for any excess cost incurred. The expense incurred by the DDA, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the DDA, terminate this Contract and recover from the DDA payment for all acceptable work executed plus reasonable profit.

Section 23 – DDA's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the DDA, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the DDA may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the DDA, shall promptly remove any part or all of its equipment and supplies from the property of the DDA, failing which the DDA shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the DDA and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the DDA upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the DDA for damages to materials and equipment from any cause except negligence or willful act of the DDA. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier warranties to the DDA prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the DDA, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the DDA may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The DDA may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the DDA from loss on account of:

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the DDA, which will protect the DDA in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

A. The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself, the DDA, PCI Municipal Services, and the Design Professional from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:

1. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

   Bodily Injury by Accident - $500,000 each accident
   Bodily Injury by Disease - $500,000 each employee
   Bodily Injury by Disease - $500,000 each policy limit

2. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor, the Ann Arbor Downtown Development Authority, PCI Municipal Services, and the Design Professional shall be named as an additional insured. shall be named as additional insured parties. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, the following minimum limits of liability are required:

   $2,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.

   $4,000,000 Per Job General Aggregate

   $2,000,000 Personal and Advertising Injury

   $4,000,000 Products and Completed Operations Aggregate

3. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor, the Ann Arbor Downtown Development Authority, PCI Municipal Services, and the Design Professional shall be named as an additional insured. shall be named as additional insured parties. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

4. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

B. Insurance required under Section A.2 and A.3 of this Contract shall be considered primary as respects any other valid or collectible insurance that the DDA may possess, including any self-insured retentions the DDA may have; and any other insurance the DDA does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the DDA.

C. In the case of all Contracts involving on-site work, the Contractor shall provide to the DDA before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the Ann Arbor Downtown Development Authority. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the DDA, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the DDA. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the Administering Department at least ten days prior to the expiration date.

D. Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the DDA.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

(1) A Performance Bond to the Ann Arbor Downtown Development Authority for the amount of the bid(s) accepted.
(2) A Labor and Material Bond to the Ann Arbor Downtown Development Authority for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the DDA in a manner and by a Surety Company satisfactory to the DDA's Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the DDA or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the DDA.

Section 33 - Rights of Various Interests

Whenever work being done by the DDA/City forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the DDA. The approval will not be given until the Contractor submits to the DDA a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the DDA may require.

The Contractor shall be as fully responsible to the DDA for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the DDA may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the DDA.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the DDA or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the DDA unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the DDA, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the DDA’s property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain DDA property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written DDA approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The DDA may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the DDA is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in DDA projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Note: Section 43 Contractor’s Declaration is included as section CD-1, and Section 44 Contractor’s Affidavit is included as section CA-1

SECTION 00 73 00 – SUPPLEMENTARY CONDITIONS

1.1 DESCRIPTION

A. The following supplements shall modify, change, delete from or add to and shall take precedence over the General Conditions of the Contract for Construction. Where any portion of the General Conditions of the Contract for Construction is modified or any Paragraph, Subparagraph, or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

B. Definitions
   1. Ann Arbor Downtown Development Authority, also referred to as the DDA or the Owner.
   2. Design Professional or Architect: Fishbeck is the lead designer; references to “Architect” or “Engineer” within the project specifications will generally refer to Fishbeck or a consultant to Fishbeck.
   3. Contract Administrator means the DDA representative authorized by the Ann Arbor Downtown Development Authority to act on the behalf of the Ann Arbor Downtown Development Authority.
   4. Supervising Professional as defined in the General Conditions shall mean the Contract Administrator.
   5. Miscellaneous Definitions:
      a. "Provide" means to furnish, fabricate, complete, deliver, install and erect, including all labor, materials, equipment, apparatus, appurtenances, and expenses necessary to complete in place, ready for operation and use.
      b. "As shown," "as detailed," "as indicated" or words of similar import mean as shown, as detailed, or as indicated in the Documents.
      c. "As selected,” "as approved," "as accepted" or words of similar import mean as selected by, as approved by, or as accepted by the Engineer.
      d. "Shall" means mandatory.
      e. "As required" means as prescribed by the Contract Documents.
      f. "As necessary" means essential to the completion of the Work.

C. The Specifications are separated into various Sections and Divisions in general accordance with the format established by the Construction Specifications Institute. No responsibility is assumed by the Owner nor the Architect for omissions or duplications by the Contractor in the completion of the Contract due to any alleged error in the arrangement of the material in the Specifications nor shall any such segregation of portions of the Work operate to make the Architect an arbiter in defining limits to the agreements between the Contractor and his Subcontractors or suppliers.
   1. Work lists, if any, in the Specification Sections have been included as optional aids to the Contractor and not as limits or mandatory distributions of the work of the various trades involved in the Project. Because of the nature of the construction process, work may be found to be described in one Section and listed in another. All work indicated or described in the Specifications is required regardless of its distribution. When items are stated as "included," the words "but not limited to" shall be assumed as implied. The final correlation of work lists is the responsibility of the Contractor.
   2. The Specifications are of the abbreviated type and may include incomplete sentences. Omissions or phrases such as "The Contractor shall" or "complying with the requirements of" are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings. Words in the singular shall include the plural wherever applicable, or the context so indicates.

D. Contractor
   1. The Contractor shall supervise and direct the Work, using the Contractor’s best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract. The Contractor shall review any specified or recommended construction or installation procedure, including those recommended by manufacturers, and shall advise the Architect: (1) if, in the Contractor’s opinion, the procedure deviates from good construction practice; or (2) if following the procedure will affect any warranties, including the Contractor’s general warranty; or (3) of any objections the Contractor may have to the procedure; or (4) if the Contractor proposes any alternative procedure which the Contractor is willing to warrant.
   2. The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
4. Except in the case of minor changes in the Work authorized by the Architect, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

E. Contractor Schedule
1. The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals not less than monthly as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Owner's or Architect's silence with respect to a submitted construction schedule that exceeds time limits current under the Contract Documents shall not relieve the Contractor of its obligation to meet those time limits. The Owner's or Architect's silence shall not make the Owner or Architect liable for any Contractor damages incurred because of increased construction time or not meeting those time limits.
2. The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

F. Shop Drawings & Coordination Drawings
1. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work. The Contractor shall not submit any shop drawing that is merely a tracing or other copy of any of the Contract Documents. Each shop drawing shall be prepared by the Contractor, or a subcontractor or supplier of the Contractor and shall be submitted according to the project specifications.
2. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.
3. The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.
4. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
5. The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

6. The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.
7. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.
8. Coordination Drawings. The Construction Drawings indicate the desired arrangement and approximate location for conduit, piping, and duct work, and other items of equipment. The Contractor shall issue coordination drawings to ensure that the Work is constructed in a manner to avoid obstructions, preserve head room, keep openings and other passageways clear, overcome interference with structural conditions, and coordinate with other trades. The Contractor shall provide coordination drawings for all mechanical, electrical, telecommunications, data, fire protection, and any other building systems. The Contractor is entitled to use the Architect's electronic documents as backgrounds in preparing these drawings. The Contractor shall be responsible for proper installation and coordination of equipment in the space available.

G. Administration of the Contract
1. The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.
2. The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work is in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.
3. On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.
4. Except as otherwise provided in the Contract Documents, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner. Any direct communications between any of the Owner, Architect, and Contractor that affect the performance or administration of the Contract shall be made or confirmed in writing by the Contractor. Any such communications that represent a modification to the Contract requirements shall be documented as required by the Contract Documents.
5. The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

6. The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of its obligations. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
7. The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor.
8. Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.
9. The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

H. Section 13 – Changes in the Work
1. Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Section and elsewhere in the Contract Documents.
2. A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.
3. Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.
4. A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
    a. A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.
    b. If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
        i. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. The lump sum proposal shall be itemized for the various components of the Work, segregated by labor, materials, equipment, in a detailed format identifying unit quantities and unit prices, satisfactory to Owner. The Contractor will provide its itemized lump sum proposal and similar proposals for any Subcontractors and Sub-subcontractors;
        ii. Unit prices stated in the Contract Documents or subsequently agreed upon;
    c. Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect, in writing, of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

d. A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

e. Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order.

f. When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

5. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

I. Section 16 – Progress Payments

1. Except with the Owner's prior approval, payments to the Contractor shall be subject to retention of not less than ten percent (10%).

J. Section 21– Contractor's Insurance

1. Insurance requirements identified in the Contract supersede the General Conditions insurance requirements.
2. The Contractor's insurance shall protect the Contractor and Owner from claims which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.
3. The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.
4. PROPERTY INSURANCE - Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall not include coverage of losses of property other than the Project. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the Owner has an insurable interest in the property required to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.
   a. Property insurance shall be on an "all-risk" or equivalent policy form and shall include insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

b. If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor shall then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner.

c. If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles. The Contractor shall pay such deductibles to the extent such costs were caused by the Contractor or any person or entity performing or supplying any portions of the Work.

d. Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

END OF SECTION 00 73 00

SECTION 01 11 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work covered by the Contract Documents includes the Work of all trades required and all the labor, equipment, materials and supervision necessary and incidental to the restoration of the Ann Arbor DDA Parking Structures in Ann Arbor, Michigan.

B. Work will be performed at locations within the parking structure as indicated on the Drawings.

C. Main items of the Work required in these areas are described in the Drawings and Specifications.

D. It shall be understood that where additional Work is described, but not specifically located and/or shown on the Drawings, the Contractor shall be responsible for locating and marking areas to be repaired.

1.3 TYPE OF CONTRACT

A. Construct the Work of this Contract under a single unit price Contract.

1.4 GENERAL

A. Imperative Language: These Specifications (Divisions 01 through 32) are written in the imperative and abbreviated form. This imperative language of the technical specifications is directed at the Contractor unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "shall be" and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall", "shall be" and similar mandatory phrases shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated in the imperative or otherwise.

B. Related Sections: Some Sections of these Specifications (Divisions 01 through 32) may include a paragraph titled "Related Sections". This paragraph is an aid to the Project Manual user and is not intended to include all Sections which may be related. It is the Contractor's obligation to coordinate all Sections whether indicated under "Related Sections" or not.

C. Reference to the General Conditions: In Divisions 01 through 32, a reference to the General Conditions includes by inference all amendments or supplements in the Supplementary Conditions.

D. Furnish, Install, Perform, Provide:
   1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the site (or some other specified location) ready for use or installation and in usable or operable condition.
   2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
   3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
   4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of the Contractor, “provide” is implied.

1.5 WORK BY OTHERS

A. The Owner may have other Work occurring within the parking structures at the same time as this Project. This Contractor shall cooperate at all times with the Owner to ensure that all Work proceeds without delay to scheduled completion.

1.6 CONTRACTOR USE OF PREMISES

A. Limit use of premises to allow for Owner occupancy and public access.

B. Coordinate use of premises under direction of the Owner.

C. Where the Contract Documents identify certain site elements within the construction limits, such as sidewalks, drives, and streets, that must be kept open for public or the Owner’s use during construction, the Contractor shall be responsible for protection and maintenance of such elements as well.

1.7 OCCUPANCY REQUIREMENTS

A. Owner Occupancy During Construction:
   1. The Owner will occupy or utilize the premises during the entire period of construction for conduct of the Owner’s normal operations. Coordinate with the Owner to minimize conflict and to facilitate the Owner's operations.
   2. Limit parking for construction vehicles to an area located within work areas.

1.8 WORK SEQUENCE

A. Prior to commencement of Work, coordinate construction schedule and operations with the Owner and Engineer.

B. Notify Owner at least 24 hours prior to beginning any demolition or abrasive blasting operations.

C. Remove all removed concrete and debris from areas exposed to public view and dispose.

D. Remove dust and debris created by demolition from the remainder of the facility at the conclusion of operations.

E. Sequence Submittal: Submit a proposed Phasing Plan with appropriate times of starting and completion of closures to the Engineer and Owner for review.

1.9 CONTRACTOR LOG

A. Furnish and maintain 1 logbook at the Project site. Enter into this log each day:
   1. Weather conditions and temperature
   2. General progress of the Project
   3. Materials received
   4. Amount of materials placed
   5. Tests performed
   6. Inspections made by other authorities
   7. All visitors to the Project site
   8. Unresolved problems

B. Submit for record one copy of the log to the Engineer weekly.

1.10 EXAMINATION OF SITE

A. Visit the site of the Work, compare the drawings and specifications and other Contract Documents with existing conditions. Failure to visit the site will in no way relieve the Contractor from the necessity of furnishing of materials or performing any work that may be required to complete the work in accordance with the Contract Documents.

B. Where the installation of new construction is dependent on existing dimensions, the Contractor will be responsible for the verification of existing dimensions prior to the construction or fabrication of materials

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 11 00

SECTION 01 25 13 – PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the administration of substitutions and Product options.

1.3 SUBMITTALS

A. List of all Products proposed for installation:
   1. Submit electronic copies within 30 days after the date of the Owner’s signature on the Agreement Supplement, unless otherwise indicated elsewhere in the Contract Documents.
   2. Tabulate the list by each Specification Section.

1.4 CONTRACTOR'S OPTIONS

A. Products specified only by reference standards or by description:
   1. Select any Product meeting the standards or description by any Supplier unless otherwise required elsewhere in the Contract Documents.
   2. Submit for the Engineer's review:
      a. Name and address of Supplier.
      b. Trade name.
      c. Model or catalog designation.
      d. Manufacturer's data including:
         1) Performance and test data.
         2) Compliance with reference standards.

B. Products specified by naming one or more suppliers without an "Or Equal" Clause:
   1. Use specified Product of one of the Suppliers named.
   2. No substitutions.

C. Products specified by naming one or more suppliers with an "Or Equal" Clause:
   1. Indicates the option of selecting equivalent Products by stating "or equal" after the specified Suppliers.
   2. The Engineer may waive some or all of the requirements specified for substitutions if, at the Engineer's sole discretion, the proposed equivalent Product is considered an "or equal".
   3. If, at the Engineer's sole discretion, the proposed equivalent Product does not qualify as an "or equal", it will be considered as a proposed substitute and a substitution request submittal will be required.

1.5 SUBSTITUTIONS

A. Substitutions after the date of the Owner’s signature on the Agreement Supplement:
   1. Within 30 days after the date of the Owner’s signature on the Agreement Supplement.
   2. The Engineer will consider formal requests for substitution of Products in place of those specified unless otherwise prohibited elsewhere in the Contract Documents.

B. Substitution Request Submittals: Submit an electronic copy of the request for substitution including the following:
   1. Complete data substantiating compliance of the proposed substitution with the Contract Documents.
   2. For Products:
      a. Names and addresses of Manufacturer and Supplier.
      b. Product identification.

c. Manufacturer's literature, including:
   1) Product description.
   2) Performance and test data
   3) Reference standards.
d. Samples.
e. Name and address of similar projects on which the Product was used and date of installation.

3. For Construction Methods:
   a. Detailed description of the proposed method.
   b. Drawings illustrating methods.
4. Itemized comparison of proposed substitution with Product or method specified.
5. Data relating to changes in the construction schedule.
6. Accurate cost data on the substitution and comparison with the Product or method specified.
7. Changes to the Work which would be caused by the substitution.

C. Contractor's Responsibilities: In making a request for a substitution, the Contractor represents:
   1. The Contractor has personally investigated the proposed Product or method and determined that it is equal or superior in all respects to that which is specified.
   2. The Contractor will provide the same guarantee for the substitution as for the Product or method specified.
   3. The Contractor will coordinate installation of the accepted substitution into the Work making such changes as may be required for the Work to be completed in all respects.
   4. The Contractor waives all claims for additional cost related to the substitution which consequently become apparent.
   5. Cost data is complete and includes all related costs under the Contractor's contract, but excludes costs under separate contracts and the Engineer's redesign costs.

D. Substitutions Not Considered: Substitutions will not be considered if:
   1. Requests are delivered to Engineer more than 30 days after the Owner/Contractor agreement has been signed.
   2. They are indicated or implied on Shop Drawings or Product data submittals without formal request submitted in accordance with this Section.
   3. Acceptance will require substantial revision of the Contract Documents.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 25 13

SECTION 01 26 13 – REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes procedures for Contractor to give notice of conflicts, errors, ambiguities, or discrepancies in the Contract Documents.

1.3 DEFINITIONS

A. Abbreviation: Request for Information (RFI).

1.4 REQUESTS FOR INFORMATION

A. Format:
   1. Use the enclosed RFI form or, at Contractor's option, generate form.
   2. Minimum required content of Contractor's RFI form:
      a. Project name.
      b. Name and address of Contractor.
      c. RFI number.
      d. RFI date.
      e. Name of initiator.
      f. Complete written request, with sketches as required.
      g. Signature of initiator.
      h. Space for written response by Engineer, with signature and date of Engineer's representative.

B. Procedures:
   1. Maintain a log of RFIs, including the RFI date and the date of the response.
   2. Allow at least 15 full working days for Engineer's response following Engineer's receipt of RFI.
   3. Submit written justification for shorter response time.
   4. Do not submit RFIs for information already included in the Contract Documents.
   5. Illegitimate RFIs may be cause for deductions in the Contract amount. See the Supplementary Conditions.
   6. RFIs submitted directly by subcontractors or vendors will be rejected.
   7. Changes in Contract Price or Contract Times not permitted within an RFI form.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 SCHEDULES

A. Attached is the following form:
   1. Request for Information.

REQUEST FOR INFORMATION
PAGE 1 OF 1

CONTRACT FOR:	PROJECT NO.:
OWNER:	
CONTRACTOR:	
ENGINEER:	
THE CONTRACTOR SHALL COMPLY WITH THE PROCEDURES IN DIVISION 01 SECTION “REQUESTS FOR INFORMATION.”	

RFI No.: _____

Fishbeck Project Manager: _____

REQUEST		
RFI From:	**Signature:**	**Date:**

RESPONSE		
Response From:	**Signature:**	**Date:**

END OF SECTION 01 26 13

SECTION 01 29 16 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes submittal to the Owner's designee of Applications for Payment and supporting documentation.

1.3 PROJECT PRICING

A. Bidder shall complete the Bid Form, including all requested information.

B. Project pricing is a combination of lump sum work items and unit price work items.

1.4 UNIT PRICES

A. Submit unit prices for each unit price item listed in the Bid Form. The amount of each unit price shall be stipulated in the space provided in the Bid form.

1.5 LUMP SUM PRICES

A. Submit lump sum prices for each lump sum item listed in the Bid Form. The amount of each lump sum price shall be stipulated in the space provided in the Bid Form.

1.6 UNIT PRICE QUANTITY MEASUREMENT

A. The Contractor’s measurement of work-in-place that involves use of established unit prices will be reviewed by the Owner and Engineer.

B. 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.

C. Maintain plan drawings locating all unit price repairs performed. Location and size of patches, overlays, etc. must be located on clean drawings. Separate drawings shall be maintained for each level. Contractor shall submit copy of drawing identifying current quantities with each payment request. Work being invoiced must be properly identified. These drawings shall be incorporated into "Record Drawings" set required in accordance with Division 01.

D. Quantity measurements shall be performed as described in the Specifications or indicated on Drawings.

1.7 APPLICATION FOR PAYMENT

A. The form of Application for Payment shall be notarized AIA Document G702, "Application and Certification for Payment," supported by AIA Document G703, Continuation Sheet.

B. Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. An incomplete or incorrect Application for Payment will constitute reason for refusing to recommend payment and will be returned without action.
   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
   2. Include amount of change orders issued prior to the last day of construction period covered by the application.

C. Submit an executed electronic copy of the Application for Payment to the Engineer including waivers of lien and similar attachments, when required.

D. 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. Submittal Schedule (preliminary, if not final)
   7. List of Contractor's staff assignments
   8. List of Contractor's principal consultants
   9. Copies of permits
   10. Copies of authorizations and licenses from governing authorities for performance of the Work
   11. Initial progress report
   12. Certificates of insurance and insurance policies
   13. Performance and payment bonds
   14. Data needed to acquire Owner's insurance

E. 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. Assurance that Work not complete and accepted will be completed without undue delay
   5. Transmittal of required Project construction records to Owner
   6. Proof that taxes, fees and similar obligations have been paid
   7. Removal of temporary facilities and services
   8. Removal of surplus materials, rubbish, and similar elements
   9. Warranties

1.8 WAIVERS OF MECHANICS LIEN

A. With each Application for Payment submit waivers of mechanics liens from subcontractors or sub-subcontractors and suppliers for the construction period covered by the previous application.

B. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, and on each item.

C. When application shows completion of an item, submit final or full waivers.

D. The Owner reserves the right to designate which entities involved in the Work must submit waivers.

E. Submit waivers of lien on forms and executed in a manner acceptable to the Owner.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 29 16

SECTION 01 31 13 – PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes provisions for coordination of the Work.

1.3 GENERAL COORDINATION

A. Coordinate scheduling, submittals and work of the various Sections of the Specifications to:
   1. Ensure efficient and orderly sequence of installation of interdependent construction elements.
   2. Provide for items to be installed later.

1.4 ACCEPTANCE OF CONDITIONS

A. Inspection:
   1. Prior to performing work under a Section:
      a. Carefully inspect the installed work.
      b. Verify that all such work is complete to the point where the work under that Section may properly commence.
      c. Starting of work indicates acceptance of the condition of components to which the work will be applied.
   2. Verify that all materials, equipment, and Products to be installed under a Section may be installed in strict accordance with the design and reviewed Shop Drawings.

B. Discrepancies:
   1. Resolve all discrepancies and conflicts between the trades.
   2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 31 13

SECTION 01 31 19 – PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes scheduling and administering of preconstruction and progress meetings.

B. Scheduling and Administration of Meetings:
   1. Responsibility:
      a. Preconstruction Meeting: Engineer.
      b. Progress Meetings: Engineer.
   2. Procedures:
      a. Prepare agenda.
      b. Distribute written notice and agendas of meetings in advance of the meeting date.
      c. Make physical arrangements for the meetings.
      d. Preside at meetings.
      e. Record minutes and include significant proceedings and decisions.
      f. Distribute copies of the minutes after meetings to:
         1) Participants.
         2) Others affected by proceedings.

1.3 PRECONSTRUCTION MEETING

A. Schedule: Preconstruction meeting will be scheduled by the Engineer:
   1. Within 21 days after the date of the Owner’s signature on the Agreement Supplement.
   2. Before starting the Work at the site.

B. Attendance:
   1. Representatives of the following parties are to attend the meeting:
      a. Owner's representatives.
      b. Engineer's representatives.
      c. Contractor's project manager.
      d. Contractor's field superintendent.
      e. Major subcontractors.

1.4 PROGRESS MEETINGS

A. Types of Progress Meetings:
   1. Regular.
   2. Called.
   3. Preinstallation for the following:
      a. Prior to concrete pours.
      b. Prior to installation of traffic coatings.

B. Schedule meetings as follows unless otherwise approved by the Engineer:
   1. Regular: Bi-weekly.
   2. Called: As the progress of the Work dictates.
   3. Preinstallation: At least 5 working days prior to start of installation.

C. Location: Hold meetings at Project Site or as indicated in the notice.

D. Attendance: Representatives of the following parties are to be in attendance at the meeting:
   1. Engineer's representatives.
   2. Contractor's project manager.
   3. Contractor's field superintendent.
   4. Major Subcontractors as pertinent to the agenda.
   5. Owner's representative as appropriate.

E. Minimum Agenda: The minimum agenda for progress meetings shall consist of the following:
   1. Review and approve minutes of previous meetings.
   2. Review progress of the Work since the previous meeting.
   3. Note field observations, problems and decisions.
   4. Identify problems which impede planned progress.
   5. Review offsite fabrication problems.
   6. Develop corrective measures and procedures to regain planned schedule.
   7. Revise construction schedule as indicated.
   8. Review submittal schedules; expedite as required to maintain schedule.
   9. Maintenance of quality and work standards.
   10. Review changes proposed by the Owner for their effect on the construction schedule and completion date.
   11. Identify all claims and potential claims.
   12. Pending changes and substitutions.
   13. Complete other current business.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 31 19

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes procedures for the submittal of Shop Drawings, Product Data, Samples, Operation and Maintenance Manuals, and other information.

B. Related Sections include pertinent Sections of these Specifications for the individual Submittals required.

1.3 DEFINITIONS

A. Submittal: Information sent by Contractor to convey information about systems, equipment, materials, products, and administrative matters for the Work.

B. Resubmittal: Submittal sent for review a second or further time.

C. Product Data: Illustrations, standard schedules, diagrams, performance charts, instructions, brochures, or manufacturer's literature that describe the physical size, appearance, and other characteristics of materials or equipment for a portion of the work.

D. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

E. Samples: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

F. Action Submittals: Submittal that requires Engineer's response.

G. Informational Submittals: Submittal that does not require Engineer's response.

1.4 SUBMITTAL PROCEDURES

A. Submittal Schedule:
   1. Prepare and submit a Submittal schedule that identifies the following for each Submittal:
      a. Submittal number
      b. Submittal description
      c. Projected date Submittal will be submitted.
   2. An electronic copy (MS Excel file) of a blank Submittal schedule, in the preferred format, will be furnished by Engineer at the preconstruction meeting.
   3. Submittal Numbers:
      a. Use the applicable Specification Section number followed by a decimal point and then a sequential number (e.g., 07 18 00.1).
      b. Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 07 18 00.1.A).
      c. Submittals that are not numbered correctly may be rejected.

B. Delivery Method:
   1. Paper Copies: Unless indicated otherwise, submit 2 copies of each Submittal. One copy of each Action Submittal will be returned to Contractor. Extra copies submitted by Contractor will be discarded.
   2. Electronic Files:
      a. Unless indicated otherwise, submit 1 copy of each Submittal in a format capable of being read using Adobe Acrobat Reader.
      b. Scanned Submittals shall be produced in such a way as to not compromise the graphic quality or accuracy of scale, where applicable; and text shall be searchable.
      c. One copy of each Action Submittal will be returned to Contractor.
      d. Transmit Submittals via electronic mail (e-mail) or web-based collaboration and document sharing system, where used. Submittals that are transmitted electronically will be returned electronically.
   3. Transmit Submittals to party and address identified by Engineer at preconstruction meeting.

C. Coordination and Timing: Coordinate preparation and processing of Submittals with performance of construction activities. Contractor is responsible for cost of delays caused by lack of coordination or tardiness of Submittals. Incomplete Submittals will be rejected.
   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 parts of the Work so processing will not be delayed because of need to review Submittals concurrently for coordination.
      a. Engineer reserves the right to withhold action on a Submittal requiring coordination with other Submittals until related Submittals are received.

D. Processing Time: Allow 10 full working days for Engineer to review each Submittal, including Resubmittals. Time for review shall commence on Engineer’s receipt of Submittal. No extension of the Contract Time will be authorized because of failure to transmit Submittals enough in advance of the Work to permit processing, including Resubmittals. Engineer will advise Contractor when a Submittal being processed must be delayed for coordination.

