

ADVISORY PARKING COMMITTEE
WEDNESDAY, June 7, 2023 @ 7:30am

1. Roll Call
2. Introductions – Michelle Moody
3. Approval of Minutes, May 3, 2023
4. Bike Rack – Presenting to Multi-Modal Board at July or August meeting
5. N. Old Woodward Garage Construction
 - a Contract awarded to RAM Construction at 5/22/23 City Commission meeting.
 - b June 12th projected mobilization date
 - c Lot 5 Repaving – Projected to occur during mid-June
6. Misc. Communication
 - a May APS Update
 - b TIBA Reports
7. Meeting open to the public for items not on the agenda
8. Next Meeting – July 12 2023
9. Adjournment

Notice: Please note that board meetings will be conducted in person. Members of the public can attend in person at Birmingham City Hall or may attend virtually at <https://us06web.zoom.us/j/86082330819>

Meeting ID: 860 8233 0819

Persons with disabilities that may require assistance for effective participation in this public meeting should contact the City Clerk's Office at the number (248) 530-1880, or (248) 644-5115 (for the hearing impaired) at least one day before the meeting to request help in visual, hearing, or other assistance.

Las personas con incapacidad que requieren algún tipo de ayuda para la participación en esta sesión pública deben ponerse en contacto con la oficina del escribano de la ciudad en el número (248) 530-1800 o al (248) 644-5115 (para personas con discapacidad auditiva) un día antes de la reunión para solicitar ayuda a la visual, auditiva, o de otras asistencias. (Title VI of the Civil Rights Act of 1964).

Advisory Parking Committee
Meeting of May 3, 2023
151 Martin Street, City Commission Room, Birmingham, MI

Minutes

These are the minutes of the Advisory Parking Committee ("APC") regular meeting held on Wednesday, May 3, 2023. The meeting was called to order at 7:30 a.m. by Chair Vaitas.

1. Rollcall

Present: Chair Al Vaitas, Vice-Chair Richard Astrein; Jim Arpin, Kevin Kozlowski, Mary-Claire Petcoff, Lisa Silverman, Jennifer Yert

Absent: Lisa Clark, Kelly Cobb

Staff: Parking Systems Manager Ford; City Transcriptionist Eichenhorn, Police Captain Wald

SP+: Catherine Burch

2. Introductions

3. Approval Of Minutes: Meeting Of February 1, 2023

Motion by VC Astrein

Seconded by Ms. Yert to accept the minutes of February 1, 2023 as amended.

Motion carried, 7-0.

VOICE VOTE

Yeas: Vaitas, Kozlowski, Astrein, Petcoff, Arpin, Silverman, Yert

Nays: None

4. Moped parking – Poles/bollards installed – Waiting on ETA on sleeves

PSM Ford presented the item.

Motion by Mr. Kozlowski

Seconded by VC Astrein to recommend that the Multi-Modal Transportation Board install bicycle parking in the moped parking spaces.

Motion carried, 7-0.

VOICE VOTE

Yeas: Vaitas, Kozlowski, Astrein, Petcoff, Arpin, Silverman, Yert

Nays: None

5. Parking Citations – Propose to increase fines for various citations – Captain Wald to

present

PC Wald presented the item and answered informational questions from the APC.

Dr. Silverman recommended that the fines for expired meters remain low, and that the fine for multiple violations be raised. She said there was not evidence that a higher fine would deter parkers from letting their meters expire. She noted that gaining revenue from the parking system was not the APC's or City's primary goal. She also noted there was some public reaction to parking changes in a nearby municipality, and that those concerns could affect the impression of potential parking changes in Birmingham as well.

Ms. Yert concurred.

The Chair said that parking violations are avoidable.

VC Astrein said the majority of offenders were merchants, not patrons of the City's businesses.

VC Astrein agreed with Dr. Silverman that an increase in fines for repeat meter violations was appropriate.

PC Wald summarized the aforementioned parking changes in the nearby municipality at the request of the Chair.

Motion by VC Astrein

Seconded by Mr. Kozlowski to recommend to the City Commission an increase in expired meter violation to \$20, and \$100 after five violations in a calendar year. Also to increase the parking violations to \$175 for handicap.

Motion carried, 7-0.