E. Identification: Place a permanent label on each Submittal or generate a separate cover sheet.
   1. Indicate name of firm or entity that prepared Submittal.
   2. Provide space to record Contractor's review and approval markings and action taken by Engineer.
   3. Include the following information:
      a. Project name.
      b. Date.
      c. Name and address of Engineer.
      d. Name and address of Contractor.
      e. Name and address of Subcontractor(s).
      f. Name and address of Supplier(s).
      g. Name of Manufacturer.
      h. Submittal number, including revision identifier.
      i. Drawing number and detail references, as applicable.
      j. Location(s) where product is to be installed, as applicable.
      k. Other necessary identification.

F. Deviations: Encircle or otherwise specifically identify deviations from the Contract Documents on Submittals. Submittals that include deviations that are not identified may be rejected. Engineer may or may not consider deviations. Deviations are not substitutions. Refer to Division 01 Section “Product Substitution Procedures” for procedures regarding requests for substitutions.

G. Transmittal: Package each Submittal individually and appropriately for transmittal and handling. Transmit each Submittal using a transmittal form. Engineer will reject Submittal(s) received from sources other than Contractor.

H. Resubmittals: Make Resubmittals in same form and number of copies as initial Submittal.
   1. Note date and content of previous Submittal.
   2. Clearly identify additions and revisions.
   3. Resubmit Submittals until they are marked, “Reviewed, No Exceptions Noted” or “Reviewed With Corrections Noted.”

I. Distribution: Furnish copies of Submittals with mark indicating, “Reviewed, No Exceptions Noted” or “Reviewed With Corrections Noted,” to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.

J. Use for Construction: Unless otherwise indicated by Engineer, use only Submittals with mark indicating, “Reviewed, No Exceptions Noted” or “Reviewed With Corrections Noted.”

1.5 CONTRACTOR'S USE OF ENGINEER’S ELECTRONIC DRAWING FILES

A. At Contractor's written request, copies of Engineer’s electronic Drawing files may be provided to Contractor for Contractor's use in connection with Project, including Submittal preparation. Electronic files may be furnished by Engineer for the convenience of the Contractor. Conclusions or information obtained or derived from such electronic files will be at the Contractor’s sole risk. Materials furnished by Engineer that may be relied upon are limited to printed Contract Documents.

B. When Contractor uses Engineer’s electronic Drawing files to facilitate Submittal preparation, prepare Submittals to be project specific. Submittals that are not project specific, including Engineer’s Drawing files submitted on a new title block, will be rejected.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit project specific Action Submittals required by individual Specification Sections. Do not use highlighting that would not be reproducible. Include a table of contents or index with each Submittal.

B. Product Data: Collect information into a single Submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for Submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each Submittal to indicate which products and options are applicable.
   3. Include the following information, as applicable:
      a. Manufacturer's written recommendations.
      b. Manufacturer's product specifications.
      c. Manufacturer's installation instructions.
      d. Standard color charts.
      e. Manufacturer's catalog cuts.
      f. Wiring diagrams showing factory-installed wiring.
      g. Printed performance curves.
      h. Operational range diagrams.
      i. Mill reports.
      j. Standard product operation and maintenance manuals.
      k. Compliance with specified referenced standards.
      l. Testing by recognized testing agency.
      m. Application of testing agency labels and seals.
      n. Notation of coordination requirements.
   4. Submit Product Data before or concurrent with Samples.
   5. Maintain copy of returned Submittal for Project records.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale where appropriate. Scale shall be sufficiently large to indicate pertinent features of the item and its method of connection to the Work.
   1. Preparation: Fully illustrate requirements of the Contract Documents. Include the following information, as applicable:
      a. Dimensions.
      b. Identification of products.
      c. Fabrication and installation drawings.
      d. Roughing-in and setting diagrams.
      e. Wiring diagrams showing field-installed wiring, including power, signal, control, and communication wiring. Differentiate between Manufacturer-installed and field-installed wiring.
      f. Manufacturing instructions.

g. Templates and patterns.
h. Schedules.
i. Calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by field measurement.
m. Relationship to adjoining construction clearly indicated.

2. Sheet Size: Submit Shop Drawings on sheets at least 8-1/2 x 11 inches but no larger than 24 x 36 inches.
3. Maintain copy of returned Submittal for Project records.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by individual Specification Sections. Do not use highlighting that would not be reproducible. Include a table of contents or index with each Submittal. As part of electronic submittals, the table of contents or index shall include electronic bookmarks to the first page of the respective Section(s) identified.

B. Contractor's Construction Schedule: Prepare and submit within 10 days after the date of the Owner's signature on the Agreement Supplement an estimated construction progress schedule in bar chart form. Extend schedule from date established for the execution of the Contract to date of final completion.
1. Prepare a list of all activities required to complete the work. Identify critical path activities, including material lead time. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.
2. Coordinate construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
3. Schedule shall include provisions for submittal review time, resubmittal review time, procurement time, material cure time, adverse weather, and constraints and work restrictions in the Contract Documents.
4. Schedules for restoration work shall indicate the areas to be closed during each phase of construction and shall indicate the proposed traffic flow for each phase.

C. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects/engineers and owners, and other information specified.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on Manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by Manufacturer for this Project.

G. Product Certificates: Prepare written statements on Manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on Manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Manufacturer's Instructions: Prepare written or published information that documents Manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of Manufacturer. Include the following, as applicable:
   1. Preparation of substrates.
   2. Required substrate tolerances.
   3. Sequence of installation or erection.
   4. Required installation tolerances.
   5. Required adjustments.
   6. Recommendations for cleaning and protection.

J. Manufacturer's Field Reports: Prepare written information documenting tests and inspections of factory-authorized service representative. Include the following, as applicable:
   1. Name, address, and telephone number of factory-authorized service representative making report.
   2. Statement of substrate condition and acceptability of substrate for installation or application of product.
   3. Statement that products at Site comply with requirements.
   4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   6. Statement whether conditions, products, and installation will affect warranty.
   7. Document all settings in writing.
   8. Other required items indicated in individual Specification Sections.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each Submittal and check for coordination with other work of the Contract and for compliance with the Contract Documents. Verify all field dimensions and conditions; note corrections as necessary. Mark with approval stamp before submitting to Engineer.
   1. Approval Stamp: Stamp each Submittal with an approval stamp. Use the same stamp format for each Submittal. Include Project name and location, Submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that Submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

B. Submittals that are not approved and stamped by Contractor will be rejected.

3.2 ENGINEER’S REVIEW

A. Action Submittals: Engineer will review Action Submittals, make marks to indicate corrections or modifications required, and return Submittal. Engineer will stamp each Submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
   1. Reviewed, No Exceptions Noted: Submittal appears to conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
   2. Reviewed With Corrections Noted: Upon incorporation of review comments, it appears that Submittal will conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
   3. Revise and Resubmit: Submittal has one or more specific segments that are incomplete, do not appear to conform to the information given in the Contract Documents, or are incompatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Contractor shall resubmit information for review to demonstrate understanding of comments and portions of Work to be provided. Except as noted, Contractor shall not proceed with Work related to Submittal.
   4. Rejected, Resubmit: Submittal as a whole is incomplete, does not appear to conform to the information given in the Contract Documents, or is incompatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Contractor shall resubmit information for review to demonstrate understanding of comments and portions of Work to be provided. Contractor shall not proceed with Work related to Submittal.

B. Informational Submittals: Other Submittals required by the Contract Documents are for information only. Engineer will acknowledge receipt of Informational Submittals. Such Submittals include, but are not limited to:
   1. Qualifications Data.
   2. Certificates.
   3. Test Reports.
   4. Manufacturer’s Instructions.
   5. Maintenance Data.
   6. Field Reports.

C. Submittals not required by the Contract Documents will be returned without being reviewed.

D. Partial Submittals are not acceptable, will be considered non-responsive, and will be rejected.

3.3 RE-REVIEW COSTS

A. Compensation:
   1. Should Engineer be required to review a Submittal more than twice because of failure of the Submittal to meet the requirements of the Contract Documents, Engineer will record Engineer's expenses for performing all additional reviews.
   2. Owner will compensate Engineer for these additional services and deduct the amount paid from payments to Contractor.

END OF SECTION 01 33 00

SECTION 01 41 00 – TESTING LABORATORY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes provisions for testing of concrete.

B. Owner Paid Items: Owner will employ and pay for services of an Independent Testing Laboratory approved by Engineer to perform testing as specified in this Section.

C. Specific Tests, Inspections and Methods Required:
1. Cast-In-Place Concrete (ACI 301 1.6.4 and ACI 311.5R-1.3, 2.4): Comply also with testing requirements established in governing building codes. Additional requirements are specified as follows:
    a. Concrete Compression ASTM C 39.
        1) Laboratory will have a compression machine capable of breaking 6-inch x 12-inch cylinders of 10,000 psi or be prepared to test 4-inch x 8-inch cylinders in accordance with ASTM standards.
        2) Take a minimum number of test cylinders as listed for each 50 cubic yards, or fraction thereof, of each mix design of concrete placed in any one day.
            a) 6-inch x 12-inch cylinders: 6 cylinders.
            b) 4-inch x 8-inch cylinders: 8 cylinders.
        3) Compression test sample size will be 6-inch x 12-inch cylinders except that 4-inch x 8-inch cylinders may be used for silica fume concrete.
        4) Compression tests:
            a) Test 2 cylinders at 7 days.
            b) Test 2 cylinders at 28 days (3 cylinders for 4-inch x 8-inch cylinders).
            c) Hold 2 cylinders in reserve for use as the Engineer directs (3 cylinders for 4-inch x 8-inch cylinders).
        5) After 56 days, unless notified by the Engineer to the contrary, reserve cylinders may be discarded without being tested for specimens meeting 28 day strength requirements.
    b. Slump Test:
        1) Conduct 1 slump test per batch at the point of placement ASTM C 143.
            a) When water reducing admixtures or high range water reducing admixtures are added at Site, test concrete slump prior to addition of admixtures.
    c. Air Content Testing: Sample and test each batch of air entrained concrete delivered to project ASTM C 173 or ASTM C 231 and ASTM C 138.
    d. Ambient Air Temperature and Composite Concrete Sample Temperature.
        1) Record temperatures for each batch of concrete ASTM C 1064.
    e. Corrosion Inhibitor Testing:
        1) Concrete Producer shall have corrosion inhibitor Manufacturer/Supplier perform following:
            a) Install a visual reference (such as a bottle or other approved device) for dispensing Calcium Nitrite corrosion inhibitor. Visual reference shall be accessible to Independent Testing Laboratory, Manufacturer/Supplier's Representative, and Engineer.
            b) Calibrate dispensing system at initial equipment installation and annually thereafter. Install tamper proof seals after each calibration of system.
        2) Concrete plant operator shall perform following:
            a) Verify contents of visual reference (such as a bottle or other approved device) prior to discharge of product for each batch. If visual reference does not indicate specified amount of corrosion inhibitor, concrete plant operator shall stop production and notify corrosion inhibitor Manufacturer/Supplier immediately.

3) Independent Testing Laboratory shall perform following:
   a) Prior to and after each pour, take volume readings of corrosion inhibitor tank, correlate to size of pour, and report results to Engineer, corrosion inhibitor Manufacturer/Supplier, and concrete supplier. Volume used should be within ± 10% of specified amount.
   b) Test plastic corrosion inhibitor concrete for presence of corrosion inhibitor in accordance with test method indicated in Appendix A. Test each concrete sample used for concrete compression test cylinders at rate of one test for each 50 cubic yards, or fraction thereof, of each mix design of concrete placed in any 1 day.

1.3 RETESTING COSTS

A. Retesting and relating engineering services shall be paid which indicate that initial tested items are not in accordance with Contract Documents, and for additional tests that are for his convenience.

1.4 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. American Concrete Institute (ACI):
      a. ACI 301-05 - Standard Specifications for Structural Concrete
      b. ACI 311.5R-02 - Guide for Concrete Plant Inspection and Field Testing of Ready-Mixed Concrete.

1.5 REPORTS AND SUBMISSIONS

A. Testing: Submit for each of the following:
   1. Record field test reports including following information according to ACI 311.5R 2.5:
      a. Project information as specified herein.
      b. Design mix number.
      c. Design strength.
      d. Cement content.
      e. Water content.
      f. Coarse aggregate lbs/yd.
      g. Fine aggregate lbs/yd.
      h. Admixtures.
      i. Truck number and/or ticket number.
      j. Drum rotation revolution.
      k. Cubic yards.
      l. W/C ratio.
      m. Batch time.
      n. Discharge start time.
      o. Empty time.
      p. Sample time.
      q. Slump.
      r. Air content.
      s. Air temperature and concrete temperature.
      t. Location of placement and location of sample batch.
   2. Submit for record laboratory test results including following information in addition to information cited under field tests.
      a. Cylinder identification.
      b. Date tested, concrete age.
      c. Total load.
      d. Compressive strength.
      e. Type of fracture.
      f. Method of curing.
      g. Weight of cylinder.

B. Certifications: Upon request for review and approval certification and qualifications of Laboratory and Laboratory field Technicians.

1.6 QUALITY ASSURANCE

A. Quality Control according to ACI 301 1.6. Additional requirements are as follows:
   1. Laboratory will meet requirements of ASTM C 1077.
   2. Laboratory will have been inspected by an independent agency such as Cement and Concrete Reference Laboratory CCRL or AASHTO Material Reference Laboratory AMRL.
   3. Laboratory will meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
   4. Laboratory will be authorized to operate in state in which Project is located.
   5. An ACI certified Concrete Laboratory Testing Technician - Grade II will be responsible for concrete testing services.
   6. An ACI certified Concrete Field Testing Technician - Grade I will be responsible for field testing services.
   7. Employment of Laboratory will in no way relieve Contractor's obligations to perform Work of Contract.

B. Laboratory Responsibilities according to ACI 301 1.6.4. Additional requirements are as follows:
   1. Laboratory will cooperate with Engineer, Contractor, and Subcontractors in order to provide qualified personnel upon due notice.
   2. All testing will be performed in a timely manner to prevent installation (or to allow for removal) of non-conforming material.
   3. All tests will be reported in writing to Contractor, Subcontractor, Supplier, Installer, etc., Engineer, and Owner. Written reports of test results will be delivered to above parties within 48 hours of testing or by fax if immediately requested. Each report will include, as a minimum, following:
      a. Report number.
      b. Date issued.
      c. Project title and number.
      d. Name of Contractor and Subcontractor if applicable.
      e. Supplier.
      f. Testing Laboratory name, address, and telephone number.
      g. Name and signature of Laboratory Field Technician.
      h. Date and time of sampling or inspection.
      i. Record of temperature and weather conditions.
      j. Date of test.
      k. Identification of product and Specification Section.
      l. Location of sample or test in Project.
      m. Type of inspection or test.
      n. Results of tests and compliance with Contract Documents.
      o. Interpretation of test results when requested by Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 41 00

APPENDIX A

Test Method for Calcium Nitrite presence in plastic concrete.

Scope:

This method of test is used to determine presence of calcium nitrite in plastic concrete state. A freshly mixed concrete sample shall be tested. Quantofix test strips, for high range nitrite, manufactured by Gallard-Schlesinger Industries, Inc. of Carle Place, New York or equivalent, shall be used.

A. Apparatus:
   1. Quantofix Test Stripsfor high range nitrite #91322
      a. CTL Scientific (888) 686-3454
   2. 10cc disposable syringes with Leur-Lok tip #309604
      a. Care Express (800) 339-3880
   3. Disposable Filters 25mm/.45 micron #SLHAM3355
      a. Millipore (800) 6455476

B. Procedure:
   1. Add field concrete to pre-measured 2 liters of water in a wide mouth container. Use water in the container to rinse out measuring cup.
   2. Shake container 2-5 minutes until contents are well mixed. As indicated in Column 2 of the following Table, stated quantity of concrete, in millimeters, should be obtained in container.
   3. Using syringe, uptake approximately 10ml of extraction water from container. Attach a disposable filter to end of syringe.
   4. Filter the extraction water into a clean cup.
   5. Dip test strip into clear, filtered extraction water and compare color to chart on side of test strip container.
   6. Use following chart to determine amount of concrete to be extracted and expected readings on test strips.

Column 1 Amount of Calcium Nitrate Added, Liter/cu. Meter	Column 2 Volume of Concrete to be Extracted, millimeters	Column 3 Expected Reading on Test Strip
9.9	225	0.3
12.4	180	0.3
14.8	150	0.3
17.3	130	0.3
19.8	225	0.6
22.3	200	0.6
24.8	180	0.6

Notes:

Column 1 indicates amount of calcium nitrite in liters that has been added to a cubic meter of concrete.
Column 2 indicates amount of concrete that should remain in container after shaking.
Column 3 is test strip reading that will correspond to indicated quantity of calcium nitrite.

SECTION 01 55 26 – TRAFFIC CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the major items listed below:
   1. Maintaining traffic and parking.
   2. Temporary facilities for:
      a. Maintaining vehicular access.
      b. Maintaining pedestrian access.
      c. Traffic detours.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. MDOT:
      a. 2020 Standard Specifications for Construction.
      b. Standard Plans.
      c. Michigan Manual of Uniform Traffic Control Devices, as amended.

1.4 DEFINITIONS

A. Abbreviation for Michigan Manual of Uniform Traffic Control Devices: MMUTCD.

B. Terms:
   1. Traffic: Includes all users of the roadway, motorized and non-motorized.
   2. Traffic Control Device: Includes, but is not limited to, signs, pavement markings, traffic signals, traffic channelizing devices, flagging devices, and other devices designed to provide orderly and predictable movement of traffic, and assist vehicle operators in vehicle guidance and navigation tasks.

1.5 SEQUENCING AND SCHEDULING

A. Coordination with Construction Sequencing and Schedule:
   1. Within 15 days after execution of the Contract, determine the vehicle and pedestrian traffic flow and the signage for each phase of construction to maintain the traffic flow throughout the parking structure.
   2. This section is coordinated with sequencing and scheduling proposed in Division 01 Section “Summary of Work.”
   3. Adjustments to the proposed sequencing and scheduling may require changes to work described in this section, which must be approved by the Engineer and Owner. Such changes shall be at no additional cost to Owner.

1.6 TRAFFIC SIGNAGE

A. Provide and maintain traffic signs through the duration of the Project to assist in traffic direction.

B. Provide signs necessary to inform visitors and employees of closings and traffic flow modifications, both inside and outside of the structure. Sign wording, appearance and placement shall be approved by Owner.

C. Work will not be permitted to proceed until required signage is in place.

1.7 MAINTENANCE

A. Extra Materials:
   1. Supplied by the Contractor at no expense to the Owner.
   2. Store on Site to replace stolen or damaged materials.

B. Maintenance Service:
   1. Inspect temporary traffic control devices daily during the course of the Work.
   2. Deficiencies in the location or condition of traffic control devices shall be corrected immediately.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Roadway: All materials for temporary traffic control devices shall conform with the MDOT 2020 Standard Specifications for Construction and the MMUTCD, as amended.

B. Parking Structure:
   1. Frames may be new or used, wood or metal, ins sound condition and structurally adequate.
   2. Signs should be a minimum of 1/2-inch exterior grade plywood.
   3. Minimum heights of letters should be 4 inches and stenciled.
   4. Paint should be exterior quality and the color of the lettering black on a highway orange background.

PART 3 - EXECUTION

3.1 GENERAL

A. Take necessary precautions including, but not limited to, provision of necessary traffic control devices, implementation of closures, construction of temporary facilities, and maintenance of detours as necessary for the safety of the general public, efficient movement of traffic, and the protection of the Work.

B. Temporary traffic controls shall be installed and maintained in conformity with applicable statutory requirements and as required by the governing roadway authority.

3.2 MAINTAINING ACCESS

A. Provide and maintain all drive lanes, entrances, exits, and safeguards required or necessary to the progress of the Work, and effectively control such traffic in a manner to provide minimum hazard to the Work and all persons.

B. Route all construction equipment, trucks, and similar vehicles via existing public streets to and from the structure as approved by the governing authorities and the Owner.

C. Provide and maintain for proper control of traffic and safety of all concerned, including all necessary barricades, suitable and sufficient lights, reflectors and danger signals, warning and closure signs and directional signs.

D. Vehicle and pedestrian traffic flow inside and outside of the structure shall be maintained to provide easy entry and exit from the structure and to all parking areas.

E. Maintain local and emergency traffic at all times during the Work.

F. Pedestrian Access:
   1. Conduct Work to minimize obstruction to pedestrian traffic.
   2. Barricade and fence disturbed or obstructed pedestrian facilities.

3.3 CLOSURES

A. Road closures shall be in accordance with the MMUTCD, as specified herein.

B. Provide the Engineer and Owner a minimum of 1 weeks' notice and receive approval before implementing parking closures.

3.4 PROTECTION

A. Protect all existing traffic control devices in the work area.

B. Promptly repair or replace traffic control devices damaged by construction.

3.5 TRAFFIC SIGNAGE

A. Install signs at an optimum height for visibility, attached to frames or structural surfaces.

B. Relocate signs as required by progress of work.

C. Maintain signs neat and clean, repair damages to support or sign.

D. Remove signs, framing, and supports at the completion of the Project.

END OF SECTION 01 55 26

SECTION 01 56 00 – TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 BARRICADES

A. Provide and maintain suitable barricades as required to prevent public entry, and to protect the Work, existing facilities, trees and plants from construction operations; remove when no longer needed, or at completion of Work. Barricades shall conform to city and state laws, ordinances, permit requirements.

B. The Contractor shall provide and maintain all necessary barricades for safe conduct of his work, or as required by federal, state or local laws or ordinances and in accordance with OSHA requirements and other requirements of this Specification.

C. Provide and maintain suitable barricades as required for protection of open excavations and post with warning lights.

1.3 ENCLOSURES

A. Enclosures shall be sufficient to prevent entrance/exit or infiltration of rain, water, wind or other elements, and which will prevent undue heat loss from within an enclosed area.

B. Provide adequate ventilation and protection to provide construction personnel with safe working environment.

C. Prevent hazardous accumulations of dusts, fumes, mists, vapors, or gases in areas occupied during construction. Provide local exhaust ventilation to prevent harmful dispersal of hazardous substances into atmosphere of occupied areas. Dispose in manner that will not result in harmful exposure to person. Ventilate storage spaces containing hazardous or volatile materials.

D. Contractor shall submit to the Owner, for approval, proposed methods used to contain dust and fumes in work area.

E. Contractor shall be responsible for any damage to vehicles due to the construction.

1.4 CONSTRUCTION/MAINTENANCE

A. Contractor shall be responsible for design, construction and maintenance of all barricades and enclosures.

PART 2 - PRODUCTS

2.1 GENERAL

A. Materials may be new or used, suitable for intended purpose.

PART 3 - EXECUTION

3.1 Installation

A. Install barricades and enclosures of a neat and reasonable uniform appearance, structurally adequate for the required purposes.

B. Maintain barricades and enclosures during entire construction period. Relocate barricades and enclosures as required with progress of construction.

3.2 REMOVAL

A. Completely remove barricades and enclosures when construction has progressed to the point that they are no longer needed.

B. Clean and repair damage caused by installation of barricades and enclosures.

END OF SECTION 01 56 00

SECTION 01 66 00 – PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes provisions for the storage and protection of Products.

1.3 MATERIAL AND EQUIPMENT

A. Comply with the applicable specifications and standards.

B. Comply with size, make, type, and quality specified.

C. Manufactured and fabricated products
   1. Design, fabricate, and assemble consistent with the current engineering and shop practices.
   2. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
   3. Two or more items of the same kind shall be identical, by the same manufacturer.

D. Do not use material or equipment for any purpose other than that for which it is designed or specified.

1.4 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the Engineer. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition, and adjust products in strict accord with such instructions and in compliance with specified requirements.
   1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.
   2. Do not proceed with work without clear instructions.

1.5 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with Work and conditions at the site.
   1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
   2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents, and approved submittals and that products are properly protected and undamaged.

1.6 STORAGE AND PROTECTION

A. Storage:
   1. Maintain ample way for foot traffic at all times, except as otherwise approved by the Engineer.
   2. Repair or replace property damaged by reason of storing of material at no additional cost to the Owner.
   3. Packaged Materials:
      a. Delivered in original, unopened containers.
      b. Stored until ready for use.
   4. Materials shall meet the requirements of these Specifications at the time that they are used in the Work.

5. Store Products in accordance with Manufacturer's instructions and as required by the technical specifications, with seals and labels intact and legible.
6. Store fabricated products above the ground on blocking skids, prevent soiling or staining.
7. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
8. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

B. Protection:
   1. Use all means necessary to protect the:
      a. Products of every Section before, during and after installation.
      b. Installed work and materials of all trades.
   2. All materials shall be delivered, stored and handled to prevent:
      a. The inclusion of foreign materials.
      b. Damage by water, breakage or other causes.
   3. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
   4. Provide weathertight enclosures with raised floors as may be required to adequately protect those materials and Products stored on the site which may require protection from damage by the elements.
   5. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

C. Protection after installation: Provide substantial coverings as necessary to protect installed products from damage from weather, traffic, and subsequent construction operations. Remove when no longer needed.

D. Replacements: In the event of damage, immediately make repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 66 00

SECTION 01 74 00 – CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes provisions for maintaining all structures and the site in a standard of cleanliness.

B. Related Sections include the following: In addition to standards described in this Section, comply with all requirements for cleaning up as described in various other Sections of these Specifications.

1.3 QUALITY ASSURANCE

A. Inspection:
   1. Daily and more often if necessary.
   2. Conduct inspections to verify that requirements of cleanliness are being met.

1.4 DELIVERY, STORAGE AND HANDLING

A. Hazards Control:
   1. Volatile Wastes:
      a. Store in covered metal containers.
      b. Remove from premises daily.
   2. Prevent accumulation of wastes which create hazardous conditions.
   3. Provide adequate ventilation during use of volatile or noxious substances.

1.5 PROJECT CONDITIONS

A. Cleaning and Disposal:
   1. Conduct operations to comply with local ordinances and anti-pollution laws.
   2. Not Allowed:
      a. Burning or burying of rubbish or waste materials onsite.
      b. Disposal of volatile wastes in storm or sanitary sewers: Volatile wastes include, but are not limited to, mineral spirits, oil or paint thinner.
      c. Disposal of wastes into streams or waterways.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Compatibility:
   1. Compatible with the surface being cleaned.
   2. Recommended by the Manufacturer of the material being cleaned.
   3. As reviewed by the Engineer.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General:
   1. Store materials:
      a. In an orderly arrangement allowing maximum access.
      b. To allow unimpeded drainage and traffic.

c. Provide for the required protection of materials.

2. Scrap, debris, waste material and other items not required for construction of the Work.
   a. Do not allow accumulation.
   b. Remove from the site at least each week and more often if necessary.
   c. Provide adequate storage for all materials awaiting removal.
3. Observe all requirements for fire protection and protection of the environment.

B. Site:
1. Daily, and more often if necessary:
   a. Inspect the site.
   b. Pick up all scrap, debris and waste material; remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary:
   a. Inspect all arrangements of materials stored onsite.
   b. Restack or otherwise service all arrangements to meet the requirements of paragraph 3.1.A.1 above.
3. At all times maintain the site in a neat and orderly condition which meets the approval of the Engineer.
4. Paved Surfaces: Keep clean.
5. Dust Control:
   a. Control dust on or near the Work by the application of water or other approved means.
   b. If the Contractor fails to correct unsatisfactory conditions with 24 hours after due notification:
      1) The Owner may arrange for such work to be performed by other means.
      2) Pay costs.

C. Structures:
1. Weekly, and more often if necessary:
   a. Inspect the structures.
   b. Pick up all scrap, debris and waste material; remove all such items to the place designated for their storage.
   c. Sweep all interior spaces clean.
      1) Clean as used above shall be defined to be free from dust and other material capable of being removed by reasonable diligence using a hand-held broom.
2. Preparation for installation of succeeding material: Clean the structures or pertinent portions thereof:
   a. To the degree of cleanliness recommended by the Manufacturer of the succeeding material.
   b. Using all equipment and materials required to achieve the required cleanliness.
3. Schedule cleaning operations so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

3.2 FINAL CLEANING

A. Definitions:
1. Clean: The level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.

B. Prior to Completion of the Work:
1. Remove from the site all tools, surplus materials, equipment, scrap, debris and waste.
2. Conduct final progress cleaning as described in Article 3.1 above.

C. Site:
1. Unless otherwise specifically directed by the Engineer:
   a. Hose down all paved areas onsite and all public sidewalks directly adjacent to the site.
   b. Rake clean other surfaces of the grounds.
2. Remove all resultant debris.

D. Structures:
1. Visually inspect all interior and exterior surfaces.
2. Restore or replace all property damaged by the Work.
3. Remove all traces of grease, paint, dust, soil, stains, labels, waste material, smudges, fingerprints, writing, and other foreign matter.
4. Remove all traces of splashed materials from adjacent surfaces.

5. Water blast floor surfaces at all Levels of Work performed.
6. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure.
7. In the event of stubborn stains not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.
8. Remove all paint droppings, spots, stains, and dirt from finished surfaces using only the specified cleaning materials and equipment.
9. Repair, patch and touch up marred surfaces to specified finish to match adjacent surfaces.
10. Clean all glass inside and outside.
11. Clean all hardware.
12. Clean all plumbing fixtures.
13. Clean all lighting fixtures.
14. Clean all maintenance, storage, and mechanical rooms in parking structure.

E. Timing: Schedule final cleaning as approved by the Engineer to enable the Owner to accept a completely clean Project.

END OF SECTION 01 74 00

SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the instructions for and the responsibilities of each party in contract closeout.

1.3 SUBSTANTIAL COMPLETION

A. Contractor: When the Contractor considers that the Work or any portion of the Work is ready for its intended use, the Contractor shall submit:
   1. Written certification to the Engineer and Owner that the Work, or designated portion of the Work, is substantially complete.
   2. A comprehensive list of items to be completed or corrected.
   3. Request that the Engineer issue a certificate of Substantial Completion.

B. Engineer's Inspection: The Engineer will make an inspection:
   1. Within 10 days after receipt of certification.
   2. Together with the Owner and Contractor.

C. Engineer's Determination of Substantial Completion:
   1. Should the Engineer consider the Work or designated portion of the Work substantially complete, the following steps shall be taken:
      a. The Contractor shall prepare and submit to the Engineer a list of items to be completed or corrected as determined by the inspection.
      b. The Engineer will prepare and deliver to the Owner:
         1) A tentative certificate of Substantial Completion.
         2) A tentative list of items to be completed or corrected before final payment.
      c. The Owner shall have 7 days after receipt of the tentative certificate during which to make written objection to the Engineer as to any provisions of the certificate or attached list.
      d. The Engineer will, within 14 days after delivery of tentative certificate to the Owner, decide:
         1) Not Substantially Complete: The Engineer will issue written notice to the Contractor stating reasons.
         2) Substantially Complete: The Engineer will issue definitive certificate of Substantial Completion and a revised list of items to be corrected or completed.
   2. Should the Engineer consider that the Work or designated portion of the Work is not substantially complete, the following steps shall be taken:
      a. The Engineer shall notify the Contractor in writing stating the Engineer's reasons.
      b. The Contractor shall complete the Work and send a second written notice to the Engineer certifying that the Project, or designated portion of the Project, is substantially complete.
      c. The Engineer and Owner will reinspect the Work.

1.4 FINAL INSPECTION

A. Contractor Certification: Prior to final inspection, the Contractor shall submit written certification that:
   1. The Contract Documents have been reviewed.
   2. The Project has been inspected in compliance with the Contract Documents.
   3. Work has been completed in accordance with the Contract Documents.
   4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
   5. The Project is complete and ready for final inspection.

B. Engineer's Inspection: The Engineer will make final inspection:
   1. Within 10 days after receipt of certification.
   2. Together with the Owner and Contractor.

C. Engineer's Determination of Final Completion:
   1. Should the Engineer consider the Work complete and ready for final payment in accordance with the requirements of the Contract Documents, the Engineer shall request the Contractor to make Project closeout submittals.
   2. Should the Engineer consider the Work not complete and ready for final payment:
      a. The Engineer shall notify the Contractor in writing stating the reasons.
      b. Contractor:
         1) Take immediate steps to remedy the stated deficiencies.
         2) Send a second written notice to the Engineer certifying that the Work is complete.
      c. The Engineer and Owner will reinspect the Work.

1.5 CLOSEOUT SUBMITTALS

A. Contractor:
   1. Provide closeout submittals as required in the Contract Documents.
   2. These submittals shall include, but not necessarily be limited to:
      a. Project record documents.
      b. Operation and maintenance manuals.
      c. Guarantees.
      d. Directory of suppliers for all products used by contractor on project.
      e. Spare parts and maintenance materials furnished in original box or cardboard box labeled with contents and quantity marked on top and one end of box.
      f. Instruction in operation of all systems.
   3. Record Drawings shall include, but not necessarily be limited to:
      a. Copies of the Drawings incorporating all changes and bulletins (enclosed in clouds).
      b. All shop drawings incorporating all changes (enclosed in clouds).
      c. All approved submittals.
      d. Location and size of all concrete patches and cracks.
      e. Field changes of dimension and detail.
      f. Details not on original Contract Drawings.

1.6 GUARANTEES

A. The act of the Contractor in executing the Agreement for this Work shall be considered as his acceptance of the following guarantee covering the Project:
   1. Any materials, workmanship or equipment furnished as a part of this Project which prove defective or fail to operate properly, within 1 year, or as otherwise specified in the Contract Documents, of the date of acceptance of the Work required under this (or substantial completion of the) Project (damage by wear and tear, violence, or casualty not the fault of the Contractor excepted), shall be repaired and replaced by the Contractor promptly upon notification from the Owner and without cost to the Owner.
   2. This guarantee provision shall apply regardless of whether or not such defective workmanship, materials, or equipment are listed in the final punch list. Date of acceptance (or substantial completion) will be established by the Owner and Engineer upon finding all items of this Project substantially complete as to quality of workmanship and materials. Also see Division 07 for additional guarantees.

B. Contractor shall provide warranty commencing on the date of Project acceptance. Completion of various Project phases shall not initiate commencement of warranty in these specific areas. A single Project warranty date, at Project acceptance, will constitute commencement of warranty.

C. Some areas of Project may be open to vehicular traffic and subject to wear (i.e. coatings, sealants, expansion joints) prior to commencement of warranty.

1.7 EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

A. Affidavits:
   1. Submit with final Application for Payment an affidavit of payment of debts and release of claims using AIA Document G706.

2. Affidavit shall include:
   a. The Contractor's release or waiver of lien using AIA Document G706A.
   b. Consent of surety of final payment using AIA Document G707.
   c. Separate releases or waivers of liens for Subcontractors, Suppliers, and others with lien rights against property of the Owner together with a list of those parties.

B. Execution: All submittals shall be duly executed before delivery to the Engineer.

1.8 FINAL ADJUSTMENT OF ACCOUNTS

A. Final Statement: Submit a final statement of accounting, which reflects all adjustments, to the Engineer. This statement shall contain the following:
   1. Original Contract Sum.
   2. Additions and deductions.
   3. Total Contract Sum as adjusted.
   4. Previous payments.
   5. Sum remaining due.

B. Final Change Order: The Engineer will prepare a final Change Order reflecting approved adjustments to the Contract Sum not previously made by Change Orders.

1.9 FINAL APPLICATION FOR PAYMENT

A. The Contractor shall submit a final Application for Payment in accordance with the requirements of the Contract Documents.

B. Disposition of Final Application for Payment:
   1. If the final Application for Payment and the Work are acceptable in accordance with the Contract Documents:
      a. The Engineer will, within 10 days after receipt of the Application for Payment:
         1) Submit to the Owner a written recommendation for payment.
         2) Submit to the Owner and Contractor a written notice that the Work is acceptable subject to the provisions of the General Conditions.
      b. The Owner will, within 30 days after receipt of the Application for Payment and the Engineer's recommendation in accordance with the Contract Documents, pay to the Contractor the amount recommended.
   2. If the Application for Payment, the Work or both are unacceptable:
      a. The Engineer will return the Application for Payment to the Contractor, indicating in writing the reasons for refusing to recommend final payment.
      b. The Contractor shall make the necessary corrections and resubmit the Application for Payment.
   3. Final Completion Delayed:
      a. Upon receipt of the Contractor’s final Application for Payment and recommendation by the Engineer, the Owner shall make payment of the balance due for that portion of the Work fully completed and accepted if the Engineer confirms that final completion of the Work is significantly delayed through no fault of the Contractor.
      b. Payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 77 00

SECTION 02 41 23 – SELECTIVE CONCRETE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes furnishing labor, materials, equipment, and supervision to demolish, haul, and dispose of concrete. Demolish concrete delaminations according to the depth indicated on the Drawings.

B. Basis of Contract Payments: Include demolition cost in repair costs, unless otherwise noted.

1.3 SUBMITTALS

A. Product Data: Submit types of equipment proposed for use.

B. Quality Assurance/Control Submittals: Submit restoration and sequencing plan prior to beginning Work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 PREPARATION

A. Review the types of equipment proposed for use with the Owner and Engineer.

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

C. Protect Owner's property which is to remain, including facades, signs, windows, doors, plantings, parking equipment, electrical and mechanical lines and fixtures.

D. Protect adjoining properties, public thoroughfares, sidewalks and utilities from damage due to Work.

E. Take precautions and provide protection as required to prevent damage to remaining existing elements of the parking structure, adjoining building elements, and vehicles using the facility.

F. At no cost to Owner, promptly repair damage to adjacent facilities resulting from demolition operations.

G. Clean adjacent facilities of dust, dirt and debris resulting from demolition operations.

H. Obtain authority for performing work on public and private property adjoining Owner's property.

I. Remove temporary protection and devices when no longer needed and when directed by the Owner.

3.2 DELAMINATED CONCRETE SURFACE PREPARATION

A. Location and Marking of Work Areas:
   1. Locate floor slab delaminations by sounding the surface with a hammer or rod or dragging a chain. Sound all floor slabs. Further sound delaminated areas once located to define their limits. Mark these limits or "boundaries" with chalk or paint.
   2. Locate beam, wall, column, and slab delaminations by sounding the member with a hammer or rod. Cracks, usually horizontal in orientation along beam faces and vertical in orientation near corners of columns, are reliable indicators of delaminated concrete. Further sound delaminated areas once located to define their limits. Mark these limits or "boundaries" with chalk or paint.
   3. Prior to concrete removal locate reinforcing bars tendons, anchorages, and electrical conduits in the vicinity of the repairs.
   4. Take precautions to prevent damage to reinforcement tendons, anchorages, and electrical conduits.

B. Concrete Removal and Surface Preparation:
   1. Remove concrete from within the marked boundary to a minimum depth as indicated on the Drawings using 15 to 30 pound chipping hammers equipped with chisel point bits.
   2. Do not use larger chipping hammers with a maximum stroke of 4 inches without approval from Engineer.
   3. If delaminations exist beyond the minimum removal depth, then continue chipping until unsound and delaminated concrete has been removed from the cavity.
   4. Where reinforcing bars and tendons are exposed by concrete removal, exercise extra caution to avoid damaging them during removal of additional unsound concrete.
   5. The minimum depth of concrete removal around and beyond the perimeter of the bar for the entire exposed length shall be as indicated on the Drawings.
   6. If rust is present on reinforcing bars where they enter sound concrete, then remove additional concrete along the reinforcement.
      a. Continue additional removal until gray reinforcement is exposed.
      b. If rust persists beyond the removal limits, advise Engineer and Engineer will recommend further removals.
   7. Sawcut delaminated, spalled and unsound concrete at their marked boundaries to a depth as indicated on the Drawings.
      a. Edges shall be straight and patch areas polygon shaped.
      b. A diamond blade saw or grinder with abrasive disk suitable for cutting concrete is acceptable for performing this work.
      c. Dress the edges cut at the delamination boundary perpendicular to the member face. The cut shall also be of uniform depth for the entire length of the cut.

C. Preparation of Concrete Bonding Surface: Abrasive blast or high-pressure waterblast exposed concrete surfaces to remove laitance and foreign material that may impair bonding prior to concrete placement.

D. Cleaning and Securing of Reinforcing: Refer to Division 03 Section “Concrete Reinforcement”. Clean existing reinforcing and miscellaneous metals of rust and laitance to near white metal.

E. Final Preparation: Air blast surface as a final step to remove dust and debris.

3.3 INSPECTION

A. Examine areas and conditions under which the Work is to occur.
   1. Notify Engineer immediately in writing of conditions detrimental to the proper and timely completion of this Work, as required in the General Conditions.

3.4 FIELD QUALITY CONTROL

A. After demolition is complete but prior to final cleaning, coordinate with Engineer to review the cavities and exposed reinforcement (including tendons).
   1. The review will include sounding the exposed concrete to determine completeness of delamination removals, examination of dressed edges to verify depth and vertical edge of cut, and uniformity of removals to ensure compliance with minimum limits specified.

B. Engineer will review reinforcement, including tendons, exposed within the cavities for corrosion or damage resulting from Contractor's removal operations.
   1. Perform replacement of defective or damaged reinforcement bars in accordance with Division 03 Section “Concrete Reinforcement.”

C. Promptly make changes and additions required by Manufacturer's engineer.

D. Submit Manufacturer's engineer's written approval of installation.

3.5 CLEANING

A. On a daily basis remove and properly dispose of concrete and debris from areas exposed to public view.

3.6 PROTECTION

A. The concrete slab has embedded electrical conduit. Take precautions to prevent damage to the conduit. Coordinate with Owner to shut off power if repairs are located near conduit.

B. The concrete slab at the Liberty Square Parking Structure is post-tensioned. Use caution when removing concrete. Damaged tendons under tension may release with explosive force during concrete demolition.
   1. Slab post-tensioning consists of monostrand tendons. Tendons are greased and encased in plastic sheathing.

C. Locate post-tensioning tendons and electrical conduits prior to concrete demolition or saw cutting.
   1. Take precautions to prevent damage to the post-tensioning tendons and the conduit.
   2. Contractor is solely responsible for training and monitoring work force concerning the procedures to be employed in the execution of this work. Repair, at no cost to Owner, damage caused by demolition.

END OF SECTION 02 41 23

SECTION 03 01 33 – REHABILITATION OF CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Locate and remove delaminated, spalled and unsound concrete.
   2. Preparation of cavities created by removal to receive patching materials.
   3. Replacement of existing deteriorated concrete and reinforcement.
   4. Crack repair.

B. Basis of Contract Payments:
   1. Determine final Contract Price by actual quantities installed at Unit Prices stated in Contractor's Bid for the following:
      a. Concrete restoration work will be paid for on a unit price basis. Measure patching quantities on a square foot basis; estimated depth of patch is indicated on the Drawings. Refer to Bid form.
      b. Submit copy of drawings identifying current quantities with each payment request. Work being invoiced must be properly identified. These drawings shall be incorporated into record set required in accordance with Division 01.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ASTM:
      a. A185 – Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
      b. A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
      c. C33 – Concrete Aggregates.
      d. C94 – Ready-Mixed Concrete.
      e. C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
      f. C136 – Sieve Analysis of Fine and Coarse Aggregates.
      g. C150 – Portland Cement.
      h. C260 – Air-Entraining Admixtures for Concrete.
      i. C309 – Liquid Membrane Forming Compounds for Curing Concrete.
      j. C494 – Chemical Admixtures for Concrete.
   2. ACI:
      a. 301 – Specifications for Structural Concrete for Buildings.
      b. 302 – Guide for Concrete Floor and Slab Construction.
      c. 390R – Guide to Consolidation of Concrete.
      d. 347R – Guide to Formwork for Concrete.
      e. 440.2R-02 – Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures.
      f. 503.2 – Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive.
      g. 503R – Pull Off Test to Determine CFRP Adhesive to Concrete Substrate.
      h. 546.1 – Guide for Repair of Concrete Bridge Superstructures.
   3. International Concrete Repair Institute (ICRI):
      a. ICRI Concrete Repair terminology.
      b. ICRI Technical Guideline No. 320.2R “Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces”.
      c. ICRI Technical Guideline No. 320.1R “Guide for Surface Preparation for the Repair of Deteriorated Concrete from Reinforcing Steel Corrosion”.

1.4 DEFINITIONS

A. Delaminations: Fracture planes or “internal cracks,” within concrete. Typically these fractures are parallel to the member face and vary in depth.

B. Spalls: Potholes, cavities or voids in floor slabs, beams, columns, and walls. Usually result of delamination migrating to face of concrete member. When fracture finally reaches surface, concrete encompassed by delamination breaks away, resulting in spall.

C. Unsound Concrete: Concrete exhibiting one or more of the following:
1. Incipient fractures present beneath existing delaminated or spalled surfaces.
2. Honeycombing.
3. Friable or punky areas.
4. Deterioration from freeze-thaw action.

D. Scaling: Deterioration which attacks mortar fraction (paste) of concrete mix. First appears as minor flaking and disintegration of concrete surface. Scaling eventually progresses deeper into concrete, exposing aggregate which breaks away. Concrete scaling is caused by freeze-thaw action. If concrete is frozen in saturated state, excess water freezing in concrete causes high internal stresses.

E. Saturated Surface Dry (SSD): The condition where the concrete is saturated with water and cannot absorb more, but no free water is present on the surface and is in accordance with the ICRI recommendations.

1.5 SUBMITTALS

A. Submit for record the Manufacturer’s Spec Data Sheets and Health and Safety Data Sheets.

B. Submit for record upon request, a written description of the Contractor’s concrete repair ability, including equipment, facilities, personnel, and a list of similar completed projects.

1.6 QUALITY ASSURANCE

A. Fabrication and Installation Personnel Qualifications:
1. Trained and experienced in the fabrication and installation of the materials and equipment.
2. Knowledgeable of the design and the reviewed Shop Drawings.
3. Each component of a system or product shall be installed by Manufacturer trained personnel. Installers shall demonstrate knowledge of product and installation.

B. Formwork: Design of the formwork is the responsibility of the Contractor. Design shall provide adequate means of ensuring complete filling of forms with concrete through the use of bird mouths or other methods. Refer to ACI 347R for assistance with design of formwork.

C. The patched areas shall be sounded with a hammer 7 days after placement. Repair all detected hollowness by removing and replacing the patched or affected area at no extra cost to the Owner.

D. If shrinkage cracks appear in the repair material within 72 hours after placement, the repairs shall be considered defective, and shall be removed and replaced at no extra cost to the Owner.

E. Plan drawings shall be maintained locating all repairs performed under this section. Location and size of patches, overlays, etc. must be located on clean drawings. Separate drawings shall be maintained for each level. These drawings shall be incorporated into record set required in accordance with Division 01.

F. The Contractor, or Restoration Subcontractors, shall have not less than 2 years’ experience in the field of structural concrete restoration work.

1.7 PROJECT CONDITIONS

A. Cold weather concreting: In accordance with ACI 306.1 or as specified herein.

B. Hot weather concreting: In accordance with ACI 305 or as specified herein.

C. Inclement Weather:
1. Unless adequate protection is provided, concrete shall not be placed during rain, sleet or snow.
2. Rainwater shall not be allowed to increase the mixing water nor to damage the surface finish.

1.8 DELIVERY, STORAGE AND HANDLING

A. Store materials on platforms off ground, protected from the elements.

B. Handle and store aggregates in a manner to prevent intrusion of foreign material. Protect all material until used.

C. Material which has deteriorated or which has been damaged shall not be used.

1.9 WARRANTY

A. All material under this section shall be fully warranted for a period of 1 year against any defects in materials or workmanship commencing with the date of Substantial Completion.

B. All required warranties shall be obtained by the Contractor as an agent for the Owner from all installation contractors, and the manufacturers. All such warranties shall inure to the benefit of the Owner without the necessity of separate transfer or assignment thereof.

C. Responsibilities of Each Party:
1. Contractor: Shall act as the agent for the Owner in collecting and enforcing submission of the warranty requirements prior to Substantial Completion of the project.
2. Installation Contractor: Responsible for 100% of the labor to remove and replace the defective material if a failure occurs within the warranty period.
3. Manufacturer: Responsible for supplying 100% of replacement material in case of a failure during the warranty period unless stated otherwise in the warranty.
4. The installation contractor and material supplier specifically agree that the warranty is a joint and several type of warranty where, in case of default of either party, the other party is then responsible for 100% of all the work in accordance with the original contract documents. The warranty form shall be jointly signed by authorized representatives from both the installation contractor and the manufacturer.

D. Specific Warranty Requirements
1. The 1-year comprehensive warranty shall specifically cover the following:
a. A fully complete 100% warranty for all workmanship and material for the repairs.
b. Delamination of the coating or substrate.
c. Any damage to material or equipment caused by coating system failure.
d. Ordinary wear and tear.
e. Failures due to improper surface preparation, use of non-reviewed materials, insufficient thickness for any part of the system including primer(s), faulty workmanship, or non-approved deviations from current manufacturer’s specifications and written instructions.
f. Material incompatibility with any existing coating.

E. Replacement Cost:
1. The warranty shall cover 100% of the replacement cost whether or not the Owner has benefitted from use of the product through part of its useful life.
2. When the work covered by the warranty has failed, the replacement work shall be warranted to cover the original remaining warranty period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. VOC Compliance:
   1. All individual coatings and coating systems shall have VOC levels at or below the EPA recommendations identified in 40 CFR Part 59.
   2. VOC content shall be tested in accordance with EPA Method 24.

B. Vertical and Overhead Trowelable Concrete Repairs:
   1. MasterEmaco S 488CI, BASF, Shakopee, MN.
   2. Sikatop 122 Plus or 123 Plus, Sika Corp., Lyndhurst, NJ.
   3. Planitop 23, or X, Mapei, Deerfield Beach, FL.
   4. Or reviewed equal.

C. Vertical and Overhead Form and Pour Concrete Repairs:
   1. MasterEmaco S 466CI or S 477CI, BASF, Shakopee, MN.
   2. Sikatop 111 Plus or Sikacrete 211 SCC Plus, Sika Corp., Lyndhurst, NJ.
   3. Planitop 15 or FD, Mapei, Deerfield Beach, FL.
   4. Or reviewed equal.

D. Horizontal Concrete Repairs:
   1. Sikatop 111 Plus or Sikacrete 211 SCC Plus, Sika Corp., Lyndhurst, NJ.
   2. MasterEmaco S 466CI or S 477CI, BASF, Shakopee, MN.
   3. Planitiop 15 or FD, Mapei, Deerfield Beach, FL.
   4. Or reviewed equal.

E. Slab Scaling Repair: Refer to Division 07 Section “Traffic Coatings.”

F. Crack Repair Rout and Seal: Refer to Division 07 Section “Joint Sealants for Parking Structures.”

G. Field-Applied Epoxy Modified Coating:
   1. Sika Armatec 110 Epo Cem by Sika.
   2. MasterEmaco P 124 by BASF.
   3. Mapei Mapefer 1k by Mapei.
   4. Dural Prep AC by Euclid.

H. Steel Reinforcing: Refer to Division 03 Section “Epoxy-Coated Reinforcing Steel.”

I. Miscellaneous Steel Shapes, Plates, and Bars:
   1. W-Shapes: ASTM A 992.
   2. Channels, Angles: ASTM A 36.
   3. Plates and Bars: ASTM A 36.
   4. All materials to be hot-dip galvanized ASTM A 123 after assembly, or stainless steel ASTM A 666, Type 304L as indicated on Drawings.
   5. All welds shall be E70XX low-hydrogen electrodes. Stainless steel electrodes to be Type 308L or 347.

J. Adhesive Anchors: Refer to Division 03 Section “Post-Installed Anchors.”

K. General: Provide primers as required in accordance with Manufacturer's recommendations.

2.2 POST-TENSIONING SYSTEM

A. Plastic Sheathing Repair: Sheathing materials shall be extruded high density polyethylene 30 mil minimum thickness.

B. Sheathing Repair Tape:
   1. Adhesive high density polyethylene, 12 mils minimum thickness, 2 inches minimum width.
   2. Reviewed Repair Tapes:
      a. "Patch #145 Vinyl - Rubber Adhesive" by 3M, St. Paul, MN.
      b. "Polyken, Type 826" by Kendall Co., Boston, MA.
      c. "PWT-20" by Alltape, Hialeah, FL.
      d. Or reviewed equal.
   3. Repair tape shall be wrapped around strand to create a water tight seal.

PART 3 - EXECUTION

3.1 GENERAL

A. Installation: Install products in strict accordance with Manufacturer's recommendations.

B. Engineer's Inspection: Do not install patching or reinforcing material until Engineer has inspected the repair site.

C. Shoring:
   1. Temporary shoring may be required at slab, beam, or column repairs.
   2. Shores shall be in place prior to concrete removal and cavity preparation in areas requiring shores.
   3. Provide catch platform if required for removed concrete.
   4. Contractor is responsible for all work relating to construction, erection methods, bracing, shoring, rigging, guys, scaffolding, formwork, and other work aids required to safely perform the Work.