VOICE VOTE

Yeas: Vaitas, Kozlowski, Astrein, Petcoff, Arpin, Silverman, Yert

Nays: None

6. Monthly Parking

PSM Ford presented the items. PSM Ford and Ms. Burch answered informational questions from the APC.

a. Increase Monthly rate – Starting July 1st

VC Astrein suggested that a premium be added to the most heavily utilized garages. Dr. Silverman concurred.

Motion by Dr. Silverman

Seconded by VC Astrein to raise the monthly rate for Chester to \$70, Old Woodward, Park, and Peabody to \$90, and Pierce to \$100 per month.

Motion carried, 7-0.

VOICE VOTE

Yeas: Vaitas, Kozlowski, Astrein, Petcoff, Arpin, Silverman, Yert

Nays: None

- b. Survey
- c. Increase allocation to sell?
 - i. Park St. Garage – increase by 100 passes
 - ii. Pierce St. Garage – increase by 50 passes

Ms. Petcoff said she was concerned about those with parking passes not being able to find a parking spot in their assigned parking deck around lunchtime.

PSM Ford and Ms. Burch said that the approach was incremental for that reason and that the counts would be monitored daily.

Motion by Dr. Silverman

Seconded by Ms. Yert to increase the Park St. Garage by 100 passes and the Pierce St. Garage by 50.

Motion carried, 7-0.

VOICE VOTE

Yeas: Vaitas, Kozlowski, Astrein, Petcoff, Arpin, Silverman, Yert

Nays: None

7. Addendums to Two Contracts

PSM Ford summarized the items and answered informational questions from the APC.

Ms. Yert noted that the increased fees were helping improve the parking garages and that the public should be made aware of that.

- a. WJE Amendment - \$192,000 – Park St. Garage Façade Alternative
- b. Traffic & Safety - \$72,706 – N. Old Woodward island replacement

8. N. Old Woodward Garage Construction

PSM Ford summarized the items and answered informational questions from the APC.

- a. Pulling ahead construction of this garage.
- b. Bid Opening – 4/28/23
- c. Project work to start May 9th with a completion of October 31st
- d. Peabody and Chester Garages next

9. Misc. Communication

PSM Ford summarized the items.

- a. March APS Update
- b. [RH Article](#)

10. Meeting open to the public for items not on the agenda

In reply to VC Astrein, PC Wald said there were ongoing discussions regarding enforcement and parking for delivery services.

In reply to Mr. Arpin, PSM Ford said that the City was working on increasing electric vehicle (EV) charging capacity, and that updating the garages to accommodate EV charging in the future was part of the garage updates. PSM Ford also stated that weight allowances were being assessed for the parking garages.

In reply to Ms. Yert, PSM Ford and Ms. Burch stated that some positive feedback had been received regarding the parking garage entry and exit systems. They also noted that lines to enter and exit the garages were less long.

In reply to APC inquiry, PSM Ford provided answers about APC vacancies.

11. Adjournment

No further business being evident, the meeting adjourned at 8:36 a.m.



Aaron Ford, Parking Systems Manager

Laura Eichenhorn, City Transcriptionist



MEMORANDUM

Parking System

DATE: 5/22/23

TO: Thomas M. Markus, City Manager

FROM: Aaron Ford, Parking Systems Manager

SUBJECT: 2023 North Old Woodward Parking Structure Repair Project Award

INTRODUCTION:

Structural assessment reports were completed at all five of the City's parking structures by Wiss, Janney, Elstner Associates, Inc. (WJE). As part of those assessments, WJE was asked to prepare a 5-year plan to address all the repairs needed. More "Immediate Repair Recommendations" were approved by the City Commission in September of 2021 and completed by the end of 2022. In November WJE submitted a proposal to design repairs and develop construction documents for each of the City's five parking structures as part of a long-term (3-5 years) repair plan with construction beginning in 2023. The North Old Woodward Garage is the first of the City's five garages to have work begin, starting in June 2023.

BACKGROUND:

In 2020 and 2021, WJE performed condition assessments at four of the five subject parking structures for the purpose of developing short, mid, and long-term repair and maintenance strategies, as well as solutions to rehabilitate and extend the useful life of the structures. Following the completion of the condition assessments, the City chose to perform limited repairs at the North Old Woodward, Chester, Park, and Peabody parking structures. WJE designed repairs, developed construction documents, and provided construction period services for the repair projects during fall 2021. Those projects have been completed. WJE also has previous experience, prior to the 2020-2021 assessment program, with the North Old Woodward and Pierce Street parking structures.