D. Waste Removal: Remove waste material from Site and dispose of legally.

3.2 CONCRETE REPAIRS

A. General:
   1. Before commencing work, examine all adjoining work on which this work is dependent and report in writing to the Engineer any condition which prevents Contractor from performing the work. Starting work constitutes acceptance of adjoining work.
   2. Inspection of Repair Preparation:
      a. Inspection:
         1) After removals are complete, but prior to final cleaning, cavity and exposed reinforcement shall be inspected by Contractor and verified by Engineer for compliance with requirements of this Section.
         2) Where Engineer finds unsatisfactory cavity preparation, Engineer shall direct Contractor to perform additional removals. Engineer shall verify areas after additional removals.
      b. Defects:
         1) Inspect embedded reinforcement and conduits exposed within cavity for defects due to corrosion or damage resulting from removal operations.
         2) Notify Engineer of defective and damaged reinforcement or conduits.
         3) Replace damaged or defective reinforcement or conduits according to this Section and as directed by Engineer.
   3. Provide other surface treatment as required by the Manufacturer of the patching compounds.
   4. Inform Engineer at least 2 days in advance of concrete repair placement to allow adequate time for Engineer to schedule inspection.
   5. Use form and fill method or trowel on fill method as Manufacturer recommends.
   6. Predampen cavity surface with clean water. Cavity concrete surfaces shall be saturated surface dry (SSD) with no free water. Provide 24 continuous hours of poured water on horizontal surface cavities and 24 continuous hours of sprinkler wetting on vertical surface cavities immediately prior to placement of concrete repair material.
   7. For deeper horizontal patches add aggregate in accordance with Manufacturer's recommendations.
   8. Concrete shall be placed continuously at each repair area until reinforcing steel is encapsulated, forms are full and air pockets are eliminated.
   9. Vibrators shall be utilized to assist in consolidating concrete. Concrete shall not be overvibrated. Overvibration of concrete (concrete segregation) shall be cause for rejection of the work. Refer to ACI 309R for assistance with the selection, numbers and use of vibrators.

10. Protect freshly applied concrete from premature drying and maintain with minimal moisture loss at a relatively constant temperature for a minimum of 7 days.
11. Use a form release agent that is compatible with specified curing compounds.
12. Leave forms in place for a minimum of 3 days.
13. Immediately after removing forms, either wet cure or apply at least 2 coats of curing compound in accordance with Manufacturer's recommendations.
14. 14 days or later after installation of repairs, sound repair concrete in presence of Engineer. Remove delaminated or otherwise unsound concrete encountered and install new repair concrete.

B. Floor Slabs:
1. Refer to Drawings for specific repair details.
2. Delaminations: Locate by sounding surface with hammer, rod, or chain drag.
3. When delaminated area is struck, distinct hollow sound is heard.
4. Sound designated floors for delaminations.

C. Vertical and Overhead Surfaces:
1. Refer to Drawings for specific repair details.
2. Surface Delaminations: Locate by sounding appropriate member with hammer or rod.
3. Cracks, usually horizontal in orientation along beam faces, and vertical in orientation near column corners are indicators of delaminated concrete.

D. Crack Repair:
1. Refer to Drawings for specific criteria for crack repair.
2. Follow sealant Manufacturer's specific guidelines where more stringent than those referenced herein.
3. Cracks which are prepared shall be sealed the same day.
4. Routing of cracks shall be a dry process.

E. Existing Reinforcement:
1. Existing reinforcement and miscellaneous metal to remain shall be cleaned of rust and laitance to Near White Metal and field epoxy coated in accordance with epoxy coating Manufacturer's recommendations.
2. Loose reinforcement bars shall be secured by either tying to bonded reinforcement or drilling supplemental anchors and installing tie downs. Lead anchors are not permitted.
3. Field-applied epoxy cure time must be extended as directed by Engineer during cold weather application.
4. Field-applied epoxy must be properly cured in a non "tacky" condition prior to concrete placement.
5. Remove epoxy spillage from adjacent concrete surfaces.

F. Field-Applied Epoxy Modified Coating:
1. After abrasive blasting operations and cleanup are completed, paint existing reinforcement and miscellaneous metals embedded in concrete with a field-applied epoxy modified coating with Anti-Corrosion Agent (two coats at 10 mils).
2. Protect prepared surfaces from damage prior to and during patch placement.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Engineer: Check work.

B. Promptly make corrections, changes, and additions required by Manufacturer's engineer.

3.4 CLEANING

A. Clean materials installed under this Section in accordance with Division 01 Section "Cleaning and Waste Management."

END OF SECTION 03 01 33

SECTION 03 15 16 – POST-INSTALLED ANCHORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the furnishing and installation of post-installed anchors.

B. Basis of Payment: Post-installed anchor cost to be included in repair costs.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following pertinent provisions:
   1. ASTM:
      a. A36 - Carbon Structural Steel.
      b. A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.
      c. A198 - Steel Bolting Materials for High-Temperature Service.
      d. A240 - Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
      e. A307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
      f. A510 - General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel.
      g. A563 - Carbon and Alloy Steel Nuts.
      h. B633 - Electrodeposited Coatings of Zinc on Iron and Steel.
      i. E488 - Strength of Anchors in Concrete and Masonry Elements.
      j. E1512 - Testing Bond Performance of Bonded Anchors.
      k. F436 - Hardened Steel Washers.
      l. F593 - Stainless Steel Bolts, Hex Cap Screws, and Studs.
      m. F594 - Stainless Steel Nuts.
      n. F844 - Washers, Steel, Plain (Flat), Unhardened for General Use.
   2. ACI:
      a. 318, Chapter 17 - Anchoring to Concrete.
      b. 355.2 - Qualification of Post-Installed Mechanical Anchors in Concrete.
      c. 355.4 - Qualification of Post-Installed Adhesive Anchors in Concrete.
   3. International Code Congress Evaluation Service - ICC-ES:
      a. AC-193 - Mechanical Anchors in Concrete Elements.
      b. AC-308 - Post-installed Adhesive Anchors in Concrete Elements.
   4. Michigan Building Code.

1.4 SUBMITTALS

A. Product Data: For each anchor type to be furnished for each base material to which it will be fastened, including:
   1. Anchor specific type, physical properties and installation procedures.
      a. General catalog sheets of anchors without specific reference are not acceptable.
   2. Strength developed by anchor in each base material to which each is being fastened.
   3. Anchor embedment depth in base material.
   4. Anchor material.
   5. ICC-ES Report for each specific anchor indicating compliance to applicable building code.

1.5 QUALITY ASSURANCE

A. Compliance:
   1. Mechanical anchors shall comply with AC-193 and ACI 355.2.
   2. Adhesive anchors shall comply with AC-308 and ACI 355.4.

B. Installation Personnel Qualifications:
   1. Knowledgeable of the specific Manufacturer's requirements for proper installation of post-installed anchors.
   2. Anchor installers shall be properly trained by the anchor Manufacturer.
      a. Each person installing the anchor shall be trained.
      b. Anchor installation training shall take place prior to the installation of the anchors. The installer shall have training verification available for review at any time.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Hilti.

B. Products of the following manufacturers are among those which may be considered equal based on Submittals reviewed by Engineer; approval or rejection of the proposed or equal will be at Engineer's sole discretion:
   1. Powers/Rawl.
   2. Redhead.
   3. Simpson.

C. If Contractor intends to substitute other than Basis of Design products, Contractor shall be responsible to submit substitution product data that proves equivalence including, but not limited to:
   1. Capacities for specific anchor sizes, embedment lengths, and base materials into which the anchor will be fastened.
   2. Capacity reduction factors for spacing and edge distance.
   3. Material of each anchor type.
   4. ICC ES report applicable to each anchor type.

2.2 MATERIALS

A. Actual or Potential Ambient Conditions:
   1. Submerged or Corrosive Environment: Stainless steel in accordance with ASTM F593.
   2. Dry Areas: Mild steel, galvanized in accordance with ASTM B633, SC1, Type III.

2.3 POST-INSTALLED ANCHORS

A. Anchors that Resist Loads Through Mechanical Friction or Keying Forces:
   1. Screw Style Anchors Approved for Use in Cracked and Uncracked Concrete:
      a. Hilti KH-EZ SS316 (ICC-ESR 3027).
      b. Capable of sustaining an ultimate load of 4 times the imposed load capacity in concrete when tested in accordance with ASTM E488.

B. Anchors that Resist Loads Through an Injectable Chemical Adhesive:
   1. In Concrete: Hilti HIT HY 200 Safe Set.
   2. Anchored Material:
      a. Stainless steel threaded rods or deformed reinforcing bars as specified herein or as indicated on the Drawings.
      b. Threaded rods and associated hardware: Type 303/304 stainless steel.
      c. Injectable Adhesive: Two-component epoxy ASTM C 881.
   3. Bonding Strength: Tested in accordance with ASTM E1512.
   4. If installation temperatures of base materials fall below 41 degrees F, review cold weather applications with Manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install post-installed anchors:
   1. In strict accordance with the installation instructions supplied by the Manufacturer.
   2. In rotary hammer drilled holes, unless otherwise approved by Engineer.
   3. In drilled out holes of the proper depth and diameter cleaned of dust and debris according to the Manufacturer's specific installation instructions.

B. Provide sizes, spacings, edge distances and embedment as indicated on the Drawings.

C. Anchors that Resist Loads Through an Injectable Chemical Adhesive:
   1. Install in concrete with minimum age of 21 days, and in masonry with a minimum age of 7 days.
   2. Do not apply load until adhesive has properly cured and developed specified strength where cure time shall be as called out in the Manufacturer's literature based on prevailing environmental conditions at the time of installation.

3.2 CLEANING

A. Clean materials installed under this Section according to Division 01 Section "Cleaning and Waste Management."

END OF SECTION 03 15 16

SECTION 03 21 16 – EPOXY-COATED REINFORCING STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the furnishing and placement of epoxy coated concrete reinforcement.

B. Basis of Payment: Reinforcing steel cost to be included in concrete repair costs.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ACI:
      a. 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
      b. 315 - Details and Detailing of Concrete Reinforcement.
      c. 315R - Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
      d. 318 - Building Code Requirements for Reinforced Concrete.
   2. ASTM Specifications:
      a. A185 - Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
      b. A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
      c. A775 - Epoxy-Coated Reinforcing Steel Bars.
   3. AWS: D1.4 - Structural Welding Code-Reinforcing Steel.
   4. CRSI:
      a. Manual of Standard Practice.
      b. Reinforcing Bar Detailing.
      c. Placing Reinforcing Bars.

1.4 SUBMITTALS

A. Manufacturer's Literature: For epoxy coating.
   1. Manufacturer's product data.
   2. Verification that the product has been tested and approved in accordance with ASTM A775.

1.5 QUALITY ASSURANCE

A. Materials and installed Work may be reviewed by Engineer at any time during progress of Work. Allow free access to facilities for this purpose. Provide 48 hours notice to inspect completed reinforcing prior to placement of concrete.

B. If in opinion of Engineer, cross-sectional area loss of bars is greater than 15 percent, Contractor shall splice as directed by Engineer. Minimal splice lap shall be as indicated on Drawings.

1.6 DELIVERY, STORAGE AND HANDLING

A. Comply with requirements of ASTM D3963/D3963M-96 Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars and CRSI Field Handling Techniques for Epoxy-Coated Rebar at the Job Site.

B. Deliver reinforcement free of loose rust, scale, paint, oil coating damage and structural defects.

C. Storage:
   1. Store coated reinforcement on Site so as to prevent damage to reinforcement and to epoxy coating.
   2. Store coated reinforcement on padded or wooden cribbing off the ground. Protect from weather.
   3. If reinforcement is to be stored on Site for more than 1 month before placement, cover reinforcement with opaque polyethylene sheeting, properly secured. Do not store reinforcement at job site unprotected over winter.

D. Handling:
   1. Contact areas of handling and hoisting systems shall be padded or be made of nylon or other acceptable material.
   2. Use multiple pick-up points to lift bundles of coated steel to prevent bar to bar abrasion due to bundle sag.
   3. Pad bundling bands or fabricate bands of nylon or other acceptable material.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
   1. All concrete reinforcement and accessories shall be new, free from rust, scale, paint, oil and structural defects immediately before application of epoxy coating.
   2. Reinforcement shall be the sizes indicated on the Drawings.

B. Epoxy Coating Material:
   1. Corrosion Protection Coatings:
      a. One part, heat curable, thermosetting powdered epoxy.
      b. Conforming with ASTM A775.
   2. Epoxy Coating Patching Material:
      a. Compatible with factory applied epoxy coating.
      b. Conforming with ASTM A775.

C. Reinforcing Bars:
   1. ASTM A615.
   2. Yield Stress: Fy = 60,000 psi.
   3. Deformed unless noted otherwise; smooth where specifically indicated on the Drawings.

D. Welded Wire Fabric:
   1. ASTM A185.
   2. Yield Stress: Fy = 65,000 psi.
   3. Plain, cold drawn, electrically welded fabric.

E. Accessories:
   1. Chairs, bolsters, anchors, spacers, stirrups, ties and other devices as required for spacing and fastening reinforcement in place shall conform to CRSI Manual of Standard Practice.
   2. Supports for epoxy coated reinforcement shall be epoxy coated or shall be made of a dielectric material.
   3. At exposed underside of concrete, use plastic-tipped chairs and bolsters.
   4. Fasten coated reinforcing with plastic -, nylon -, or epoxy-coated steel tie wire.

2.2 FABRICATION

A. General:
   1. Fabricate reinforcement to the dimensions indicated on the Drawings in accordance with the CRSI Manual of Standard Practice.
   2. Tolerances: As indicated in ACI 117.
   3. Bundle and tag reinforcement with suitable identification to permit checking, sorting and placing.
   4. Welding:
      a. Not permitted unless specifically indicated on the Drawings.
      b. When permitted, comply with AWS D1.4.
      c. No tack welding permitted.

B. Hooks:
   1. Bend hooks in accordance with ACI 318.
   2. Cold bend bars in such a way that will not damage the reinforcement.

C. Epoxy Coating:
   1. Minimum 6 mils thick and uniform.
   2. Coat reinforcement after fabrication.
   3. Repair damage to epoxy coating in accordance with:
      a. ASTM A775.
      b. Epoxy-coating Manufacturer's recommendations.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place epoxy-coated reinforcement in accordance with:
   1. Drawings.
   2. CRSI Placing Reinforcing Bars and Manual of Standard Practice.
   3. Tolerances indicated in ACI A117.

B. Clearance:
   1. Preserve clear space between bars of not less than 1 times the normal diameter of round bars.
   2. In no case let the clear distance be less than 1-inch or less than 1-1/3 times the maximum size of aggregate.
   3. In the absence of specific cover requirements on the Drawings, provide the following minimum concrete cover for reinforcement:
      a. Cast against and permanently exposed to earth: 3 inches.
      b. Exposed to Earth, Weather or Water:
         1) No. 6 Through No. 18 Bars: 2 inches.
         2) No. 5 Bars, 5/8-Inch Wire and Smaller: 1-1/2 inches.

C. Splices:
   1. Comply with ACI 318 and this Section.
   2. In the absence of specific lap requirements on the Drawings, lap in accordance with ACI 318, Class B.
   3. Laps of Circular Ring Tension Steel: Not less than 40 bar diameters.

D. Corner Bars:
   1. Provide corner bars for all horizontal wall steel.
   2. In the absence of specific lap requirements on the Drawings, lap in accordance with ACI 318, Class B.

E. Field Cutting and Bending: Field cutting or bending of bars will be permitted only under special conditions reviewed by Engineer.

F. Field Welding:
   1. In accordance with AWS D1.4.
   2. Only when specifically indicated on the Drawings.
   3. Performed with adequate ventilation.
   4. No tack welding permitted.

G. Welded Wire Fabric:
   1. Block up, lap, and tie all welded wire fabric reinforcement.
   2. Lap welded steel fabric 1 mesh at sides and ends.
   3. Install welded wire 1-inch from top of slab.

H. Bar Supports:
   1. Rest epoxy-coated steel reinforcement supported from formwork on coated wire bar supports, or on bar supports made of dielectric material or other suitable material.
   2. Coat wire bar supports with dielectric material for a minimum distance of 2 inches from the point of contact with the coated steel member.
   3. Reinforcing Bars Used as Support Bars: Epoxy coated.

I. Slabs On Grades:
   1. Do not hook up welded wire fabric; either tie on supports at correct elevations, or lay on partial slab thickness of fresh concrete just prior to placing remainder of slab.
   2. For chairs or bolsters resting on soil, place on either:
      a. Sand plates.
      b. Concrete bricks set flush with soil to provide bearing surface for chairs or bolsters.

3.2 FIELD QUALITY CONTROL

A. Notification:
   1. Notify Engineer when reinforcing is in place so Engineer may review the reinforcement placement.
   2. Provide a minimum of 48 hours' notice prior to placement of concrete.

B. Repair:
   1. Repair areas of damage resulting from fabrication, handling, cutting or welding in accordance with:
      a. Coating Manufacturer's recommendations.
      b. ASTM A775.
   2. Provide proper ventilation during patching operations.

END OF SECTION 03 21 16

SECTION 03 31 26 – CAST-IN-PLACE CONCRETE FOR PARKING STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. All equipment, materials, labor, and supervision to install cast-in-place concrete as indicated on Drawings and as specified herein.
   2. Remove and reinstall electrical conduit, light fixtures, mechanical equipment, signs, etc. necessary for proper completion of repairs.
   3. Concrete repair materials.

B. Basis of Contract Payments:
   1. Determine final Contract Price by actual quantities installed at Unit Prices stated in Contractor's Bid for the following:
      a. Concrete restoration work will be paid for on a unit price basis. Measure patching quantities on a square foot basis; estimated depth of patch is indicated on the Drawings. Refer to Bid form.
      b. Submit copy of drawings identifying current quantities with each payment request. Work being invoiced must be properly identified. These drawings shall be incorporated into record set required in accordance with Division 01.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. Reference Standards and Cited Publication. (ACI 301 1.3) Additional standards as follows:
      a. American Concrete Institute (ACI):
         1) ACI 201.2R Guide to Durable Concrete.
         2) ACI 222R Corrosion of Metals in Concrete.
         3) ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
         4) ACI 212.4R Guide for the Use of High-Range Water Reducing Admixtures (Superplasticizers) in Concrete.
         5) ACI 221.R State-of-the-Art Report on Alkali – Aggregate Reactivity
         6) ACI 302.1R Guide for Concrete Floor and Slab Construction.
         7) ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete.
         8) ACI 305R Hot Weather Concreting.
         9) ACI 306R Cold Weather Concreting.
         10) ACI 308 Standard Practice for Curing Concrete.
         11) ACI 311.5R Guide for Concrete Plant Inspection and Field Testing of Ready-Mixed Concrete.
         12) ACI-318 Building Code Requirements for Structural Concrete.
         13) ACI 362.1R Guide for the Design of Durable Parking Structures.
         14) ACI 515.1R Guide to the Use of Waterproofing, Dampproofing, Protective and Decorative Barrier Systems for Concrete.
         15) ACI SP 66 Detailing Manual.
         16) ACI Concrete Craftsman Series.
         17) ACI CP-10 Craftsman Workbook for ACI Certification of Concrete Flatwork Technician Finisher.
      b. Federal Highway Administration: FHWA-RD-77-85, Sampling and Testing for Chloride Ion in Concrete.
      c. American Association of State Highway Transportation Officials (AASHTO):
         1) AASHTO T 260, Method of Sampling and Testing for Total Chloride Ion in Concrete and Concrete Raw Materials.

2) AASHTO T 318, Standard Method of Test for Water Content of Freshly Mixed Concrete Using Microwave Oven Drying.

d. American Society of Testing Materials (ASTM): As specified herein.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

A. Performance and Design Requirements (ACI 301 4.2.2): Additional requirements are as follows:
1. Coarse Aggregate (ACI 301 4.2.2.3):
   a. Maximum aggregate size and ASTM C33 gradation requirements (4.2.2.3):
   b. Footings and Piers: 1-inch, size 57.
   c. All Other Members: 3/4-inch, size 67.
2. Air Content (ACI 301 4.2.2.4):
   a. As indicated on Drawings.
   b. Plastic air test shall be performed by pressure method, ASTM C231 or volumetric method, ASTM C173. Verify air content with unit weight test.
   c. Hardened air test shall be performed (for superstructure concrete, precast members, etc.) providing entrained air void spacing factor and specific surface of air void volume. Air content of hardened concrete by microscopical determination – ASTM C457 – Latest Edition (Linear Traverse Method).
3. Admixtures (ACI 301 4.2.2.5):
   a. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions by weight of cement are not permitted. No admixture shall cause an increase in shrinkage when tested in accordance with ASTM C157.
4. Chloride-ion Concentration (ACI 301 4.2.2.6):
   a. Total soluble chloride-ion content by weight of cement and of concrete shall be provided (for prestressed concrete, floor topping on precast). Total soluble chloride ion content of concrete shall be tested in accordance with AASHTO Method T260 for each proposed mix design. Percent by weight of cement of total soluble chloride ion content shall be below limits indicated on Drawings. This includes contributions from all ingredients. Alternately, water soluble chloride ion content shall be tested in accordance with ASTM C1218. Percent by weight of cement of water soluble chloride ion content shall be below limits indicated on Drawings. This includes contributions from all ingredients. If specified limits are exceeded, additional testing for water soluble chloride ion content shall be performed using Soxhlet method in accordance with ACI 222.1. In event that any concrete mix has water soluble chloride ion content in excess of specified limits for that mix, appropriate amounts of calcium nitrite shall be added to offset its effects. Ready-Mix Supplier shall provide laboratory test results indicating amount of excess chloride ion content in concrete mixture contributed by aggregates. For each pound of chloride ion in excess of amount allowed, mix shall contain calcium nitrite (30% ±2%, solids content) on a one-to-one basis (1 gallon of calcium nitrite for 1 pound of excess chloride ion). Maximum of 1.5 lbs. of chloride ion per cubic yard may be offset in this manner.
      1) Water soluble chloride ion content of mix including all constituents shall not exceed limits as indicated on Drawings, unless a higher limit is approved by Engineer and corrosion are inhibitors added to mixture to offset additional chloride.
      2) If specified level of water soluble chloride ion content cannot be maintained, appropriate level of calcium nitrite admixture shall be added to mix in accordance with above at no additional cost to Owner.
5. Mix Designs with Silica Fume
   a. Additional Mix Design Requirements:
      1) Ready-Mix Supplier and Owner Testing Laboratory shall independently perform air content tests of silica fume mix design in accordance with ASTM C231 or ASTM C173. Verify air content with unit weight test.
      2) Ready-Mix Supplier and Owner's Testing Laboratory shall independently perform air content tests of hardened silica fume mix design in accordance with ASTM C457.
6. Mix Designs with Corrosion Inhibitor:
   a. Additional Mix Design Requirements:
      1) Ready-Mix Supplier and Owner's Testing Laboratory shall independently perform air content testing of mix design in accordance with ASTM C231 or ASTM C173.
      2) Ready-Mix Supplier and Owner's Testing Laboratory shall independently perform air content tests of hardened concrete mix design in accordance with ASTM C457.

3) Corrosion inhibitor Supplier and Owner's Testing Laboratory shall independently perform plastic concrete corrosion inhibitor testing of mix design in accordance with test method for Calcium Nitrite Presence in Plastic Concrete indicated in Appendix A of Division 01 Section "Testing Laboratory."

7. Strength and Water-Cementitious Material Ratio (ACI 301 4.2.2.9):
   a. As indicated on Drawings.
   b. Weight of fly ash, silica fume, and GGBS additives shall be included with weight of cement to determine water-cementitious materials ratio.
   c. Water content of freshly mixed concrete will be tested on a random basis during placement in accordance with AASHTO T 318, Standard Method of Test for Water Content of Freshly Mixed Concrete Using Microwave Oven Drying. This test shall be run each time test cylinders are molded or whenever directed by the Engineer.

1.5 SUBMITTALS

A. Submittals (ACI 301 Submittals Checklist): Additional Submittal requirements as follows:
   1. For Review and Approval:
      a. For Mix designs on each class of concrete a minimum of 3 weeks prior to placing concrete. Mix designs shall be prepared in accordance with ACI 301. Proportions shall be in accordance with ACI 211.1.
      b. A warrant of design mix(s), stating that they are totally representative of concrete(s) to be supplied and that they meet requirements of Contract Documents.
      c. New design mixes when any change in materials are required or necessary.
      d. Pour sequence noting any deviations of construction joints as indicated on Drawings.
      e. All materials and methods for concrete curing.
      f. Cold weather placement procedures.
      g. Wet weather protection procedures.
      h. Hot weather placement procedures.
      i. Silica fume concrete.
      j. Prior to making structural repairs to concrete, patching materials to be used and method of application.
      k. Bonding grout mix design.
   2. All submitted material data shall be representative of concrete to be supplied and shall be current to the Work (i.e. tested within past 3 months of award date of contract).
   3. Procedures for placing, finishing, and curing.
   4. Procedures for protection from drying and plastic shrinkage cracking during placing, finishing, and curing operations.
   5. For Record:
      a. ACI certification of concrete finisher(s).
      b. Upon request concrete delivery tickets.
      c. Upon request, record results of Contractor's Testing Laboratory criteria requirements (cylinder strength tests) for removal of forms and shores for cold weather concreting.
      d. Upon request, a written description of Contractor's concrete repair ability, including equipment, facilities, personnel, and a list of similar completed projects.
      e. Laboratory test results of site-batched concrete aggregate moisture content.

1.6 QUALITY ASSURANCE

A. Quality Assurance (ACI 301 1.6): Additional requirements as follows:
   1. General (ACI 301 1.6.1):
      a. Perform all Work in strict accordance with laws and regulations of applicable building codes and with all other authorities having jurisdiction, that take precedence over requirements of this Specification, except where requirements of Specifications are more exacting or stringent, they shall govern.

2. Flow/Leak Test: The Contractor shall arrange for and wet all slabs with water for the purpose of detecting any defects in the concrete which would result in leaks and/or inadequate drainage. Slab surfaces shall be wetted until water flows freely to drains. No finished spaces shall be insulated or ceiling installed until drainage test has been completed on the slab above and reviewed by the Engineer for acceptance.
    a. Low spots, puddles, or bird baths are defined as 4'-0" sq ft area of standing water with a visible sheen isolated by drying concrete and as any smaller low spots that do not dry within 6 hours. The low spots, puddles, or bird baths shall be eliminated.
    b. The slabs shall be reviewed for cracks. Cracks are located when water from the flow/leak test is observed on the underside of the slab. Cracks may also be observed on the top surface of the slab when the concrete slabs are drying and the cracks are highlighted with moisture. The cracks shall be repaired.
3. Testing responsibilities of Contractor (ACI 301 1.6.3):
    a. Provide Owner's testing laboratory, for their review, proposed mix designs, including samples for tests of:
        1) Air content.
        2) Chloride permeability.
        3) Plastic and hardened concrete corrosion inhibitors.
    b. Advise Owner's testing laboratory minimum of 48 hours in advance of operations.
    c. Report any testing irregularities to Engineer.
    d. Patch holes resulting from concrete coring, matching adjacent areas.
    e. If, at any time during construction, it is desired to deviate from approved mix designs, Contractor's testing laboratory shall modify mix design, subject to Engineer's approval.
4. Admixture Manufacturer shall make available a qualified Manufacturer's representative to assist Contractor and Engineer as specified in this Section.
5. Corrosion Inhibitor Dispensing Requirements:
    a. Ready-Mix Supplier shall have corrosion inhibitor Manufacturer's Representative perform following:
        1) Install "low level pump cutoff device" in dedicated calcium nitrite corrosion inhibitor tank. Devices shall shut off dispenser pump in event of insufficient product.
        2) Install visual reference (such as bottle or other approved device) for dispensing Calcium Nitrite corrosion inhibitor. Visual reference shall be accessible to Owner's testing laboratory, Manufacturer's representative, and Engineer.
        3) Calibrate dispensing system at initial equipment installation and annually thereafter. Install tamperproof seals after each calibration of system.
    b. Ready-Mix Supplier shall perform following:
        1) Verify contents of visual reference prior to discharge of product for each batch. If visual reference does not indicate specified amount of corrosion inhibitor, Ready-Mix Supplier shall stop production and notify corrosion inhibitor Manufacturer/Supplier immediately.
6. Owner's Testing Laboratory (Ready-Mixed Supplier) shall perform following:
    a. Prior to and after each pour, take volume readings of corrosion inhibitor tank, correlate to size of pour, and report results to Engineer, Manufacturer/Supplier, and Ready-Mix Supplier. Volume used shall be within +/- 10% of specified amount.
7. Admixtures shall be from single manufacturer, where possible. A letter shall be issued from several manufacturers certifying compatibility with all ingredients in the proposed mix design.
8. A minimum of one concrete finishing crew member shall be an ACI Certified Concrete Flatwork Finisher or equivalent for all slabs on grade and supported slabs. Equivalent finisher certification programs shall include both written and performance examinations. Certified finisher shall have input to crew's placement and finishing procedures regarding application of ACI Standards for quality flatwork. Contractor shall designate a certified finisher in advance of operations and warrant continued participation. Applicable standards are contained in ACI "Concrete Craftsman Series."
9. Nondestructive tests will not be permitted to determine in-place strength.
10. Contractor, or restoration subcontractors, shall have not less than 2 years' experience in the field of structural concrete restoration work.
11. Repaired areas shall be sounded by Contractor with a chain drag or hammer 7 days after concrete placement. Contractor shall repair all hollowness detected by removing and replacing patch or affected area at no extra cost to Owner.
12. Maintain drawing locating all concrete repairs performed under this Section. Location and size of patches, overlays, etc. must be located on clean drawing. Separate drawing shall be maintained for each Level and ceiling plan.

1.7 DELIVERY, STORAGE AND HANDLING

A. Materials Storage and Handling (ACI 301 4.1.4): Additional requirements as follows:
1. Store materials on platforms off ground; protect stored cement against elements.
2. Handle and store aggregates separately in a manner to prevent intrusion of foreign material.
3. Protect all material until used.
4. Any materials which have deteriorated or have been damaged shall not be used.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products (ACI 301 4.2): Additional requirements as follows:
1. Cementitious material (ACI 301 4.2.1.1).
2. Aggregates (ACI 301 4.2.1.2):
a. Aggregates shall have a total water soluble chloride ion content below 0.02% by weight of aggregate, unless a higher limit is approved by Engineer by adding corrosion inhibitor to mixture to offset additional chloride ion.
b. Coarse aggregate shall consist of gravel, crushed gravel, crushed stone, or other approved inert materials of similar characteristics, meeting ASTM C33 class designation as follows:
1) Footings and Piers: Class 1S.
2) Walls: Class 4S.
3) Columns, Beams, Slabs, and All Other Members: Class 5S.
c. Acceptance of aggregate for freeze thaw characteristics shall be based on past performance in concrete under similar conditions (freeze thaw, road salts) over 5 winters or when concrete is tested in accordance with ASTM C666.
d. Acceptance of aggregate for shrinkage characteristics shall be based on its past performance in concrete under similar conditions, or when concrete is tested in accordance with ASTM C157 and ASTM C469.
e. Acceptance of aggregate for alkali-aggregate reaction (AAR) which includes alkali-silica reaction (ASR) and alkali-carbonate rock reaction (ACR) shall be based on past performance in concrete under similar conditions, or when the aggregates are examined by petrographic examination ASTM C295, and/or rock cylinder test ASTM C586, and/or prism test ASTM C1105, and/or tested in accordance with one or more of ASTM C1260, C1293, or C1567.
3. Admixtures (ACI 301 4.2.1.4):
a. Admixtures shall be used to provide proper workability, finishability, and setting times at low water-cementitious ratios and to increase compressive strength, of concrete as approved by Engineer.
b. Use approved admixtures and dosage rates as necessary unless indicated otherwise on Drawings. Use in strict accordance with Manufacturer's recommendations. Admixtures shall be added at separate intervals or locations of mix cycle.
c. Air Entraining Admixtures: Specific admixture to be selected by Admixture representative and approved by Engineer.
1) ASTM C260.
2) Acceptable Materials:
a) Sika AIR Series, AEA-14 or AEA-15, Sika Corp.
b) Darex or Daravair Series, GCP Applied Technologies.
c) MB or Micro-Air Series, BASF Admixtures.
d) AEA, Air Mix or Eucon Air Series, Euclid Chemical Company.
e) Catexol Series, Axim Italcementi Group.
f) Or approved equivalent.
d. Chemical Admixtures: Specific admixture to be selected by Admixture representative and approved by Engineer.
1) Water Reducing Admixtures:
a) ASTM C494, Type A.
b) Acceptable Materials:
(1) Plastocrete, Sika Corp.
(2) WRDA or ADVA Series, GCP Applied Technologies.
(3) Pozzolith Series, BASF Admixtures.
(4) Eucon Series, Euclid Chemical Company.
(5) Catexol Series, Axim Italcementi Group.

(6) Or approved equivalent.

2) Midrange Water Reducing Admixture Conventional Slump Concrete, 6 Inches to 8 Inches:
   a) ASTM C494, Type A.
   b) Use shall not change the requirement of:
      (1) Water/cementitious ratio.
      (2) Concrete strength.
      (3) Air content.
      (4) Specification for placing, finishing, and curing.
3) Acceptable Materials:
   a) Sikament AFM or Sikament 686, (Sikament Series), Sika Corp.
   b) Daracem , MIRA, or ADVA Series, GCP Applied Technologies
   c) Polyheed Series, BASF Admixtures
   d) Eucon Series, Euclid Chemical Co.
   e) Catexol Series, Axim Italcementi Group
4) High Range Water Reducing Admixture 6 Inches to 10 Inches Slump Concrete:
   a) ASTM C494, Type F or G.
   b) Use shall not change requirement of:
      (1) Water/cementitious ratio.
      (2) Concrete strength.
      (3) Air content.
      (4) Specification for placing, finishing, and curing.
   c) Acceptable materials are:
      (1) Sikament AFM or Sikament 686, (Visocrete Series), Sika Corp.
      (2) ADVA or Daracem Series, GCP Applied Technologies.
      (3) Glenium Series or Rheobuild 1000 or 716, BASF Admixtures.
      (4) Eucon or Plastol Series, Euclid Chemical Company.
      (5) Catexol Series, Axim Italcementi Group.
5) High Range Water Reducing Admixture (superplasticizer): Self-consolidating concrete.
   a) ASTM C1017 Type I or II.
   b) Use shall not change requirements of:
      (1) Concrete strength.
      (2) Air content.
      (3) Specification for placing, finishing and curing.
   c) Acceptable materials.
      (1) Sikament 300 or 686, (Visocrete Series), Sika Corp.
      (2) ADVA or Daracem Series, GCP Applied Technologies.
      (3) Glenium Series, BASF Admixtures.
      (4) Plastol Series, Euclid Chemical Company.
      (5) Catexol Series, Axim Italcementi Group.
      (6) Or approved equivalent.
6) Non-corrosive Non-chloride Accelerator:
   a) ASTM C494, Type C or E.
   b) Admixture shall not contain more chloride ions than are present in municipal drinking water. Admixture Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures.
   c) Acceptable materials are:
      (1) Plastocrete 161 FL or Sikaset NC, (SikaSet Series), Sika Corp.
      (2) Daraset Series, Lubricon NCA, DCI, or Polarset, GCP Applied Technologies.
      (3) Pozzutec Series, BASF Admixtures.
      (4) Accelguard Series, Euclid Chemical Co.
      (5) Catexol 2000RHE, Axim Italcementi Group.
7) Calcium Nitrite-Based Corrosion Inhibitor:
   a) ASTM C494 Type C.
   b) Acceptable materials are:
      (1) Sika CNI, Sika Corp.
      (2) DCI or DCI-S Corrosion Inhibitor, GCP Applied Technologies.
      (3) Rheocrete CNI, BASF Admixtures.
      (4) Catexol 1000 CN-CI, Axim Italcementi Group.
      (5) Eucon CIA, Euclid Chemical Company.

4. Mineral Admixtures:
   a. Fly Ash:
      1) Fly ash, if used, shall not exceed 25% by weight of total cementitious material weight in mix design. Fly ash shall conform to ASTM C618, including optional requirements on available alkalis, Class C or F, sampling and testing in accordance with ASTM C311. Loss of ignition (carbon content) shall be limited to 4%.
      2) Use of fly ash shall not alter specified levels of air entrainment nor reduce strength requirements for any mix.
   b. Silica Fume:
      1) Silica fume shall conform to ASTM C1240 requirements as a liquid slurry or dry densified.
      2) Acceptable materials are:
         a) Sikacrete 950 DP, Sika Corp.
         b) Force 10,000 or Force 10,000-D, GCP Applied Technologies.
         c) Rheomac SF100, BASF Admixtures.
         d) Eucon MSA, Euclid Chemical Company.
         e) Catexol SF-D, Axim Italcementi Group.
         f) Or approved equivalent.
      3) Self disintegrating bags designed to be disposable in batch are prohibited.
5. Ground Granulated Blast-Furnace Slag (GGBS):
   a. Ground Granulated Blast-Furnace Slag, if used, shall not exceed 40% by weight of total cementitious material in mix design.
   b. Ground Granulated Blast-Furnace Slag shall conform to ASTM C989, Grade 100 or higher.
6. Maximum Percent of Total Cementitious Materials:
   a. Where both fly ash and slag are used in a mix design their total shall not exceed 35% by weight of the total cementitious material in the mix design for slabs and 50% for formed members.
   b. Where fly ash, slab and silica fume are all used a single mix design total shall not exceed 42% by weight of the total cementitious material in the mix design.
7. Fibrous Concrete Reinforcement – Plastic Crack Control:
   a. 100% virgin polypropylene (Collated fibrillated monofilament materials): Dosage rate 1.5 #/cu. yard of concrete minimum, containing at least 3 million individual fibers.
   b. 100% virgin polypropylene (Fibrillated microfilament materials): Dosage rate 1.0 #/cu. yard of concrete minimum, containing at least 25 million individual fibers. Minimum length shall be 0.75-inch.
   c. Meet minimum plastic shrinkage crack reduction of 70% when tested in accordance with ICBO ES, Appendix B (7-92).
   d. Meet requirements of ASTM C1116, "Standard Specification for Fiber-Reinforced Concrete and Shotcrete", designation Type III, 4.1.3.
   e. Acceptable materials are:
      1) Gilco, Grace Fibers or Grace Micro Fibers, GCP Applied Technologies.
      2) Fibermesh Inforce e3 or Stealth e3, FibreMesh Co., Chattanooga, TN.
      3) Forta Fiber-CFP, Forta Corp., Grove City, PA.
      4) Axim Fibrasol F, Axim Concrete Technologies.
      5) Fiberstrand, The Euclid Chemical Company.
      6) Sika Fiber, Sika Corp.
      7) Or approved equivalent.

B. Materials (ACI 301 5.2.1): Additional requirements as follows:
1. Waterproof Sheet Materials (ACI 301 5.2.1.2):
   a. Acceptable materials are:
      1) Waterproof paper over burlap.
      2) White polyethylene film over burlap.
      3) White polyethylene-coated burlap.
2. Evaporation Retarder:
   a. Acceptable materials are:
      1) SikaFilm, Sika Corporation.
      2) MasterKure ER 50, BASF Corporation Construction Systems.
      3) Eucobar, Euclid Chemical Company.
      4) E-Con, L & M Construction Chemicals, Inc.
      5) Or approved equivalent.

2.2 MIXES

A. Measuring, Batching, and Mixing (ACI 301 4.3.1): Additional requirements as follows:
   1. Ready Mix Concrete:
      a. Furnish delivery ticket with each load of concrete delivered. In addition to requirements of ASTM C94 Section 16, provide following information on delivery tickets:
         1) Type of aggregate
         2) Total water content
         3) Air Entrainment
         4) Slump
         5) Silica fume (if used) admixture content per cubic yard of concrete
         6) Fly ash (if used) content per cubic yard of concrete
         7) GGBS (if used) content per cubic yard of concrete
         8) Water-cementitious materials ratio
         9) Corrosion inhibitor
         10) High Range Water reducing admixture
         11) Fibrous concrete reinforcement
   2. Slump Adjustment (ACI 301 4.3.2.1):
      a. In accordance with ASTM C143. Contractor will provide slump guidelines adhering to strength and water/cementitious ratio requirements. Mix design shall provide water slump for concrete and after addition of superplasticizers.
      b. Water is not to be added at site to meet specified slump, unless specifically indicated as being withheld on concrete batch ticket and approved by Engineer.
      c. High range water reducing admixtures (superplasticizers), if added at batch plant, may be redosed at job site. Manufacturers should provide a redosage chart for this purpose. If superplasticizers are added at batch plant, concrete delivery time, placement, and finishing procedures shall account for limited time affect. If superplasticizer is added at site after verification of initial slump, concrete shall be completely retested after proper mixing. All concrete containing superplasticizer shall have a maximum 9-inch slump unless otherwise approved by Engineer.
   3. Time of Discharge (ACI 301 4.3.2.2):
      a. All concrete trucks shall not have concrete build-up on drum or have worn fins. Engineer may require inspections to verify conformance to NRMCA Quality Control Manual, Section 3.
      b. Time of discharge after batching shall not exceed 90 minutes or after drum has revolved 300 revolutions unless otherwise approve by Engineer.
   4. Air content tests shall be taken of concrete at point of discharge unless otherwise approved by Engineer.
   5. Silica Fume Concrete - Additional Mixing Requirements:
      a. Sequence and method of charging mixer, transportation, discharging and placement of silica fume concrete shall be reviewed with silica fume Manufacturer’s representative.
      b. For all types of mixing equipment, mix times shall be increased by 40% over minimum mix time required to achieve mix uniformity as defined by ASTM C94.
      c. For truck-mixed and central mixed silica fume concrete, maximum allowable batch size shall be 80% of maximum as called out by ASTM C94.
   6. Fibrous Concrete Reinforcement - Additional Mixing Requirements: Fibers shall be added at a maximum rate of 4 lbs per cubic yard of concrete as indicated on Drawings, Specification, or as approved by Engineer in accordance with Manufacturer's recommendations and within time and location of initial concrete batching as specified in ASTM C94.
   7. Prepackaged Materials Used in Concrete (ACI 301 4.3.1.3):
      a. Mixing and installing of concrete patching materials and priming of existing concrete surface shall be in accordance with Manufacturer's recommendations.
      b. Site mixing operation shall be approved by Manufacturer and produce sufficient concrete so that placement and finishing operation can proceed at a steady pace.

PART 3 - EXECUTION

3.1 GENERAL

A. General (ACI 301 5.1): Additional requirements as follows:
   1. Placement Notification (ACI 301 5.1.2.2.b): Notify Owner's Testing Laboratory and Engineer 48 hours in advance of concrete operations.
   2. Before placement of concrete, formwork shall have been completed, foreign material shall have been removed, reinforcement shall have been secured in place, and entire preparation shall have been reviewed by Engineer.

3.2 PREPARATION

A. Preparation (ACI 301 5.3.1): Additional requirements as follows:

B. Before placement of repair material pre-dampen surfaces of cavities. Surfaces shall have no standing water during the concrete pour.

C. Coordinate Work with other trades to allow reasonable time to set sleeves, inserts and other accessories.

D. Conveying Equipment (ACI 301 5.3.2.3): Pump hoses shall be supported independently and not laid on reinforcement.

E. Consolidating (ACI 301 5.3.2.5): Vibrators must not be allowed to touch reinforcement embedded in partially set concrete. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

F. Bonding Grout:
   1. All concrete bonding surfaces must be abrasive blasted to a clean sound substrate prior to concrete placement.
   2. Bonding grout shall be pneumatically (brush) applied to existing concrete bonding surface immediately prior to concrete placement. Bonding grout shall be applied evenly to a uniform minimum thickness of 1/16-inch to 1/8-inch throughout. Grout shall not be allowed to dry or dust prior to placement of repair material.
   3. Provide 1 shop vacuum capable of removing water from repair cavity prior to bonding grout application.

G. If construction joints are permitted, new concrete placement shall not be until contact surface of concrete in place has been swept with a stiff brush or scraped to remove laitance and roughened. One hour prior to concrete placement, pre-wet bonding surface or soil with a uniform spray application of water. Surface shall be maintained in a damp condition, puddles shall be blown clean. Bonding surface shall then be coated with a thin layer of bonding grout immediately prior to placement of concrete. Bonding grout shall be worked into bonding surfaces with stiff brooms or brushes.

3.3 PLACEMENT OF CONCRETE

A. Placement of Concrete (ACI 301 5.3.2): Additional requirements as follows:
   1. Cold Weather (ACI 306.1, ACI 301 5.3.2.1.b):
      a. Record air temperature no less than twice per 24 hour period.
      b. Cast expendable thermostats or thermo-couplers in concrete at rate of at least one per 100 cubic yards of concrete placed for supported structure. Monitor internal temperature of concrete at 12 hour maximum intervals throughout curing process.
      c. Record temperature of concrete for each batch as delivered.
      d. Mix water, sand, and aggregate may be warmed so that no frozen lumps of ice, snow, or aggregate will survive mixing but do not overheat ingredient to cause flash setting of concrete or loss of entrained air.
      e. Specified non-corrosive accelerator may be used.

f. Do not place concrete unless air temperature is at least 20 degrees F and rising.
g. Use evaporation retarder or water fog after finishing to assure that plastic shrinkage cracking of concrete surface does not occur.
h. Cure shall consist of visqueen and insulated blankets placed on slab as soon as possible after concrete will support them without deformation.
i. Do not wet cure concrete placed under cold weather conditions.
j. Curing of supported slabs (continuous presence of visqueen and blankets) shall be maintained no less than 10 days.

2. Hot Weather (ACI 305, ACI 301 5.3.2.1.c):
   a. Temperature of concrete as delivered shall not exceed 90 degrees F, unless approved by Engineer.
   b. Forms, reinforcing, and air shall be cooled by water fog spraying immediately before placing concrete.
   c. Protect flatwork during finishing operations as follows:
      1) Immediately following screeding, apply an evaporator retarding agent in accordance with recommendations of Manufacturer. Additional applications of evaporation retarding agent may be required.
      2) Continuous fog spray of air above slab between finishing operations.
      3) Cover concrete with an approved moisture-retaining cover as soon as concrete will support it without deformation. Keep mats constantly wet for 7 days minimum. Leave mats in place for 3 additional days after discontinuing wetting process.
3. Wet Weather (ACI 301 5.3.2.1a).
4. Grout used to prime concrete pump and pump line shall not be placed into Work.
5. During periods of setting, no materials shall be placed and no loads imposed in any manner on slabs. Plank runways for accommodation of workmen or for other traffic shall be supported by blocking.
6. Construction Joints and Other Bonded Joints (ACI 301 5.3.2.6):
   a. Construction of control and isolation joints shall be as indicated on Drawings.
   b. Coordinate configuration of tooled joints with joint sealant Manufacturer. Refer to Division 07 Section “Joint Sealants.”
   c. Tool slab joints at time of finishing. Saw cutting is not allowed.
   d. Maximum variation between slab surfaces at joints shall not exceed 1/16-inch.
   e. Concrete patches shall be edged to match existing condition (beam and column chamfers, etc.), unless noted.
   f. Bulkheads to limit each pour to predetermined construction joints, shall be set normal and vertical to section to be poured, and shall be left in place until concrete has sufficiently set. Care shall be used when removing bulkheads to prevent spalling of concrete surface. Any concrete passing through bulkhead shall be removed before adjacent pour is made.
   g. Construction or control joints passing through patches shall be tooled through patch for continuity.

3.4 FINISHING FORMED SURFACES

A. Finishing Formed Surfaces (ACI 301 5.3.3): Additional requirements as follows:
   1. Rough - Form finish (ACI 301 5.3.3.3.a): All concealed concrete (i.e. behind masonry, below grade, abutting another structure), may have a “rough form finish.”
   2. Smooth - Formed Finish (ACI 5.3.3.3.b): All concrete surfaces exposed to public view, both inside and outside structure shall have a “smooth form finish.”

3.5 FINISHING UNFORMED SURFACES

A. Finishing Unformed Surfaces (ACI 301 5.3.4): Additional requirements as follows:
   1. General:
      a. Spraying of water directly on concrete surfaces is NOT allowed.
      b. Use rigid screed rails, wet screeding not accepted.
   2. Float Finish (ACI 5.3.4.2.b):
      a. Flat work in parking and drive areas.
         1) Begin bull floating immediately after screeding of concrete.
         2) When bleed water has left surface, begin final “float finish” operation.

3. Broom or Belt Finish (ACI 301 5.3.4.2.d):
    a. Slab areas to receive a deck coating shall have a “light broom finish,” or as recommended and approved by coating Manufacturer and Engineer. Slab areas not receiving a deck coating shall have a medium broom finish. Ridges shall not exceed 1/8-inch in height. Engineer shall be notified to observe and approve final finish texture.
    b. Provide "light broom finish" at stair treads, and a "light broom finish" for stair landings. Texture shall be approved by Engineer.
    c. No refloating or finishing is required after brooming.
4. Measuring Tolerances for Slabs (ACI 301 5.3):
    a. Parking and Drive Areas Finishing Tolerance: During “float finish” operation planeness of surface shall be checked in accordance with ACI 117 4.5.7 Classification Straightedged. All high spots shall be cut down and all low spots filled during finish operation.
    b. Stair Towers - Finishing Tolerance: During finishing operation, planeness of surface shall be checked in accordance with ACI 117 4.5.7, Classification Straightedged.
    c. Finish all concrete slabs to proper elevations to ensure that all surface moisture will drain freely to floor drains that no puddle areas exist. Provide positive drainage and maintain headroom clearances as indicated on Drawings. Notify Engineer of grades or clearances which do not allow headroom so adjustments can be made. Contractor shall bear cost of any corrections to provide for positive drainage.
5. Additional Finishing Requirements for slab-on-grade and topping concrete for precast as follows:
    a. Finish concrete using procedures to preclude plastic and drying shrinkage cracking. Note the use of low water/cementitious ratio concrete and silica fume (or GGBS) will essentially eliminate bleed water.
    b. Fog misting air above flat work is recommended. Free standing water is not allowed. No spraying of water directly on flat work will be allowed.
    c. Fog misting is not to be used to apply water to surface of concrete to facilitate lubrication for finishing purposes.
    d. Fog misting is required when conditions of hot weather concrete exist in accordance with “Hot Weather Concreting” as specified herein. Fogging shall continue after finishing operation until moisture retaining cover is placed over concrete.
    e. Finish concrete to texture matching approved sample or as required by the deck coating manufacturer.

3.6 CURING AND PROTECTION

A. Curing and Protection (ACI 301 5.3.6): Additional requirements as follows:
1. General:
    a. Curing shall maintain moisture content and temperature to ensure strength gain and prevent undesirable cracking, dusting, scaling, and crazing.
    b. Cure slab-on-grade, supported concrete slabs, concrete topping on precast as follows:
        1) Cover concrete with an approved moisture retaining cover as soon as the concrete will support it without deformation.
        2) Keep mats constantly wet for 7 days minimum.
        3) Leave mats in place for 3 additional days after discontinuing wetting process.
    c. Additional precautions may need to be taken to prevent excessive slab moisture loss resulting in plastic shrinkage when any combination of air temperature, concrete temperature, relative humidity and/or wind velocity which causes a rate of evaporation in excess of 0.2 pounds per square feet per hour as determined by ACI 308, Figure 1.
2. Unformed Concrete Surfaces (ACI 301 5.3.6.2):
    a. Curing of supported slabs shall be as ACI 301 5.3.6.4.d, Application of sheet materials conforming to ASTM C171. Application of curing compounds is not allowed.
    b. For silica fume concrete mixes, curing procedures shall also be in accordance with requirements of silica fume admixture Manufacturer.
    c. As a minimum or as recommended by Manufacturer, surfaces of concrete patches shall be protected with a moisture retaining cover, wet burlap as soon as surface will support it without deformation. Maintain burlap in a continuous saturated condition for 3 days.
    d. During curing period repairs shall be protected from traffic. Slab demolition from above or below shall be halted.

e. Prior to reopening repairs to traffic and loading, confirm that the repair concrete has attained a minimum compressive strength of 70% of specified 28 day strength. Confirmation is to be made by field cylinder, cured adjacent to, and in a manner similar to the repairs or by the Maturity Method.

3. Formed Concrete Surfaces (ACI 301 5.3.6.3): Curing of formed surfaces upon early removal of forms shall be in accordance with ACI 301 5.3.6.4, Preservation of Moisture.

3.7 REPAIR OF SURFACE DEFECTS

A. Repair of Surface Defects (ACI 301 5.3.7): Additional requirements as follows:
1. Match color and texture of concrete to be repaired.
2. Repair all cracks in supported concrete floor slabs and curbs by routing and sealing or epoxy injection subject to approval of Engineer.
3. Fill all air pockets and holes over 1/2-inch in diameter with a sand-cement paste. Grind smooth all form offsets or fins over 1/8-inch.
4. Remove stains, efflorescence, rust, grease and oils, form release agents, dirt, surface deposits, etc.
5. Low spots, creating puddles and bird baths which impede drainage shall be corrected by smoothing out broom lines, and grinding a drainage path (maximum 1/4-inch depth), or by patching with a specified polymer repair material.
6. High spots impeding drainage in slabs shall be corrected by grinding and re-texturing, subject to approval of Engineer.
7. Honeycombed and other defective concrete shall be patched with an approved material.
8. If shrinkage cracks appear in patch material prior to completion of initial 72-hour curing period, patch material shall be considered defective, and it shall be removed and replaced at no extra cost.

3.8 ACCEPTANCE OF STRUCTURE

A. Acceptance of Structure: ACI 301 1.7.

END OF SECTION 03 31 26

SECTION 04 01 13 – MASONRY RESTORATION AND CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes providing and furnishing labor, materials, equipment, and supervision to rebuild and to clean, repair, repoint, seal, and coat the brick masonry and concrete masonry unit walls.