At a meeting with WJE on February 3, 2022, staff requested that WJE submit a proposal to design repairs and prepare construction drawings for the anticipated comprehensive repair projects at each parking structure, with the repair work to be performed over the subsequent years. The anticipated repair projects were to include all remaining repair recommendations outlined in WJE's original condition assessment reports, which generally consist of structural repairs, waterproofing and facade repairs. City staff also requested that WJE include aesthetic and serviceability improvements within the parking structures and stairwells, including painting, and lighting.

WJE retained a mechanical, electrical (lighting), and plumbing (MEP) sub consultant to assess the parking structures and assist with the assessment, design, and development of construction documents with respect to the MEP elements of the garages.

The primary project objectives of this bid package are to address the remaining concrete deterioration at the slab topside and overlay at the middle and south bays of Level 2 and Level 3, concrete deterioration at the slab edges at all levels, and limited concrete deterioration at the underside of all levels. An additional primary objective is to address the concrete and railing distress within the stair towers. The bidders scope of work does not include the MEP (Mechanical Electrical, Plumbing) elements. These repairs are being performed by a separate contractor hired by WJE and will be a separate contract that encompasses all five garages.

An Invitation to Bid (ITB) was posted to Michigan Inter-Governmental Trade Network (MITN) on Friday, March 24, 2023, which included a project manual with detail specifications and repair drawings prepared by WJE. A mandatory pre-bid meeting was held on Thursday, April 6, 2023 that was attended by six contractors. Deadline for bid submissions was Friday, April 28, 2023 at 2 p.m. at which time six bids were received and publicly opened.

Compnay Name	Bid Amount
PULLMAN SST. INC.	\$ 1,082,550.00
RAM CONSTRUCTION	\$ 717,220.00
DRV CONTRACTORS	\$ 1,067,260.00
MARK 1 RESTORATION	\$ 747,750.00
SMITH'S WATERPROOFING	\$ 884,550.00
FASTDECKS, INC.	\$ 1,371,814.00

RAM construction provided three references as required per the ITB.

1. Adam Drain – University of Michigan
2. Nick Amato – Transwestern
3. Jon Frederick, Wayne State University

All three references were contacted. All three provided positive feedback regarding their experiences. Specific questions were asked about completing the project on schedule and about crew size. All three stated that outside of weather, their projects were completed timely, there were no issues of small crews and they even complimented RAM's safety guidelines.

LEGAL REVIEW:

The City's attorney has reviewed and approved the Invitation to Bid and attached agreement.

FISCAL IMPACT:

RAMS's bid was \$717,220. A 12% (\$86,066) contingency is being included to cover any unexpected costs that may arise as repairs are made, bringing the total cost to \$803,286. This work was budgeted in 2022-2023 and there is sufficient remaining budget for this project.

The current unrestricted net position of the APS fund is \$25,785,265.

PUBLIC COMMUNICATIONS:

Pending an award by the City Commission, work is scheduled to begin on June 5, 2023. Notice will be posted at the garage immediately upon approval from the Commission to advise all users of the pending structure renovations. Also, emails will be sent to all permit holders for the NOW Structure.

SUMMARY:

WJE, who performed Condition Assessments on all five of the City's parking structures provided three repair recommendations in 2021: Immediate (within 1 year), Near-Term (within 1-2 years), and Long-Term (within 3-5 years). In September 2021, "Immediate Recommendations" were approved by the City Commission for the Park, Peabody, Chester, and North Old Woodward parking structures. These "Immediate Recommendations" were completed by late fall 2022.

At the request of staff, WJE submitted a proposal for Repair Design and Construction Document Development for all five parking structures. The proposal was for all remaining repairs. These repairs were part of the original assessment provided by WJE, however, they also include aesthetic and serviceability improvements and includes painting and lighting. Remaining repairs to the N. Old Woodward structure are being proposed. An ITB was posted to MITN for work to be completed at the N. Old Woodward structure. The work is expected to begin immediately after the award and be completed by the end of fall 2023.

The majority of the work will take place on levels 1-3 with half the levels being blocked off at a time. Work will also be performed to the stairwells and handrails.