B. Basis of Contract Payments:
   1. Final Contract Price shall be determined by actual quantities installed at Unit Prices stated in Contractor's Bid for the following:
      a. Brick and concrete masonry restoration work will be paid on a unit price basis. Refer to Bid Form.
      b. Submit copy of drawings identifying current quantities with each payment request. Work being invoiced must be properly identified. These drawings shall be incorporated into record set required in accordance with Division 01.

1.3 SUBMITTALS

A. Product Data: Submit each of the following:
   1. For review of installation, Health and Safety Data Sheets for each product.
   2. Written program of procedures to be used, including written description of cleaning methods, dust control methods, working pressures, materials and equipment proposed.
   3. Disposal plan including location of acceptable disposal site, and detailed description of methods to be employed to control pollution.

B. Quality Assurance/Control Submittals: Test reports and certifications substantiating that products comply with local, state, and federal environmental and worker's safety laws and regulations.

C. Samples: Submit samples of masonry units for review.

1.4 QUALITY ASSURANCE

A. Mason Requirements: Experienced in the class of required work and workmanship of the highest quality.

1.5 DELIVERY, STORAGE AND HANDLING

A. Ship in weatherproof enclosures, in weather-proof containers or in weatherproof packaging. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, and damage by weather or elements, and according to Manufacturer's directions.
   1. Store masonry units on wood skids or pallets.
   2. Distribute weight of masonry units evenly to prevent breakage or cracking.
   3. Protect stored masonry units from weather with waterproof, non-staining covers or enclosures, but allowing for circulation of air.
   4. Protect mortar materials and masonry accessories from weather, moisture and contamination with earth and other foreign materials.

C. Reject damaged, deteriorated, or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

1.6 WARRANTY

A. Furnish Owner with a written 10-year sealer material warranty for loss of water repellency.
   1. Brick masonry: 1.0 mil/20 minutes or greater (80 mph wind driven rain equivalent).

PART 2 - PRODUCTS

2.1 MASONRY

A. Reuse existing masonry units which have been removed from the walls due to construction operations.

B. Whenever the quantity and quality of the masonry units are not sufficient, furnish new masonry units matching existing.

2.2 MORTAR AND GROUT

A. Mortar for Masonry Units: ASTM C270, non-staining and non-air entrained.

B. Obtain mortar ingredients of uniform quality and color:
   1. Cement: Non-staining grey or white (as appropriate) Portland Cement, ASTM C150, Type I or II.
   2. Sand: ASTM C144, clean, fine, sharp sand to match the color of sand in the original mortar.
   3. Hydrated lime: ASTM C207, Type S.
   4. Water: Clean, potable, and free of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to the performance of the masonry.
   5. Mortar Coloring Pigment: Pure ground mineral oxides, non-fading and alkali proof, to match existing mortar color as closely as possible. Not to exceed 10 percent of the weight of the mortar.

C. Manufactured masonry cement meeting the above requirements may be used.

D. Match existing color of mortar and grout.
   1. Modify color in accordance with Manufacturer's recommendations.

2.3 TIES

A. All materials to be stainless steel, Type 304.

B. Materials:
   1. At concrete back-up:
      a. HB-5213-HS Adjustable Veneer Anchor by Hohmann & Barnard, Inc.
      b. Or reviewed equal.
   2. At CMU back-up:
      a. HB-5213-HS Adjustable Veneer Anchor by Hohmann & Barnard, Inc.
      b. Or reviewed equal.

2.4 CLEANING MATERIALS

A. Cleaning compounds shall not contain acids, nor cause scratching of surface, or staining.

2.5 MASONRY SEALER

A. Apply sealer at a maximum yield of 100 square feet per gallon.

B. Materials:
   1. Protectosil CHEM-TRETE BSM 400, Evonik, Parsippany, NJ.
   2. Or reviewed equal.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect area to receive the work and report unacceptable conditions immediately in writing to Engineer, as required in the General Conditions.
   1. Do not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner.
   2. Commencement of work implies acceptance of related work.

3.2 PREPARATION

A. Protect persons, motor vehicles, surrounding surfaces of building of which masonry surfaces are being restored, building Site and surrounding buildings from injury or damage resulting from masonry restoration work.

B. Erect additional temporary protection as required over pedestrian walkways and at person and vehicle entrances and exits which must remain in operation during course of masonry restoration work.
   1. Refer to Division 01 Section “Temporary Barriers and Enclosures.”

C. Remove temporarily, if required, or protect signage, electrical fixtures, electrical outlets, etc. from wall surfaces. Reinstall removed items at completion of construction.

D. Remove loose and unsound mortar and loose masonry units from existing walls.

E. Clean existing masonry wall surfaces and mortar joints free of dust, dirt, or other foreign materials prior to installation of new masonry.

3.3 INSTALLATION

A. Handle masonry units in a manner to prevent chipping, breakage, soiling or other damage.
   1. Do not use pinch or wrecking bars without protecting edges of masonry with wood or other rigid materials.

B. Install ties at 16 inches maximum on center each way.

C. Cut masonry units to provide accurate fit and to lie within plane of existing masonry.
   1. Provide full uniform thickness materials.
   2. Provide uniform distribution of size and shape of masonry units to match existing surface.

D. Set masonry in full bed of mortar.
   1. If not thoroughly wet at a time of setting, drench or sponge masonry.
   2. Provide plastic setting buttons as required to prevent extrusion of mortar.
   3. Do not set additional courses until mortar in courses below is set sufficiently to maintain alignment and prevent extrusion.

E. Rod the mortar and tap face of masonry to eliminate voids.
   1. Tool joints to match existing joints.

3.4 MASONRY REPLACEMENT

A. Use care to remove damaged masonry units.

B. Do not remove existing masonry in quantities that could potentially weaken the structural integrity of the wall. Install shoring whenever masonry removal exceeds 36 inches.
   1. For sections exceeding 5 feet continuous contractor shall provide submittal/written procedure indicating his proposed stabilization method and sequence.

C. Any damage caused to masonry sections or areas not scheduled for removal and replacement by the Contractor's failure to properly stabilize undisturbed sections shall be repaired at no additional cost to the owner.

D. Remove masonry units by sawcutting through the mortar in the joints surrounding the masonry units in question.
   1. Masonry shall be removed in a sawtooth pattern.
   2. All existing mortar on adjacent masonry units that are to remain in place shall be removed and the surfaces prepared for placement of new mortar and masonry units.
   3. Care should be taken not to damage surrounding masonry, windows, etc. Any damage to surrounding materials will be repaired by the Contractor at no cost to the Owner.
   4. Weather protection shall be installed to protect the open cavity from water damage when removal cavity is left open over night or when it may rain.

E. Handle masonry units in a manner to prevent chipping, breakage, soiling or other damage.
   1. Do not use pinch or wrecking bars without protecting edges of masonry with wood or other rigid materials.

F. Where possible, use full-size units without cutting.

G. Cut masonry units, as required, to provide accurate fit and to maintain plane of existing masonry.
   1. Cut units with motor-driven saws to provide clean, sharp, un-chipped edges.
   2. Cut units as required to provide a continuous pattern and to fit adjoining construction.
   3. Install cut units with cut surfaces and, where possible, cut edges concealed.

H. Pre-wet all masonry prior to placement to prevent improper cure of the mortar.

I. Install replacement masonry plumb, level, and true to line and all corners.
   1. Verify all angles are square.
   2. Use block lines whenever possible.
   3. If use of a line pin is required, rake out the hole within the mortar joint and repoint with mortar during subsequent work.

J. Provide uniform distribution of size and shape of masonry units to match existing.

K. Match existing patterns, bonds, and/or special details accurately.

L. Set all masonry in full bed of mortar.
   1. Do not set additional courses of masonry until mortar in courses below is set sufficiently to maintain alignment and prevent extrusion.

M. Completely fill all head joints of replacement masonry with mortar.

N. Tool mortar joints to match profile of existing mortar joints, unless otherwise indicated, when thumbprint hard. Remove excess mortar from edge of joint by brushing.

O. Allow mortar droppings on masonry units to dry, remove with trowel followed by bristled brush.

3.5 REPOINTING EXISTING MASONRY

A. Remove deteriorated mortar in masonry joints back to a uniform depth of ¾ inch, or until sound, unweathered mortar is reached.
   1. Remove mortar the entire width of the joint.

B. Cut back existing mortar joints to form right angles, square, at terminations with toothing chisel or pointer's grinder to expose masonry for contact with pointing mortar.

C. Do not damage masonry units during removal of mortar.

D. Brush, vacuum, or flush joints to remove dirt and loose debris.

E. Pre-hydrate repointing mortar to reduce excessive shrinkage.
   1. Thoroughly mix all dry ingredients.
   2. Add only enough water to the dry mix to produce a damp, workable consistency that will retain its shape when formed into a ball.
   3. Allow repointing mortar to stand in dampened condition for approximately 1 hour.

F. Add additional water to pre-hydrated mortar to maintain workable consistency.

G. Wet mortar joints to a saturated, surface dry condition prior to installation of new mortar.

H. Pack repointing mortar into joints in layers not greater than 1/4-inch until a uniform depth is formed.
   1. Compact each layer thoroughly and allow it to become thumbprint-hard before applying next layer.

I. Tool joints to match profile of existing mortar joints, unless otherwise indicated, when thumbprint hard. Remove excess mortar from edge of joint by brushing.

J. Cure mortar by maintaining in a damp condition for not less than 72 hours.

3.6 ENVIRONMENTAL REQUIREMENTS

A. Cold/Hot Weather Procedures: Comply with ACI 530/530.1-13 and the following.

B. Cold Weather Procedure:
   1. Do not install masonry when the air temperature is below 45 degrees F, unless it is rising, and at no time when the air temperature is below 40 degrees F, except with written permission of the Engineer/Architect.
   2. When the air temperature is between 40 degrees F and 32 degrees F, and masonry installation is authorized, heat mortar sand or mixing water at time of mixing to produce mortar temperatures between 70 degrees F and 120 degrees F.
   3. Do not lay masonry units which have a surface temperature of 20 degrees F or less.
   4. Maintain air temperature above 40 degrees F on both sides of masonry for at least 72 hours after installation.

C. Hot Weather Procedure:
   1. Protect masonry installation from direct exposure to sun and wind when the air temperature is 95 degrees F or greater in the shade with a relative humidity less than 50 percent.
   2. Maintain temperature of mortar and grout below 120 degrees F.
   3. Retemper with cool water to maintain mortar consistency.
   4. Use mortar within 2 hours of initial mixing.

3.7 PROTECTION

A. Protect partially completed stonework against weather when work is not in progress. Cover top of walls with strong waterproof, non-staining membrane extending at least 2 feet down both sides of walls and anchor securely in place.

3.8 SEALER

A. Perform work in accordance with Manufacturer’s written instructions and specification, and as indicated on the Drawings.

B. Surface:
   1. All surfaces must be cleaned to remove all traces of dirt, dust, efflorescence, mold, salt, grease, oil, asphalt, laitance, curing compounds, paint, coatings, and other foreign materials.
   2. Clean and dry prior to application.
   3. Air and material temperatures: 45 degrees F or higher during application.

C. Allow new masonry and concrete to cure for a minimum of 28 days prior to sealer application.

D. Allow repaired and newly installed sealants to fully cure prior to sealer application.

E. Allow 72 hours drying time for repointed mortar prior to sealer application.

F. Protect glass, metal, plastic, and other nonporous substrates from overspray.

G. Two coats may be required to achieve specified yield.

3.9 CLEANING

A. Protect finished work from stains.

B. Protect storage, construction, and mixing areas, as well as surrounding surfaces and leave them clean. Clean all stains or dirt on surrounding surfaces resulting from the implemented repairs to the satisfaction of the Owner at no additional cost.

C. Remove and replace all damaged materials to the satisfaction of the Owner at no additional cost.

D. Clean materials installed under this Section according to Division 01 Section “Cleaning and Waste Management.”

END OF SECTION 04 01 13

SECTION 05 50 00 – METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the furnishing, fabrication and erection of metal fabrications, including the major items listed below:
   1. Miscellaneous frames and supports.
   2. Steel pipe guards.

B. Basis of Contract Payments:
   1. Determine Final Contract Price by actual quantities installed at Unit Prices stated in Contractor's Bid for the following:
      a. Pipe guards will be paid on a unit price basis. Refer to Bid form.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the pertinent provisions of the following:
   1. ASTM Standard Specifications:
      a. A36 - Structural Steel.
      b. A47 - Ferritic Malleable Iron Castings.
      c. A48 - Gray Iron Castings.
      d. A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
      e. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
      f. A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
      g. A276 - Stainless Steel Bars and Shapes.
      h. A307 - Carbon Steel Bolts and Studs, 60,000 psi, Tensile Strength.
      i. A325 - Structural Bolts, Heat-Treated, 120/105 ksi Minimum Tensile Strength.
      j. A366 - Commercial Steel (CS) Sheet, Carbon (0.15 Maximum Percent), Cold-Rolled.
      k. A490 - Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength.
      l. A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
      m. A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
      n. A563 - Carbon and Alloy Steel Nuts.
      o. A780 - Standard Practice for Repair of Damaged Hot-Dip Galvanized Coatings.
      p. A786 - Rolled Steel Floor Plates.
      q. A992 - Steel for Structural Shapes for Use in Building Framing.
      r. B209 - Aluminum and Aluminum Alloy Sheet and Plate.
      s. B221 - Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, & Tubes.
      t. B633 - Electro-deposited Coatings of Zinc on Iron and Steel.
      u. D520 - Zinc Dust Pigment for Paint.
      v. E488 - Strength of Anchors in Concrete and Masonry Elements.
      w. E1512 - Testing Bond Performance of Adhesive-Bonded Anchors.
      x. F436 - Hardened Steel Washers.
      y. F593 - Stainless Steel Bolts, Hex Cap Screws, and Studs.
      z. F594 - Stainless Steel Nuts.
      aa. F1267 - Expanded Metal, Steel.
      bb. F1554 - Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.
   2. AISC publications:
      a. Code of Standard Practice for Steel Buildings and Bridges (excluding Section 4.2.1).
      b. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
      c. Detailing for Steel Construction.
      d. Manual of Steel Construction.

e. Specification for Structural Joints Using ASTM A325 or A490 Bolts.

3. AWS publications:
   a. ANSI/AWS A5.1 - Carbon Steel Electrodes for Shielded Arc Welding.
   b. ANSI/AWS A5.3 - Aluminum and Aluminum Alloy Electrodes for Shielded Arc Welding.
   c. ANSI/AWS A5.4 - Stainless Steel Electrodes for Shielded Arc Welding.
   d. ANSI/AWS D1.1 - Structural Welding Code - Steel.
   e. ANSI/AWS D1.2 - Structural Welding Code - Aluminum.
   f. ANSI/AWS D1.6 - Structural Welding Code - Stainless Steel.
4. ASME - American Society of Mechanical Engineers:
   a. ANSI/ASME B18.2.1 - Heavy Hex Structural and Askew Head Bolts.
   b. ANSI/ASME B18.6.1 - Wood Screws.
   c. ANSI/ASME B18.6.3 - Slotted and Recessed Head Machine Screws.
   d. ANSI/ASME B18.21.1 - Lock Washers.
   e. ANSI/ASME B18.22.1 - Plain Washers.
5. Federal Specifications:
   a. FS FF-B-588C(1) - Bolt, Toggle, and Expansion Sleeve, Screw.
6. American Hot-Dip Galvanizers Association.
7. Occupational Safety and Health Act.
8. NAAMM - National Association of Architectural Metal Manufacturers.
9. The Aluminum Association.

1.4 SUBMITTALS

A. Shop Drawings: For all members to be furnished to include:
   1. Detail Drawings of Members and Connections:
      a. In accordance with AISC - Detailing for Steel Construction.
      b. Size and number of bolts.
      c. Dimensions.
   2. Welding: In accordance with AWS welding symbols.
   3. Surface preparation and type of paint/coating.
   4. Item to be galvanized.

B. Mill Certification Tests: Submit in compliance with Michigan Building Code.

1.5 QUALITY ASSURANCE

A. Fabrication and Erection Personnel Qualifications:
   1. Trained and experienced in the type of work being performed.
   2. Knowledgeable of the design and the reviewed Shop Drawings.

B. Welders, Welding Operators and Tackers Qualifications:
   1. Qualified by tests in accordance with AWS D1.1.
   2. Qualification Papers:
      a. Given by an independent testing laboratory.
      b. Dated no earlier than 6 months prior to beginning of Project.
   3. Engineer, at Engineer's discretion, may accept evidence of previous qualifications.

C. Steel Fabricators:
   1. Certified under the AISC Quality Certification Program for Category I - Conventional Steel Structures, or under other quality control program acceptable to building official in accordance with building code, prior to fabrication.
   2. The quality control program shall permit work on fabricator’s premises without special inspection.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, damage by weather or elements, and in accordance with Manufacturer's directions.

C. Reject damaged, deteriorated or distorted material and immediately remove from the Site. Replace rejected materials with new material at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Materials shall be new, top quality of their respective kinds, standard sizes and fabricated in a shop whose principal business is manufacturing the items specified in this Section.

B. Steel:
1. Wide Flange and WT Shapes: ASTM A992 with yield stress of 50,000 psi.
2. M, S, MT and ST Shapes, Channels, Angles, Bars, Plates and Rods: ASTM A36 with yield stress of 36,000 psi.
3. Rectangular and Square Tubular Shapes: ASTM A500, Grade C with yield stress of 50,000 psi.
4. Round Tubular Shapes: ASTM A500, Grade B with yield stress of 46,000 psi.

C. Stainless Steel Bars and Shapes: ASTM A276.

D. Stainless Steel Fasteners:
1. Bolts: ASTM F593.
2. Nuts: ASTM F594.
3. Washers:
a. Plain Washers: ASME B18.22.1, round.
b. Lock Washers: ASME B18.21.1, helical, spring type.

E. Anchors: In accordance with Division 03 Section “Post-Installed Anchors”.

F. Field-Applied Cold Galvanizing:
1. Z.R.C. Cold Galvanizing Compound, ZRC Worldwide, Marshfield, MA.
2. Or reviewed equal.

G. Field-Applied Paint: In accordance with Division 09 Section “Restoration Painting.”

H. Other Materials: Other materials not specifically described but required for a complete and proper installation of the work of this Section, shall be new, first quality of their respective kinds, and as selected by Contractor subject to Engineer review.

2.2 FABRICATION

A. General:
1. Workmanship: Install items square and level, accurately fitted and free from distortion and defects.
2. Temporary Bracing:
a. Make provision for erection stresses by temporary bracing.
b. Keep work in alignment.
3. Welding:
a. Steel welding shall be performed in accordance with AISC Specification and AWS D1.1.
b. Filler metal requirements for steel welding processes shall be in accordance with AWS D1.1 and AWS A5.1.
c. Stainless steel welding shall be performed in accordance with AWS D1.6.
d. Filler metal requirements for stainless steel welding processes shall be in accordance with AWS A5.4.
e. Welding shall be continuous along entire area of contact.
4. Items fabricated from structural steel members which are to be architecturally exposed shall be given special attention for material selection with respect to rolling tolerances, surface finish and straightness.
5. Normal structural steel fabrication tolerances will not be acceptable where in conflict with the intent and requirements of this Section.
6. Straightness tolerances, additive to deflection, shall not exceed ± 1/16-inch to 10 feet.

7. Cope, miter, and butt caps on exposed surfaces shall be made to the closest possible tolerances consistent with metal shop equipment and practice in order to provide a pleasing appearance.
8. Fastening shall be concealed where practicable. Thickness or metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to weather shall be formed to exclude water. Provide holes and connections for the work of other trades.

B. Galvanizing:
1. Hot-dipped galvanized after fabrication in accordance with ASTM A123.
2. 2 oz/ sq ft minimum.
3. All steel miscellaneous metals shall be hot dip galvanized unless noted.

C. Shop-Applied Coating: Paint metal fabrications in accordance with Division 09 Section “Restoration Painting.”

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect area to receive Work and report immediately in writing to Engineer, as required in General Conditions, any unacceptable conditions. Do not proceed with Work until unsatisfactory conditions have been corrected in an acceptable manner. Commencement of erection implies acceptance of related Work.

B. Take field measurements prior to preparation of Shop Drawings and fabrication, wherever possible, but do not delay job progress by waiting for field measurements. Make an allowance for trimming and fitting where the taking of field measurements before fabrication might delay either completion of the metal fabrications work in particular or Substantial Completion of the Work in general.

3.2 INSTALLATION

A. Workmanship: Install items square and level, accurately fitted and free from distortion and defects.

B. Erection:
1. Bracing:
a. Provide all shoring, bracing and accessories required for complete erection.
b. Safety and adequacy of bracing and temporary bracing are the responsibility of the Contractor.

C. Touch-up:
1. After erection is complete, touch up all shop applied coatings damaged during transportation and erection according to Manufacturer’s instructions.
2. Prime all field welds, bolt heads, nuts and abrasions using the priming paint specified for shop priming.
3. Touch up all damaged galvanized areas with a Field-Applied Cold Galvanizing meeting ASTM D520 and ASTM A780.
a. Surface Preparation: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
b. Coating Thickness: Minimum of 6 mils (dry film) to be applied in multiple coats in accordance with Manufacturer’s instructions.

D. Welding: Field welding shall be performed to the same standards and requirements of shop welding.

E. Protection: Where required, provide approved protection against galvanic action between contacts of dissimilar metal or situations that will cause deterioration of metal in contact or associated in any way.

3.3 CLEANING

A. Prior to acceptance of the work of this Section, thoroughly clean all installed materials and related areas in accordance with Division 01 Section “Cleaning and Waste Management.”

END OF SECTION 05 50 00

SECTION 07 18 00 – TRAFFIC COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes providing and furnishing labor, materials, equipment, and supervision to install a deck coating system, including surface preparation and crack and joint detailing.

B. Provide preparation work and joint sealants specified in Division 07 Section “Joint Sealants for Parking Structures.”

C. Basis of Contract Payments:
   1. Determine Final Contract Price by actual quantities installed at Unit Prices stated in Contractor's Bid for the following:
      a. Coating preparation and application will be paid on a unit price basis. Refer to Bid form.
      b. Detail over cracks, construction joints, cove joints, etc., are to be incidental to deck coating cost.

1.3 SUBMITTALS

A. Action Submittals
   1. System Description: Submit complete description of proposed traffic coating system including materials, surface preparation, joint treatments, terminations, and cure times. Include aggregate materials and repair materials for pitting, bug holes, popouts, and shallow scaling.
   2. Product Data: For each type of product, including installation instructions:
      a. Traffic Coating System.
      b. Substrate Repair Material.
      c. Primer.
      d. Base Coat.
      e. Intermediate Coat (grit coat).
      f. Top Coat.
      g. Aggregate.
   3. Shop Drawings: For traffic coatings:
      a. Include details for treating substrate joints and cracks, flashings, deck penetrations, and other termination conditions.
      b. Include proposed plan for grid layout to install each coat. Include quantities of materials, square footages, and yield calculations.
   4. Color: Submit Manufacturer's standard color chart.
   5. Sample Warranty: Submit sample warranty for review prior to application.

B. Informational Submittals:
   1. Qualification Data:
      a. For Installer including projects, size, location, owner, and contact, engineer/architect and contact for projects that traffic coating system has been applied.
      b. Certification that Manufacturer has approved Installer.
      c. For Manufacturer's Representative.
   2. Certificates: For each type of traffic coating.
      a. Certification that the traffic coating system is compatible with products in Divisions 03 and 07 to which it will come in contact.
      b. Certification of Manufacturer's approval of surface preparation.
      c. Certification of Manufacturer's project review and that traffic coating installation is in accordance with written recommendations.
      d. Written certification that recoat system is compatible with existing system.

3. Field Quality-control Reports:
   a. Results of slab moisture testing completed in accordance with ASTM D 4263 Standard Test Method for Indicating Moisture in Concrete by Plastic Sheet Method.
   b. Results of dry and wet film thickness testing and adhesive testing. Include date, weather, and other pertinent information.
4. Applicator's Manual: For each type of traffic coating.
5. Material Safety Data Sheets: For each product, solvent, or related chemicals to be used and certification that materials conform to local, state, and federal environmental and worker's safety laws and regulations.
6. Maintenance Data: Manufacturer's "Snow Removal Guideline" stating procedures to follow during snow removal from traffic coated slabs.
7. Copies of purchase order and invoices indicating quantities and dates of material purchased.

1.4 QUALITY ASSURANCE

A. Manufacturer’s/Installer’s Requirements:
   1. Deck coating Installer shall be approved by deck coating Manufacturer.
   2. A minimum of 5 years’ experience in application of one of the specified deck coating systems and have experience with 5 projects in size of 50,000 square feet or greater.
   3. Review slope of slabs and condition of surfaces prior to Bidding.
   4. Manufacturer shall make available a qualified Representative to assist as specified herein. Representative shall be experienced in placement of deck coating systems. As a minimum, Representative shall be on site to review following procedures:
      a. Surface preparation and deck coating installation in trial area.
      b. Installation of deck coating from primer to top coat for first level or first phase.
   5. Preconstruction/Preapplication Meeting: Attendance is required to discuss detailing, surface preparation, application techniques and procedures, phasing and scheduling. Foreman and lead laborer for Installer will be required to attend meeting along with Contractor, Manufacturer's Representative and Engineer.

B. Testing Requirements:
   1. Installer shall check deck coating wet film thickness and record test results by taking 5 wet film readings within a 1 Square Foot area. Wet film thickness testing shall be completed a minimum of once per every 5,000 Square feet of deck coating placed or per individual section placed per day. Average film thickness shall be at or above wet film thickness equivalent of specified dry film thickness.
   2. Manufacturer's Representative shall perform dry film thickness tests and record test results for base coat and total system. For each 25,000 square foot area, 3 readings shall be taken in a single 100 square foot area. Average dry film thickness shall be at or above Manufacturer's calculated average dry film thickness for total system based on specified dry film thickness plus aggregate.
   3. Manufacturer and Installer in presence of Engineer shall perform adhesive pull-off strength testing on base membrane and completed system in accordance with ASTM D 4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers. Testing is to be performed every 50,000 square feet. For each 50,000 square foot area, 3 tests shall be taken in a single 100 square foot area. This testing can be performed in conjunction with dry film thickness testing. Test results shall be greater than 100 psi.
   4. If thickness and pull-off strength testing do not meet above requirements, corrective action will be required and more frequent testing will be required on remainder of project as directed by Engineer.
   5. Test damage is to be repaired by Installer in accordance with the Manufacturer's recommendations.

1.5 PROJECT CONDITIONS

A. Deck Coating Materials: Confirm that deck coating materials used are in accordance with this Section conform to local, state, and federal environmental and workers' safety laws and regulations.
   1. VOC content of materials shall not exceed limits per Environmental Protection Agency Natural Volatile Organic Compound Emission Standards for Architectural Coatings (40CFR59).

B. Fume Control: Take necessary precautions against injury to personnel or adjacent building occupants during application. As a minimum, take the following precautions:
   1. Provide and maintain barricades.
   2. Locate and protect building air intakes during application.
   3. Follow state, federal, and local safety regulations.
   4. Follow Manufacturers' safety requirements.
   5. Dispose empty containers immediately and properly.
   6. Use protective equipment.
   7. Ensure Work area is well vented to outside.

1.6 DELIVERY, STORAGE AND HANDLING

A. Ship in weather-proof enclosures, in weather-proof containers or in weatherproofing packaging. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable. Include the following:
   1. Name of product.
   2. Name of Manufacturer.
   3. Date of Manufacturer.
   4. Lot or batch number.
   5. UL Labels.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, and damage by weather or elements, and according to Manufacturer's directions.

C. Reject damaged, deteriorated or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

D. At no time shall weight of stored material placed on a slab area exceed 30 pounds per square foot or 2,000 pounds over 20 square inches.

1.7 WARRANTY

A. Requirements:
   1. Provide to Owner a Warranty by Installer and Manufacturer that deck coating system will be free of defects, water penetration, and chemical damage related to system design, workmanship or material deficiency, consisting of, but not limited to:
      a. Surface crazing of other weathering deficiency (including ultraviolet light exposure).
      b. Abrasion or tear failure resulting from normal traffic use.
      c. Tear failure resulting from new or existing cracks in substrate not exceeding 1/16 inch in width.
      d. Debonding from substrate or delaminating between layers.
      e. Defective installation.
      f. Debonding or damage of repair material used for filling in pitting, bug holes, popouts, and shallow scaling with concrete or deck coating material.
   2. Installer and Manufacturer will warrant and provide at no charge to Owner materials and labor needed to properly repair or replace product and replace parking stripes within duration of Warranty.
   3. In event of either party's non-performance, full burden and responsibility for Warranty repair shall fall upon remaining party.
   4. Vandalism, abrasive maintenance equipment, and construction traffic are not normal traffic use and are exempt from Warranty.
   5. Normal traffic is considered to include snow removal equipment with rubber tipped blades as described in National Parking Association publication, "Parking Garage Maintenance Manual".
   6. New concrete may experience shrinkage. Installer shall provide system suitable for such application. Warranty shall cover deck coating damage due to new concrete slab cracking not exceeding 1/16 inch.
   7. Recoat systems are applied over existing systems. Installer shall provide system suitable for such application. Warranty shall cover recoat system.

B. Warranty Duration:
   1. Bid price shall include a 5 year Warranty commencing with date of project acceptance in accordance General Conditions.
   2. Although completed areas of facility may be reopened to traffic and parking, commencement of Warranty period will not occur prior to acceptance of entire project.
   3. A single Warranty commencement date will apply to waterproofing.

PART 2 - PRODUCTS

2.1 DECK COATING - GENERAL

A. Fluid applied, waterproof, traffic bearing elastomeric membrane capable of preventing penetration of concrete by water, gasoline, oils, greases, salts, deicer chemicals, battery acids and radiator coolants.

B. Color: Gray deck coating with Owner selecting shade of gray from standard color chart submittal.

C. Provide material to fill in pitting, bug holes, popouts, and shallow scaling in accordance with Manufacturer's written recommendations.

D. Use same Manufacturer's deck coating system throughout.

E. Deck coating thicknesses specified herein are minimum dry film thicknesses and do not include the aggregate. Specified thicknesses may vary from Manufacturer's literature. A coat may have to be installed in more than 1 layer to achieve minimum thickness or on ramps a slope grade version of deck coating material shall be used. Install each coat in accordance with Manufacturer's recommended yield for required thickness.

F. Thinner or solvent to deck coating materials is not allowed.

G. Utilize a UV stable topcoat for deck coating.

H. Top coat: Seeded with aggregate and back roll.

2.2 DECK COATING – URETHANE FULL SYSTEM (FOURTH AND WASHINGTON)

A. Provide a heavy duty urethane deck coating system as indicated on Drawings.

B. Reviewed Heavy Duty Urethane Solvent-Free Deck Coating Systems:
   1. Iso-Flex 760U-HL HVT, LymTal International, Inc., Orion, MI. Primer, base coat at 25 mils, grit coat at 25 mils, and top coat at 18 mils.
   2. Auto-Gard FC, Neogard Corporation, Dallas, TX. Primer, base coat at 25 mils, grit coat at 25 mils, and top coat at 18 mils.
   3. MasterSeal Traffic 2500, BASF Building Systems, Shakopee, MN. Primer, base coat at 25 mils, grit coat at 25 mils and top coat 295) at 18 mils.
   4. Sikalastic 720/745, Sika Corporation, Lyndhurst, NJ. Primer, base coat at 25 mils, grit coat at 25 mils, top coat at 18 mils.
   5. Vulkem 360NF/950NF/951NF, Tremco, Cleveland, OH. Primer, base coat at 25 mils, 2 grit coats at 25 mils, top coat at 18 mils.
   6. Qualideck, APT, Harmony, PA. Primer, base coat at 25 mils, grit coat at 25 mils, top coat at 18 mils.

2.3 DECK COATING – EPOXY FULL SYSTEM (LIBERTY SQUARE)

A. Provide a heavy duty epoxy deck coating system as indicated on Drawings.

B. Reviewed Heavy Duty Epoxy Solvent-Free Deck Coating Systems:
   1. Iso-Flex 760 EU HL (extreme duty), LymTal International, Inc., Orion, MI. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.
   2. Auto-Gard E Severe Duty, Neogard Corp., Dallas, TX. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.

3. MasterSeal Traffic 2530, BASF Building Systems, Shakopee, MN. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.
4. Mark-170.2 Flexodeck II, Polycarb, Inc., Cleveland, Ohio. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.
5. Kelmar FWC III, Technical Barrier Systems, Inc., Oakville, Ontario. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.
6. Flexdeck System, RPM Company, Cleveland, OH. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.
7. Sikalastic 720/Sikadur 22 Lo-Mod, Sika Corporation, Lyndhurst, NJ. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils.
8. Qualideck with Qualipur 552 E as epoxy grit coat, APT, Harmony, PA. Primer, base coat at 25 mils, epoxy grit coat at 25 mils, and a top coat at 18 mils

2.4 EPOXY/SAND FILL – SCALING REPAIR

A. Provide a heavy duty epoxy deck coating with aggregate as indicated on Drawings.

B. Concrete Scaling Repair: Minimum 1/4-inch surface amplitude.

C. Extend material with sand in accordance with Manufacturer's recommendations.

D. Reviewed Heavy Duty Epoxy Solvent-Free Deck Coating:
1. 70714/70715 (Auto-Gard E), Neogard Corp., Dallas, TX.
2. Sikadur 22 Lo-Mod, Sika Corporation, Lyndhurst, NJ.
3. Q552E (Qualideck), APT, Harmony, PA.
4. Or reviewed equal.

2.5 DECK COATING – AGGREGATE

A. Size: 12/20, or larger and approved by coating manufacturer.

2.6 EPOXY BROADCAST SYSTEM

A. Provide an epoxy broadcast coating system as indicated on Drawings.

B. Reviewed Epoxy Broadcast Coating Systems:
1. Flexolith, Euclid Chemical, Cleveland, OH.
2. MasterSeal 350, Sika Corporation, Lyndhurst, NJ.
3. Sikadur 22 Lo-Mod, Sika Corporation, Lyndhurst, NJ.

PART 3 - EXECUTION

3.1 INSPECTION AND COORDINATION

A. Inspect surfaces to receive Work and report immediately in writing to Engineer as required in General Conditions deficiencies in surface which render it unsuitable for proper execution of this Work. Do not proceed with Work until unsatisfactory conditions have been corrected in an acceptable manner in accordance with Engineer.

B. Coordinate and verify that related Work meets following requirements:
1. Concrete surfaces are finished, cleaned and prepped, and have completed required curing period.
2. Previous surface treatments have been removed or are compatible with the systems to be installed.
3. Systems selected for use are compatible with each other.
4. Concrete repairs are completed.
5. Sealant installation may occur several months prior to deck coating. Installer to repair damaged or defective sealants prior to deck coating installation.

3.2 PREPARATION

A. Remove oil, grease spots, and contaminates in accordance with Manufacturer's recommendations.

B. Remove the existing striping.

C. Shotblast concrete surfaces to receive deck coating. Shotblast equipment performance requirements are as follows:
   1. Equipment shall be capable of traveling at a constant speed to provide uniform profile. Speed and size of equipment and size of steel shot shall be selected to provide desired preparation without causing unnecessary damage to concrete surface.
   2. Equipment shall vacuum up, or otherwise retain dirt, dust, and debris from blasting operation.
   3. Areas inaccessible to shotblaster (i.e., vertical surfaces, against walls, columns, stairways, etc.) are to be abrasive blasted or abraded to same performance.
   4. Shotblasted surface must be clean with a profile in which a minimum 1/16 inch of existing concrete surface is removed. Fine aggregates must be exposed; however, coarse aggregate must not be exposed. Remove laitance. Surface profile to match ICRI CSP5 in accordance with ICRI Guideline No. 03732, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
   5. Remove debris immediately after surface preparation. Debris includes, but is not limited to, shot, aggregate and dust. Debris shall be placed in a covered dumpster or a covered area where it will not be rebroadcast by wind or weather.

D. Metal surfaces that are to be deck coated shall be abrasive blasted to near white metal, SSPC SP10 in accordance with Steel Structures Painting Council Painting Manual. Rust inhibitive primer shall be installed in accordance with Manufacturer's recommendations within 8 hours of abrasive blasting.

E. Rout and seal cracks greater than 15 mils in accordance with Division 07 Section “Joint Sealants” or as required by the Manufacturer. Cracks, coves, terminations, and unusual situations shall be detailed in accordance with Manufacturer's recommendations.

F. Repair or replace materials damaged by surface preparation operations.

G. Surfaces shall be air blown with sufficient pressure to remove excess dirt, dust and debris, and to assure that concrete is clean prior to application of deck coating.

H. After shotblasting and abrasive blasting and prior to first coat of deck coating, pitting, bug holes, popouts, and shallow scaling shall be prepared in accordance with Manufacturer's recommendations. As a minimum, a thin epoxy mortar shall be used to fill voids.

3.3 ADDITIONAL PREPARATION REQUIREMENTS - RECOAT SYSTEMS

A. Prepare existing coating system in accordance with Manufacturer's written recommendations. As a minimum:
   1. Remove existing coating that is debonded or damaged.
   2. Identify and repair concrete damage prior to installation.
   3. Remove and replace failed crack and construction joint sealants prior to installation.
   4. Clean existing coating by power washing with Manufacturer's approved detergent, using stiff brooms to clean surface, and removing grease with Manufacturer's approved chemical cleaner.
   5. Shotblast existing coating system.
   6. Remove additional damaged or debonded existing coating after shotblasting.
   7. Sensitize existing coating in accordance with Manufacturer's recommendations.

3.4 INSTALLATION/APPLICATION

A. Complete Work in strict accordance with Manufacturer's written instructions and specifications and as indicated herein.

B. Do not apply deck coating materials until concrete has been air dried at temperatures at or above 40 degrees F for at least 28 days after curing period specified in Division 03 Section “Cast-In-Place Concrete for Parking Structures,”, Section “Minor Concrete Repair,” or as otherwise approved by Manufacturer.

C. Concrete shall be dry prior to application of deck coating. Installer shall perform slab moisture testing in accordance with ASTM D 4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method. Testing must be performed in at least 1 location for every 10,000SF of coating. Use of heat lamps for performing tests may be required in areas not exposed to sunlight.

D. Do not apply deck coating material until concrete and air temperature is at or above 40 degrees F. Provide appropriate enclosures and necessary heating for application. Air temperatures directly below and above the slab being coated must be maintained at a minimum of 45 degrees F up to 48 hours prior to coating and at 45 degrees F for a minimum of 72 hours after coating, or as required for full curing of material. Provide high/low thermometers within Work area. As a minimum, provide two thermometers directly below slab and two directly above slab being coated.

E. All deck coating shall maintain straight edges at terminations.

F. Surfaces to be deck coated shall be divided into areas in accordance with the Manufacturer's recommended yield for the specified thickness and for specific container size of material. Area is to be divided by keel marks, or another Engineer reviewed method.

G. Provide adequate cure time for sealants, minimum 8 hours, to be tack free prior to deck coating. Provide a detail coat at construction joints, control joints, joints at perimeter of patches, cold joints and cracks (sealed and unsealed), minimum of 4 inches wide. Detail coat shall be same thickness as base coat unless Manufacturer's requirements are stricter. Detail coat shall cure a minimum of 12 hours prior to base coating.

H. Extend deck coating up vertical surfaces as indicated on Drawings.

I. Incorporate aggregate until refusal. Aggregate until refusal will result in a surface that is tan in color. Additional aggregate may have to be added after first pass. Seed topcoat with aggregate and backroll.

J. Complete Work under this Section before painting line stripes.

3.5 ADDITIONAL INSTALLATION REQUIREMENTS - RECOAT SYSTEMS

A. Where base concrete is exposed provide primer and base coat.

B. Use primer over entire area as required by Manufacturer.

C. Apply recoat system over areas as specified.

3.6 ADDITIONAL INSTALLATION REQUIREMENTS – EPOXY BROADCAST SYSTEM

A. Wear Course: Apply neat epoxy at 40 sf/gal and immediately broadcast aggregate to refusal. Remove excess aggregate when system is tack-free.

B. Top Coat: After wear course has cured and all excess aggregate has been removed, apply neat epoxy at 60 sf/gal. Immediately broadcast aggregate to refusal. Allow system to cure and remove all excess aggregate.

3.7 DAMAGE AND REPAIRS

A. Necessary repairs for deck coating resulting from dry film testing are to be repaired by Installer.

B. Pinholing of deck coating will be cause for rejection. Installer shall repair and take necessary steps to prevent pinholing to occur at no additional expense to Owner.

3.8 CLEANING

A. Remove excess primer, sealant, deck coating, and masking materials from structure.

B. Clean materials installed under this Section according to Division 01 Section “Cleaning and Waste Management.”

END OF SECTION 07 18 00

SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes furnishing labor, materials, equipment, and supervision to install all items listed, but not limited to:
   1. Through-wall flashings.
   2. All required inserts, receivers, reglets, cleats, anchors, plates, seaming, fasteners, and accessories for the above.

B. Basis of Contract Payments: Through-wall flashing cost to be included in repair costs.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the pertinent provisions of the following:
   1. ASTM Standard Specifications:
      a. A653: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
      b. B32: Standard Specification for Solder Metal
      c. B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
   2. SMACNA - Sheet Metal and Air Conditioning Contractors National Association, Inc.:
      a. SMACNA Architectural Sheet Metal Manual, current edition.
   3. NRCA - National Roofing Contractors Association:
      a. NRCA Roofing Manual, current edition.

1.4 SUBMITTALS

A. Submit for review and approval shop drawings indicating details of typical and non-typical conditions, typical formed configurations, seams, joints, thickness and gages of metal, dimensions, types, methods, and spacing of anchors for each item shown and required by conditions.

B. Submit for record statement that metal complies with reference standards.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with ASTM A653 and the SMACNA Architectural Sheet Metal Manual.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Materials shall be new, top quality of their respective kinds, standard sizes and fabricated in a shop whose principal business is manufacturing the items specified in this Section.

B. Stainless Steel:
   1. ASTM A167 Type 304, not lighter than 24 gauge, and with a standard 2B finish for the following:
      a. Through-wall flashing, as shown on the Drawings.

2.2 ACCESSORIES

A. Asphalt Mastic Cement: Non-running, heavy body, fibered mastic composed of asphalt and other non-asbestos mineral ingredients, meeting ASTM D4586-86 requirements.
1. Provide Perflash, as manufactured by Performance Roof Systems, Inc.

B. Asphalt Primer: Brush-grade, asphaltic base material meeting ASTM D41 requirements.

C. Solder: ANSI/ASTM B32 50/50 Type.

D. Sealant: Refer to Division 07 Section “Joint Sealants for Parking Structures.”

2.3 SCHEDULE OF FASTENERS

A. Cleats to masonry: 1-1/4-inch long “Metal HIT Anchor” expansion anchors with zinc alloy sheath and stainless steel drive nail, as manufactured by Hilti Corporation.

2.4 FABRICATION

A. Form pieces in longest practical lengths.

B. Hem exposed edges of metal 1/2-inch; miter and seal corners.

C. Form materials with cover plate seam.

D. Weld, solder, mechanically fasten or crimp and seal metal joints.

E. Fabricate vertical faces with bottom edge formed outward 1/4-inch and hemmed to form drip.

F. Form and solder 2-inch minimum end dams at ends of through-wall flashing.

G. Form ends of sheet metal sill pans as indicated in the Drawings.

H. Fabricate with required connection pieces.

I. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

J. Slot all holes for fastening sheet metal copings as necessary to allow for thermal expansion and contraction. Cover exposed holes with appropriate washers.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect area to receive the Work and report immediately in writing to the Architect, as required in the General Conditions, any unacceptable conditions.

B. Examine all surfaces to receive the flashing and sheet metal. Verify all dimensions and conditions of in-place and subsequent construction.

C. Installation of metal flashing and sheet metal shall constitute acceptance of the existing conditions.

3.2 PREPARATION

A. Field measure site conditions prior to fabricating work.

B. Apply bituminous protective backing on surfaces in contact with dissimilar materials.

3.3 GENERAL INSTALLATION

A. Furnish and install sheet metal work to provide weatherproof installations warranted against leaks and weather damage through severe temperature and weather conditions.
   1. Overlap seams in direction of water flow.
   2. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

B. Furnish edge strips and cleats where sheet metal extends over edges and where necessary to secure sheet metal work.

C. Ensure that sheet metal work presents a finished appearance which is neat, uniform and possessing aesthetic characteristics of good architectural sheet metal work.

D. Provide all miscellaneous sheet metal work not specifically assigned to other trades. Furnish miscellaneous sheet metal work, accessories or other items essential to completeness of all sheet metal installation.

E. Install flashing and sheet metal in accordance with the manufacturer's installation instructions and the applicable details in the SMACNA Architectural Sheet Metal Manual and NRCA Roofing Manual.

F. When soldering any metal, thoroughly clean the parts to be joined of all grease, dirt or other foreign matter, using a clean cloth and solvent. Smooth surfaces should be roughened with clean emery cloth or sandpaper. Do not use ordinary steel wool.

G. Perform soldering slowly with well-heated base metals, so as to thoroughly heat the seam and sweat the solder through its full width.

H. Thoroughly wash acid flux with a soda solution after soldering and thoroughly rinse. Remove all soldering flux residue on exposed and painted surfaces.

I. Use ample solder and ensure that seams show at least one full-inch of evenly flowed solder. Wherever possible, all soldering shall be done in flat position. Seams on slopes steeper than 45 degrees shall be soldered a second time.

J. Lap joints:
   1. Provide 4-inch minimum laps.
   2. Apply sealant at all joints.

K. Butt joints:
   1. Provide 12-inch wide back-up plates at butt joints of sheet metal flashing, copings, and gravel stop details.
   2. Install 2 rows of fasteners in the back-up plates 2-inches away from the butt joint seam in a concealed or “blind” fashion.
   3. Do not restrict movement of sheet metal flashings, gravel stops, and copings.
   4. Apply double row of sealant along edges of each back-up plate

L. End Dams
   1. Provide end dams at repair limits.
      a. When sheet metal flashings are terminated within brick masonry expansion joints install an unsealed lap at the end dams.

3.4 THROUGH-WALL FLASHING

A. Cut reglet in bed joint of masonry backup.

B. Prime the exterior surface of the concrete masonry backup walls with asphalt primer and allow to dry.

C. Install 2-piece through-wall flashing where shown on the Drawings. Seal lapped joints with specified sealant and mechanically fasten with blind rivets.

D. Install sealant in reglet joint as shown on the Drawings.

E. Ensure there is a minimum 1/4-inch minimum modified asphalt overflow at all seams. Achieve 100 percent adhesion at all seams.

F. Terminate through-wall flashing as shown on Drawings.

3.5 GALVANIC CORROSION

A. Prevent dissimilar metal contact where possible. This shall include not only bi-metallic joints, but also fasteners that pass through new and existing flashing metals.

3.6 MISCELLANEOUS

A. Set sheet metal and trim items level, true to line, and plumb.

B. Secure to masonry with approved fasteners.

C. Set metal already formed in place and fasten to substrate by means of cleats and/or fasteners as required on the Drawings, Specifications, and site conditions.

3.7 CLEANING

A. Remove all scraps and dirt immediately upon completion of work.

B. Clean exposed metal surfaces, removing substances which might cause corrosion of metal, or deterioration of finishes.

C. Protection: Provide procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

D. Clean materials installed under this Section according to Division 01 Section “Cleaning and Waste Management.”

END OF SECTION 07 62 00

SECTION 07 92 23 – JOINT SEALANTS FOR PARKING STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes furnishing labor, materials, equipment, and supervision to install joint sealants, including surface preparation.

B. Basis of Contract Payments:
   1. Determine final Contract Price by actual quantities installed at unit prices stated in Contractor's Bid for the following:
      a. Joint and crack sealants will be paid on a unit price basis. Refer to Bid form.
      b. Joint widening or other necessary modifications shall be incidental to system cost.
   2. Work not included in this Section: Work by joint sealant Installer shall include deck coatings specified in Division 07 Section “Traffic Coatings.”

1.3 SUBMITTALS

A. Action Submittals:
   1. Product Data: Manufacturer's spec data sheets of each product to be used.
   2. Samples:
      a. For each type of joint sealants, including color(s).
      b. Samples may also be requested for chemical analysis.
      c. Sample of Warranty prior to application.
   3. Quality Assurance/Control Submittals:
      a. Complete description of the joint sealant system including primer, sealant material, and backer rods or bond breakers. Also indicate placement and installation procedures along with material working requirements, shelf life, and performance data.
      b. Qualifications of Manufacturer's representative.
      c. Qualification statement of installer stating projects, size and location.

B. Informational Submittals:
   1. Sequence of sealant placement in structure. Coordinate the sealant installation to allow required minimum concrete cure times.
   2. Safety Data Sheets (SDS) of each product, solvent, or related chemicals to be used and certification that materials conform to local, state and federal environmental and worker's safety laws and regulations.
   3. Certification that joint sealant system is compatible with products in Divisions 03 and 07 to which it will come in contact.

1.4 PROJECT CONDITIONS

A. Manufacturer and installer are required to confirm that materials used in accordance with this Section conform to local, state, and federal environmental and workers' safety laws and regulations.
   1. VOC content of materials shall not exceed the limits of Environmental Protection Agency National Volatile Organic Compound Emission Standards for Architectural Coatings (40CFR59).

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide a qualified representative to assist installer and Engineer as specified herein. Representative shall be experienced in placement of sealant material.

B. Joint Sealant Installer Qualifications:
   1. Be approved by joint sealant Manufacturer.
   2. Shall have a minimum of 5 years' experience in application of one of specified joint sealant systems and have experience for a project in size of 5,000 LF or greater.

C. Testing Requirements:
   1. Installer shall perform adhesion test in presence of Engineer at rate of 1 test per 1,000 lineal feet of joint. Perform adhesion test a minimum of 7 days after installation. Procedure in accordance with Manufacturer's standard or as follows:
      a. Make a knife cut from one side of joint to other.
      b. Make 2 cuts approximately 2 inches long at sides of joint, meeting first cut at top of 2-inch cuts.
      c. Grasp 2-inch piece of sealant and try to pull uncut sealant out of joint.
      d. If adhesion is adequate, sealant should tear cohesively in itself or be very difficult to adhesively remove from surface.
      e. Sealant shall be replaced by applying more sealant in same manner as original.
   2. If test results are unsatisfactory, perform more frequent testing until satisfactory results are consistently obtained.
   3. Replace sealant which proves defective resulting from above test at no additional cost to Owner.

D. Flow/Leak Test: Arrange for and wet slabs with water for purpose of detecting defects in waterproofing which would result in leaks or inadequate drainage, or both. Wet slab surfaces until water flows freely to drains. Do not install insulation or ceilings in finished spaces until drainage test has been completed on slab above and reviewed by Engineer for acceptance.
   1. Check caulked joints for leaks. Potentially leaking joints are located by noting whether water from flood test is observed at underside of slabs or running down faces of walls. Correct leaking joints by repairing waterproofing.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable. Include the following information:
   1. Name of product.
   2. Name of Manufacturer.
   3. Date of manufacture.
   4. Lot or batch number.
   5. UL labels.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, and damage by weather or elements, and according to Manufacturer's directions.

C. Reject damaged, deteriorated or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

D. At no time shall the weight of stored material placed on a slab area exceed 30 PSF or 2,000 lbs. over 20 square inches.

1.7 WARRANTY

A. Provide to Owner a Warranty by Installer and Manufacturer that joint sealant system will be free of defects, water penetration, and chemical damage related to design, workmanship, or material deficiency, consisting of, but not limited to:
   1. Surface crazing or other weathering deficiency.
   2. Abrasion or tear failure resulting from normal traffic use.
   3. Tear failure resulting from anticipated movement.
   4. Debonding from substrate or delaminating between layers.
   5. Defective installation.

B. Installer and Manufacturer will warrant and provide at no charge to Owner materials and labor needed to properly repair or replace product and replace parking stripes within duration of Warranty.

C. In event of either party's non-performance, full burden and responsibility for any Warranty repair shall fall upon remaining party.

D. Horizontal Traffic Bearing Applications: Normal traffic is considered to include snow removal equipment with rubber tipped blades as described in the National Parking Association publication, *Parking Garage Maintenance Manual*.

E. Vandalism, abrasive maintenance equipment, and construction traffic are not normal traffic use and are exempt from Warranty.

F. Warranty Duration – Polyurethane and Traffic Bearing Silicone Sealant:
1. Bid price shall include a 5 year Warranty commencing with date of Project acceptance in accordance with General Conditions.
2. Although completed areas of facility may be opened to traffic and parking, commencement of Warranty period will not occur prior to acceptance of entire Project.
3. A single Warranty commencement date will apply to all waterproofing.

G. Warranty Duration – Non-Traffic Bearing Silicone Sealant:
1. Bid price shall include a 5 year installer Warranty and a 10 year manufacturer Warranty commencing with date of Project acceptance in accordance with General Conditions.
2. A single Warranty commencement date will apply to all waterproofing.