ATTACHMENTS:

1. Invitation to Bid.
2. Project Manual, prepared by WJE.
3. N. Old Woodward Structure – Bid Tabulation for 2023 Repairs.
4. RAM Construction - Bid Documents
5. ITB Attachment B – Bidder's Agreement.
6. ITB Attachment C – Cost Proposal
7. ITB Attachment D – Iran Sanctions Act Vendor Certification Form
8. Agreement, Between RAM Construction and the City of Birmingham

SUGGESTED COMMISSION ACTION:

Make a motion to adopt the resolution awarding the contract to RAM Construction for the proposed work at the North Old Woodward Parking Structure in the amount of \$803,286.00; further, to authorize the Mayor and City Clerk to sign the contract on behalf of the city.



INVITATION TO BID
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

Sealed proposals endorsed “**2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT**”, will be received at the Office of the City Clerk, 151 Martin Street, PO Box 3001, Birmingham, Michigan, 48012; until Friday, April 28, 2023 at 2:00 p.m. at which time bids will be publicly opened and read.

Bidders will be required to attend a mandatory pre-bid meeting on Thursday, April 6, 2023 at 9:30 a.m. onsite at the N. Old Woodward Garage, 333 N. Old Woodward, Birmingham, MI 48009. Bidders must register for the pre-bid meeting by Wednesday, April 5, 2023 at 2:30 p.m. by contacting Parking Systems Manager Aaron Ford at (248) 530-1257 or by email at aford@bhamgov.org

The City of Birmingham, Michigan is accepting sealed bid proposals from qualified professional firms to furnish all labor, equipment, material and supervision necessary to complete repairs as detailed in (1) municipal parking structure: N. Old Woodward Ave. This work must be performed as specified accordance with the specifications contained in the Invitation to Bid (ITB) prepared on behalf of the City of Birmingham, Michigan by Wiss, Janney, Eltner Associates, Inc. (WJE) of Southfield, Michigan.

The ITB, including the Specifications, may be obtained online from the Michigan Inter-governmental Trade Network at <http://www.mitn.info> or at the City of Birmingham, 151 Martin St., Birmingham, Michigan, ATTENTION: Parking Systems Manager Aaron Ford or by email at aford@bhamgov.org

The acceptance of any proposal made pursuant to this invitation shall not be binding upon the City until an agreement has been executed.

Submitted to MITN:	Friday, March 24, 2023
Pre-bid RSVP deadline:	Wednesday, April 5, 2023 at 2:30 p.m
Mandatory Pre-Bid Meeting:	Thursday, April 6, 2023 at 9:30 a.m. 333 N. Old Woodward, Birmingham, MI 48009
Deadline for Submissions:	April 28, 2023 at 2:00 p.m.
Contact Person:	Parking Systems Manager Aaron Ford 151 Martin Street Birmingham, MI 48009 Phone: (248) 530-1257 Email: aford@bhamgov.org



INVITATION TO BID
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

Contents

INTRODUCTION	3
INVITATION TO BID (ITB)	3
MANDATORY PRE-BID MEETING	3
INVITATION TO SUBMIT A PROPOSAL	3
INSTRUCTIONS TO BIDDERS	4
EVALUATION PROCEDURE AND CRITERIA	5
TERMS AND CONDITIONS	5
CONTRACTOR'S RESPONSIBILITIES	6
CITY RESPONSIBILITY	7
SETTLEMENT OF DISPUTES	7
INSURANCE	7
CONTINUATION OF COVERAGE	7
EXECUTION OF CONTRACT	7
INDEMNIFICATION	8
CONFLICT OF INTEREST	8
EXAMINATION OF PROPOSAL MATERIALS	8
PROJECT TIMELINE	8
SCOPE OF WORK	10
ATTACHMENT A - AGREEMENT	11
ATTACHMENT B - BIDDER'S AGREEMENT	20
ATTACHMENT C - COST PROPOSAL	21
ATTACHMENT D - IRAN SANCTIONS ACT VENDOR CERTIFICATION FORM	22
 DRAWING SHEETS – NOW STREET PARKING STRUCTURE	 19-27
PROJECT MANUAL SHEETS – NOW STREET PARKING STRUCTURE ...	2Error!
Bookmark not defined.	

INTRODUCTION

For purposes of this invitation to bid the City of Birmingham will hereby be referred to as “City” and the private firm will hereby be referred to as “Contractor.”

The City of Birmingham, Michigan is accepting sealed bid proposals from qualified professional firms to **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT**. This work must be performed as specified accordance with the specifications outlined by the Scope of Work contained in this Invitation to Bid (ITB).