PART 2 - PRODUCTS

2.1 JOINT SEALANT SYSTEM - MULTI-COMPONENT POLYURETHANE

A. Horizontal Joint Sealant (except cove joints):
1. Traffic-bearing, multi-component, self-leveling or non-sag unmodified polyurethane sealant, gray in color unless indicated otherwise, containing no coal tar, asphalt, or other adulterants and conforming to ASTM C 920, Standard Specification for Elastomeric Joint Sealants, Type M, Grade P or NS, Class 25, use T and Federal Specification TT-S-00227, Type I or II, Class A.
2. On slopes greater than 2%, use slope grade versions of specified self-leveling sealants or non-sag sealants, as specified for vertical and cove joint sealants, in accordance with Manufacturer's recommendations.
3. Reviewed Horizontal Joint Sealants:
   a. Iso-Flex 880GB or 881, LymTal International, Inc., Orion, MI.
   b. Urexpan NR-200 or Dynatred, Pecora Corp., Harleysville, PA.
   c. Sikaflex - 2c NS/SL, Sika Corp., Lyndhurst, NJ.
   d. MasterSeal SL2, Sonneborn Building Products, BASF Building Systems, Shakopee, MN.
   e. THC-901, Tremco Inc., Cleveland, OH.
   f. Vulkem 445SSL, Tremco Inc., Cleveland, OH.

B. Vertical and Cove Joint Sealants:
1. Multi-component, non-sag unmodified polyurethane sealant, gray in color unless otherwise noted, containing no coal tar, asphalt, or other adulterants and conforming to ASTM C 920, Type M, Grade NS, Class 25, use NT and Federal Specification TT-S-00227E, Type II, Class A.
2. Reviewed Vertical and Cove Joint Sealants:
   a. ISO-FLEX 881, LymTal International, Inc., Orion, MI.
   b. Dynatrol II, Pecora Corp., Harleysville, PA.
   c. Sikaflex - 2c NS, Sika Corp., Lyndhurst, NJ.
   d. MasterSeal NP2, Sonneborn Building Products, BASF Building Systems, Shakopee, MN.
   e. Dymeric 240 FC, Tremco Inc., Cleveland, OH.

2.2 JOINT SEALANT SYSTEM - SILICONE

A. Horizontal-Traffic-Bearing, Vertical, and Cove Joint Sealant:
   1. Traffic-bearing, single-component, non-sag silicone sealant, gray in color unless otherwise indicated.
   2. Reviewed Horizontal-Traffic-Bearing Vertical, and Cove Joint Sealants:
      a. Dow NS Parking Structure Sealant, Dow Corning, Corp., Midland, MI.
      b. Spectrem 800, Tremco Inc., Cleveland, OH.
      c. Sikasil 728 NS, Sika Corp, Lyndhurst, NJ.
      d. 310-SL, Pecora Corp., Harleysville, PA.

2.3 FAÇADE SEALANT SYSTEM – SILICONE (LIBERTY SQUARE)

A. Façade Sealant:
   1. Neutral-curing silicone sealant, single-component, ultra-low modulus, non-sag.
   2. Reviewed Façade Sealants:
      a. DOWSIL 790, Dow Corning, Corp., Midland, MI.
      b. Or reviewed equal.
   3. Color to match existing from manufacturer’s standard colors.

2.4 BACKER ROD

A. Diameter: As recommended by Manufacturer for joint sizes indicated on Drawings.

B. Extruded round, closed cell or bi-cellular, low-density polyethylene or polyolefin foam material with a skin-like outer texture.

C. Reviewed Closed Cell Backer Rods:
   1. Mile High Foam Backer Rod, Backer Rod Manufacturing, Inc., Denver, CO.
   2. ITP Standard Backer Rod Insulation, Industrial Thermo Polymers Limited, Buffalo, NY.
   3. HBR, Nomaco, Inc., Zebulon, NC.
   4. MasterSeal 920 Closed-Cell Backer-Rod, BASF Building Systems, Shakopee, MN.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect surfaces to receive Work and report immediately in writing to Engineer as required in General Conditions deficiencies in surface which render it unsuitable for proper execution of this Work. Do not proceed with Work until unsatisfactory conditions have been corrected in an acceptable manner. Commencement of Work implies acceptance of related Work.

B. Coordinate and verify that related Work meets following requirements.
   1. Concrete surfaces are finished, cleaned and prepped, as specified by Manufacturer for system to be installed.
   2. Curing compounds used on concrete surfaces are compatible with Work to be installed.
   3. Systems selected for use are compatible with each other.

3.2 PREPARATION

A. Grind joint edges smooth and straight prior to installation.

B. Surfaces that are to receive joint sealant shall be dry and thoroughly cleaned by mechanical means of loose particles, existing joint sealant, laitance, dirt, dust, oil, grease or other foreign matter. Use mechanical methods, such as grinding or sandblasting, to clean joint surfaces to sound, virgin concrete.

C. Check preparation of substrate to ensure adhesion of joint sealant.

D. Correct unsatisfactory conditions in a manner acceptable to Manufacturer and Engineer before installation of joint sealant system.

E. Rout cracks with a grinding tool to produce the profile indicated on Drawings. Crack must be centered in the routed notch.

3.3 INSTALLATION/APPLICATION

A. Perform Work in strict accordance with Manufacturer's written instructions and specifications and as indicated on Drawings.

B. Do not apply joint sealant system until concrete has been air dried at temperatures at or above 40 degrees F. for at least 28 days after curing period specified in Division 03 Section “Cast-In-Place Concrete for Parking Structures” or as otherwise approved by Manufacturer.

C. Install bond breaker or backer rod as indicated on Drawings.

D. Prime joints and cracks.

E. Completely fill joint with sealant, without sagging or smearing onto adjacent surfaces.

F. In areas not receiving deck coating, fill horizontal joints and cracks until slightly recessed to avoid direct contact with wheel traffic.

G. Cease installation under adverse weather conditions, or when temperatures are below 40 degrees F or below or above Manufacturer's recommended limitations.

H. Protect joint sealant as required until sealant is fully cured.

3.4 CLEANING

A. Remove excess primer, sealant, and masking materials from structure.

B. Clean materials installed under this Section according to Division 01 Section “Cleaning and Waste Management.”

END OF SECTION 07 92 23

SECTION 09 91 33 – RESTORATION PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes providing and furnishing permits, labor, materials, equipment, and services to prepare and paint and stain as indicated on the Drawings. Provide for the following:
   1. Paint steel precast connections and fire protection piping to match existing.
   2. Stain/paint concrete repairs to match existing.

B. Basis of Contract Payments:
   1. Steel paint preparation and application will be paid on a unit price or lump sum basis. Refer to Bid form.
   2. Concrete staining/painting costs to be included in repair costs, unless otherwise noted.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. American Society for Testing and Materials (ASTM) Standards, as cited herein.
   2. Steel Structures Painting Council (SSPC), Volume I, Good Painting Practices and Volume II, Systems and Specifications.
   3. Local, state, or federal laws and regulations governing Volatile Organic Compounds (VOC) in paint or paint products.

1.4 SUBMITTALS

A. Manufacturer’s literature: Submit for review:
   1. Manufacturer's spec data sheets for paint systems; including primer, intermediate, and final coats.
   2. Safety Data Sheets (SDS) for each type of material used.
   3. Submit complete preparation and painting procedure to be followed. As a minimum, include the following:
      a. Surface preparation.
      b. Paint mixing and application.
      c. Inspection criteria.
      d. Paint characteristics.
      e. Dust and fume control.
      f. Storage and handling.
      g. Repair to paint system.
      h. Paint curing.
      i. Compatibility of each component.
   4. Manufacturer's standard color chart.

B. Certifications: Submit for review for each of the following:
   1. Submit compliance with local and federal guidelines governing paint application.
   2. Submit verification that proper permits have been obtained for contemplated work.
   3. Submit for record test results of actual measured wet and dry film thicknesses and certification that the preparation and application of surfaces complies with this specification and the Manufacturer's specification. Indicate the following:
      a. Location.
      b. Date.
      c. Weather and other pertinent information.
   4. For record results of adhesion tests.

C. Samples: Submit for review:
   1. Sample color chips for each topcoat color.
   2. Provide samples measuring 12 inches x 12 inches, mounted on hardboard, and with a texture to simulate actual conditions.

1.5 QUALITY ASSURANCE

A. Provide coating systems produced by the same Manufacturer.

B. Check membrane wet film thickness by making a test consisting of 5 wet film readings within a 1 square foot area.
   1. The average film thickness shall be within 10 percent minus or 30 percent plus of the Manufacturer's recommended average wet film thickness.
   2. No individual reading shall be more than ±50 percent of the manufacturer's recommended wet film thickness.
   3. Provide the quantity of wet film thickness tests for each coat are as follows:
      a. Steel: Two tests for every 500 sf or two tests for every flight of stairs.
   4. If thickness check fails the above requirements, more frequent testing will be required as directed by Engineer.

C. Test coating systems over an existing paint system for adhesion using a cross hatch adhesion test in accordance with ASTM D3359, Method B, not less than a 4B rating or Elcometer adhesion testing in accordance with ASTM D4541.
   1. Provide not less than 1000 psi pull average on 3 tests.

D. Manufacturer shall review locations where there is an existing paint/stain system to determine if their system is compatible with the existing system.

1.6 PROJECT CONDITIONS

A. Confirm that materials used in accordance with this Section conform to local, state, and federal environmental and workers' safety laws and regulations.

B. Provide necessary containment to protect on Site and adjoining property from damage during cleaning and coating operations.

C. Meet regulations regarding air quality emission standards, OSHA, NFPA, EPA and other governing law set by local, state, and federal agencies.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, and damage by weather or elements, and according to Manufacturer's directions.
   1. Mix and prepare coatings only in areas designated for that purpose.
   2. Provide clean cans and buckets required for mixing coatings and for receiving rags and other waste materials associated with painting.
      a. Clean buckets regularly.
      b. At the close of each day's work remove used rags and other waste materials associated with painting.
   3. Take precautions to prevent fire in or around coatings materials.
      a. Provide and maintain hand fire extinguisher near storage and mixing area.

C. Reject damaged, deteriorated, or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 STEEL COATING SYSTEM - GALVANIZED

A. Provide coating system consisting of prime coat and urethane finish coat 2-3 mil dry film thickness in accordance with Manufacturer's recommendations.

B. Provide prime coat and finish coat from same Manufacturer and of a different color.
   1. Finish coat color to be approved by Owner.

C. Reviewed Paint Systems – Galvanized:
   1. PPG Industries System:
      a. Primer: Pittguard 97-145 Series.
      b. Urethane: 95-812 Series Pitthane Ultra.
   2. Or reviewed equal.

2.2 STEEL COATING SYSTEM

A. Provide coating system consisting of zinc prime coat and urethane finish coat 2-3 mil dry film thickness in accordance with Manufacturer's recommendations.

B. Provide prime coat and finish coat from same Manufacturer and of a different color.
   1. Finish coat color to be approved by Owner.

C. Prime coat is only required at bare steel.

D. Reviewed Paint Systems:
   1. PPG Industries System:
      a. Zinc Primer: Aquapon 97-670 Series.
      b. Urethane: 95-812 Series Pitthane Ultra.
   2. Or reviewed equal.

2.3 CONCRETE STAIN SYSTEM

A. Provide system consisting of 2 coats of a (white) water-base penetrating stain in accordance with Manufacturers recommendations.

B. Reviewed Stain Systems:
   1. CanyonTone Stain, United Coatings (GAF).
   2. H & C COLORTOP Water-Based Solid Color Concrete Stain, H&C Products Group (Sherwin Williams).
   3. Series 617 Conformal Stain WB, Tnemec Industrial Coatings.
   4. Or reviewed Equal.

2.4 CONCRETE PAINT SYSTEM

A. Provide system designed for concrete and masonry applications of a primer and urethane finish coat.

B. Provide primer and finish coat from same Manufacturer.

C. Color of finish coat shall match existing.

D. Reviewed Paint Systems:
   1. Carboline Company Paint System:
      a. Primer: As recommended by Manufacturer.
      b. Finish Coat: Carbothane 134 HS. One coat to a dry mil thickness 2-3 mils.
   2. PPG Industries Paint System:
      a. Primer: As recommended by Manufacturer.
      b. Finish Coat: 95-800 Series-Pitthane Acrylic Urethane. One coat to a dry mil thickness 1.5-2 mils.

3. Tnemec Paint System:
   a. Primer: As recommended by Manufacturer.
   b. Finish Coat: Endura-Shield 73 Series. One coat to a dry mil thickness 2 mils.
4. Sherwin Williams Paint System:
   a. Primer: As recommended by Manufacturer.
   b. Finish Coat: Pro Industrial Urethane Alkyd Enamel. One coat to dry mil thickness 2 mils.
5. Or reviewed equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect surfaces to which paint will be applied and send a report to Engineer of conditions detrimental to the proper execution of this work, in accordance with the General Conditions.

B. Do not proceed until unsatisfactory conditions are acceptably remedied. Commencement of work implies acceptance of related work.

C. Do not apply coating system without review by Engineer as to the proposed method of the surface preparation.

D. Before commencing work, make certain that the surface is in proper condition to receive coating system, that surfaces are clean, dry, smooth, and at proper temperature as recommended by Manufacturer.

E. Provide adequate ventilation to remove fumes to a safe location and to confine and control fumes so that life and property is not endangered.

F. Protect adjacent surfaces, vehicles, and equipment from overspray.

G. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in Manufacturer's written instructions.

H. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.

3.2 PREPARATION

A. Mask boundaries to provide straight edges.

B. Do not intermix materials of different character or different Manufacturer.

C. Do not thin material except as recommended by Manufacturer.

D. Remove hardware, covers, plates, signs, and similar items already in place that are removable and are not to be painted.
   1. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   2. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed.
   3. Remove surface-applied protection.

E. Preparation of Corroded Metal Surfaces:
   1. Abrasive blast clean corroded steel in accordance with Steel Structures Painting Council surface preparation specification SSPG SP10 - White Metal.
   2. Provide a blast profile as recommended by the paint Manufacturer.
   3. Measure the blast profile using Testex Replica Tape.
   4. After blasting and before painting, brush the surface with clean brushes made of fiber or bristle, or clean by vacuum, removing traces of blast products from the surface as well as corners and pockets.
   5. Perform blast cleaning operations in such a manner that no damage is done to partially or completed portions of the Work.

6. Do not conduct dry blast cleaning operations:
    a. On surfaces that will be wet after blasting and before painting.
    b. When the surfaces are less than 5 degrees F. above the dew point.
    c. When the relative humidity of the air is greater than 85 percent, unless a water-tolerating inhibitive treatment or coating will be applied before rusting occurs.
7. Apply primer within 8 hours of surface preparation.

F. Preparation of Non-Corroded Metal Surfaces:
1. Remove all loose paint.
2. Ensure surfaces are clean and dry.
3. Ensure surface is free of contaminants such as dirt, dust, laitance, grease, and other contaminants that would interfere with the adhesion of the specified coating system.
4. Sand or abrasive blast existing painted surfaces to blend transition areas that are chipped and to roughen surface to promote proper adhesion of the specified coating system.

G. Preparation of Coated and Uncoated Concrete Surfaces:
1. Ensure surfaces are clean and dry.
2. Ensure surface is free of contaminants such as dirt, dust, laitance, grease, previously applied coatings and other contaminants that would interfere with the adhesion of the specified coating system.
3. Ensure surfaces are dry prior to coating.
4. Allow new concrete to cure for a minimum of 28 days prior to coating, or as required by Manufacturer.
5. Determine alkalinity and moisture content of surfaces to be coated by performing appropriate tests.
    a. If surfaces are found to be unsuitable for painting, correct this condition prior to painting.
    b. Do not paint surfaces with moisture contents exceeding Manufacturer's limits.

3.3 APPLICATION

A. Perform work:
1. By skilled craftsmen who are qualified to perform the required work.
2. Performed in a manner comparable to the best standards of practice found in that trade.
3. Appling materials evenly to be free from sags, runs, crawls, wrinkles, holidays, and other application defects.
4. When brushed coats:
    a. Use proper consistency and properly brushed out strokes to show the minimum of brush marks.
    b. To provide finished and dried coats with brush strokes that appear in the vertical direction only, with no curved brush marks showing.
5. Ensure each coat is thoroughly dry before the succeeding coat is applied.

B. In applying coatings by spray gun:
1. Apply the material in a wet coating that remains glossy wet for at least 20 seconds after application.
2. Perform spraying in the crisscross lap method of spraying, striking first in one direction and shortly thereafter spraying across this same section at right angles to the first set of passes, to provide a continuous wet film of the finish coat.

C. Apply coating systems in accordance with the Manufacturer's printed instructions for each specific coating.

D. Where 2 or more coats are specified, each subsequent coat shall be of sufficient color difference that defects such as holidays, skips, and thin spots can be easily seen in contrast with the preceding coat.

E. Apply the base coating within 8 hours after the final abrasive blasting.

3.4 REPAIR

A. Repair paint damage by re-application of the paint system in accordance with the Manufacturer's recommendations.

B. Apply additional coats if the coating does not completely hide the undercoat.

END OF SECTION 09 91 33

SECTION 22 14 00 – STORMWATER PLUMBING FOR PARKING STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes furnishing permits, labor, materials, fabrication and installation of the supplementary trench drains and new storm drain/riser system.

B. Complete work necessary to meet the building codes. If there are changes in the Drawings and Specifications be required to comply, notify the Engineer.

C. Basis of Contract Payments:
   1. Determine final Contract Price by actual quantities installed at unit prices stated in Contractor's Bid for the following:
      a. Installation of supplemental trench drains will be paid on a unit price basis. Refer to Bid form.
      b. Demolition and patching of the concrete, installation of joint sealants, and relocation of electrical shall be incidental to trench drain cost.
   2. Installation of new storm drain/riser system will be paid on a lump sum basis. Refer to Bid form.
      a. Miscellaneous hardware, hangers, and concrete coring work shall be incident.
   3. Scoping existing floor drain system below grade will be paid on a lump sum basis. Refer to Bid form.
   4. No extra compensation will be allowed because of differences between actual measurements and dimensions indicated on the Drawings.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ASME.
   2. ANSI.
   3. ASTM.
   4. Local Building Codes and latest requirements.

1.4 QUALITY ASSURANCE

A. Test the storm drain system under normal conditions of use in accordance with the requirements of the authorities having jurisdiction.

B. Provide instruments for making the tests.

C. Test parts of the system in the presence of the General Contractor and Engineer, for a sufficient period of time to permit a complete examination and inspection.

D. Remedy defects in materials or workmanship which appear during the test and retest the system.

1.5 SUBMITTALS

A. Manufacturer's literature: Submit Spec. Data Sheets.

B. Shop Drawings: Submit for review indicating the following:
   1. For each location:
      a. Floor drains.
      b. Cleanouts.
      c. Plumbing line layout.
      d. Plumbing line supports.
      e. Pipes.
   2. Prepare drawings indicating location of ponding and condition of each existing floor drain.

C. Testing: Submit results of storm drain system testing.

1.6 DELIVERY, STORAGE AND HANDLING

A. Ship in weather-proof enclosures, in weather-proof containers or in weatherproofing packaging. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, and damage by weather or elements, and according to Manufacturer's directions.

C. Reject damaged, deteriorated or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 PIPE

A. PVC Schedule 80, ASTM D 1784 and ASTM D 1785.

2.2 TRENCH DRAINS

A. Provide heavy duty trench drain with closed end caps, no-hub bottom outlet, and heel-proof polyethylene grate.

B. Acceptable heavy-duty Materials:
   1. Z883, Zurn, Erie, PA.
   2. or approved equal.

C. Provide connection hardware as required to complete installation and as indicated on the Drawings.

2.3 CLEANOUTS

A. PVC Schedule 80, ASTM D 2464 and ASTM D 2467.

2.4 HANGERS

A. Adjustable malleable galvanized hangers of clevis type with adjustable galvanized steel rods.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect area to receive the work and report unacceptable conditions immediately in writing to the Engineer, as required in the General Conditions. Do not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner. Commencement of erection implies acceptance of related work.

3.2 PREPARATION

A. Take out necessary permits, arrange for the required inspections and pay fees and expenses associated with performing the Mechanical Work.

B. Locate objects suspended below ceiling, embedded electrical conduit and reinforcement. Offset cored holes to miss existing items. Approval from the Engineer is required for offset dimensions prior to coring.

C. Before starting Work, prepare and submit a schedule of operations outlining the proposed order of procedure giving the dates of execution and the estimated time required for the completion of each step.

D. Verify dimensions in the field.

E. Verify ceiling heights or other architectural and structural details before installing piping.

F. Coordinate Work so as to avoid interferences with other trades. Due to the small scale of the Drawings, it is not possible to indicate offsets, fittings or valves which may be required. Investigate the structural and finish conditions affecting this Work. Plan accordingly, furnish such offsets, fittings and valves as may be required.

3.3 INSTALLATION

A. Cut openings in the slabs as required to install new floor drains.

B. Install piping parallel to building walls and column lines, maintaining clear height as to not interfere with doorways, stairway or traffic, while keeping a neat appearance.

C. Install piping so as to occupy a minimum of space, close to walls, ceiling, columns, or other members providing proper space for covering or removal of pipes.

D. Work pipe into place without springing.

E. Install piping such that it will drain and vent as indicated on the Drawings or required. Pitch horizontal lines 1/8-inch per foot minimum at a uniform grade.

F. Connect piping to existing drain system.

G. Properly support piping installed on suitable pipe hangers and supports. Fabricate the equipment for permanent hangers, supports, and anchors from durable materials suitable for the service conditions and in accordance with the Drawings.

H. Base is required strength of hangers on the combined weight of the piping filled with water.

3.4 CLEANUP

A. At the completion of Work under this Contract, remove the rubbish and accumulated materials from the building in accordance with Division 01 Section “Cleaning and Waste Management.”

B. Provide the entire installation thoroughly free from oil and grease after successfully completing tests and before the Work is turned over to the Owner.

END OF SECTION 22 14 00

SECTION 32 27 25 – PAVEMENT MARKINGS FOR PARKING STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes furnishing material, labor, equipment, and services to paint the following items of the types, patterns, sizes, and colors:
   1. Parking stripes.
   2. Traffic arrows.
   3. Walkway stripes.
   4. Curbs.
   5. Text.
   6. Americans with Disabilities Act (ADA) accessible space logo.

B. Basis of Contract Payments: Pavement marking preparation and application will be paid on a lump sum basis. Refer to Bid form.

1.3 SUBMITTALS

A. Action Submittals:
   1. Manufacturer’s Literature: Manufacturer's spec data sheets of each product to be used.

B. Informational Submittals:
   1. Safety Data Sheets (SDS) of each product, solvent, or related chemicals to be used, and certification that the materials conform to local, state, and federal environmental and worker's safety laws and regulations.
   2. Standard color chips for each color.

1.4 PROJECT CONDITIONS

A. Manufacturer and Installer: Confirm that materials used in accordance with this Section conform to local, state, and federal environmental and workers' safety laws and regulations.
   1. VOC content of materials shall not exceed the limits according to Environmental Protection Agency National Volatile Organic Compound Emission Standards for Architectural Coatings (40CFR59).

B. The Installer: Provide fume control and shall take necessary precautions against injury to personnel and adjacent building occupants during application. As a minimum, Installer shall take the following precautions:
   1. Provide and maintain barricades.
   2. Locate and protect building air intakes during application.
   3. Follow the state, federal, and local safety regulations.
   4. Follow the Manufacturers' safety requirements.
   5. Dispose empty containers immediately and properly.
   6. Use protective equipment.
   7. Ensure work area is well vented to the exterior.

1.5 DELIVERY, STORAGE AND HANDLING

A. Ship in weather-proof enclosures, in weather-proof containers or in weatherproof packaging. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable. Include the following information:
   1. Name of Product.
   2. Name of Manufacturer.
   3. Date of Manufacture.
   4. Lot or batch number.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, and damage by weather or elements, and according to Manufacturer's directions.
   1. Mix and prepare coatings only in areas designated for that purpose.
   2. Take precautions to prevent fire in or around coatings materials. Provide and maintain hand fire extinguisher near storage and mixing area.
   3. Do not allow the weight of the stored material placed on a slab area to exceed 30 psf or 2,000 pounds over 20 square inches.

C. Reject damaged, deteriorated, or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 PAVEMENT MARKINGS (LOW VOC ACRYLIC)

A. Materials: Meet Federal Specification TT-P-1952B with a VOC content less than 100 g/L (0.83 lb/gal).

B. Provide pavement markings as indicated on the Drawings.

C. Reviewed low VOC Acrylic Pavement Markings:
   1. SetFast Low VOC Acrylic Traffic Marking Paint, The Sherwin Williams, Cleveland, Ohio.
      a. TM5626; White.
      b. TM5627; Lead-Free Yellow.
      c. Handicap Blue: TM5626 White as base and tint.
   2. Or reviewed equal.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect surfaces to which paint will be applied and report immediately in writing to the Engineer as required in the General Conditions for conditions detrimental to the proper execution of this work.

B. Do not proceed until unsatisfactory conditions are acceptably remedied.
   1. Commencement of work implies acceptance of related work.

3.2 PREPARATION

A. Before commencing work, make certain that surfaces are thoroughly cleaned, dry, and in sound condition.
   1. Cleaning concrete floor surfaces shall meet the requirements of ASTM D4258 for Water Cleaning and Detergent Water Cleaning.

B. Remove existing paint stripes by grinding or scarifying so that no visible paint stripe remains.

C. Do not paint surfaces that are wet or damp.

D. Remove oil, dust, grease, dirt, and other foreign material to ensure adequate adhesion.

E. Lay out striping on each level, using dimensions indicated on the Drawings.
   1. Report discrepancies, interferences, or changes in striping due to field conditions to the Engineer prior to painting.
   2. Remove paint, repair surface, and repaint stripes not applied in strict accordance with the Drawings.

F. Verify compatibility with concrete sealer, joint sealant, traffic bearing membrane, and other surface treatments as specified in Division 07 Section “Water Repellents.”

3.3 MIXING

A. Do not mix different types of materials or materials from different manufacturers.

B. Do not thin material except as recommended by Manufacturer for spray application.

C. Mix paint thoroughly by boxing, stirring or power agitation before use.

3.4 APPLICATION

A. Apply painting and finishing materials in accordance with the Manufacturer's directions.
   1. Use techniques best suited for the material and surfaces to which applied.
   2. Apply at 15 mils wet thickness.

B. Do not apply paint when:
   1. Air or surface temperature, or both, are below 50 degrees F.
   2. Relative humidity exceeds 85%.
   3. Rain is threatening.
   4. Late in the evening when dew might form before drying.

3.5 CLEANING

A. Immediately upon completion of work, clean up paint spots, remove excess materials and equipment, and repair paint damage to other finishes in accordance with Division 01 Section “Cleaning and Waste Management.”

END OF SECTION 32 17 25