During the evaluation process, the City reserves the right where it may serve the City’s best interest to request additional information or clarification from proposers, or to allow corrections of errors or omissions. At the discretion of the City, firms submitting proposals may be requested to make oral presentations as part of the evaluation.

It is anticipated the selection of a firm will be completed by May 5, 2023. An Agreement for services will be required with the selected Contractor. A copy of the Agreement is contained herein for reference. Contract services will commence upon execution of the service agreement by the City.

INVITATION TO BID (ITB)

The purpose of this ITB is to request sealed bid proposals from qualified parties presenting their qualifications, capabilities and costs to provide **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT** in one parking structure: N. Old Woodward.

MANDATORY PRE-BID MEETING

Prior to submitting a bid, interested firms are required to attend a pre-bid meeting to conduct an on-site visit of the location and access to the project location to make inquiries about the ITB. Thursday, April 6, 2023 at 9:30 a.m. 333 North Old Woodward, Birmingham, MI 48009.

INVITATION TO SUBMIT A PROPOSAL

Proposals shall be submitted no later than Friday, April 28, 2023 at 2:00 p.m. to:

City of Birmingham
Attn: City Clerk
151 Martin Street
Birmingham, Michigan 48009

One (1) original and one (1) copy of the bid proposal shall be submitted. The bid proposal should be firmly sealed in an envelope, which shall be clearly marked on the outside, “**2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT**”. Any bid proposal received after the due date cannot be accepted and will be rejected and returned, unopened, to the proposer. Proposer may submit more than one proposal provided each proposal meets the functional requirements.

INSTRUCTIONS TO BIDDERS

1. Any and all forms requesting information from the bidder must be completed on the attached forms contained herein (see Contractor's Responsibilities). If more than one bid is submitted, a separate bid proposal form must be used for each.
2. Any request for clarification of this ITB shall be made in writing and delivered to: Parking Systems Manager Aaron Ford, (248-530-1257, aforde@bhamgov.org), 151 Martin Street, Birmingham, MI 48009. Such request for clarification shall be delivered, in writing, no later than 5 days prior to the deadline for submissions.
3. All bid proposals must be submitted following the ITB format as stated in this document and shall be subject to all requirements of this document including the instruction to respondents and general information sections. All bid proposals must be regular in every respect and no interlineations, excisions, or special conditions shall be made or included in the ITB format by the respondent.
4. The contract will be awarded by the City of Birmingham to the most responsive and responsible bidder with the lowest price and the contract will require the completion of the work pursuant to these documents.
5. Each respondent shall include in his or her proposal, in the format requested, the cost of performing the work. Municipalities are exempt from Michigan State Sales and Federal Excise taxes. Do not include such taxes in the proposal figure. The City will furnish the successful company with tax exemption information when requested.
6. Each respondent shall include in their proposal the following information: Firm name, address, city, state, zip code, telephone number, and fax number. The company shall also provide the name, address, telephone number and e-mail address of an individual in their organization to whom notices and inquiries by the City should be directed as part of their proposal.

EVALUATION PROCEDURE AND CRITERIA

The evaluation panel will consist of City staff and any other person(s) designated by the City who will evaluate the proposals based on, but not limited to, the following criteria:

1. Ability to provide services as outlined.
2. Related experience with similar projects, Contractor background, and personnel qualifications.
3. Quality of materials proposed.
4. Overall Costs.
5. References.

TERMS AND CONDITIONS

1. The City reserves the right to reject any or all proposals received, waive informalities, or accept any proposal, in whole or in part, it deems best. The City reserves the right to award the contract to the next most qualified Contractor if the successful Contractor does not execute a contract within ten (10) days after the award of the proposal.
2. The City reserves the right to request clarification of information submitted and to request additional information of one or more Contractors.
3. The City reserves the right to terminate the contract at its discretion should it be determined that the services provided do not meet the specifications contained herein. The City may terminate this Agreement at any point in the process upon notice to Contractor sufficient to indicate the City's desire to do so. In the case of such a stoppage, the City agrees to pay Contractor for services rendered to the time of notice, subject to the contract maximum amount.
4. Any proposal may be withdrawn up until the date and time set above for the opening of the proposals. Any proposals not so withdrawn shall constitute an irrevocable offer, for a period of ninety (90) days, to provide the services set forth in the proposal.
5. The cost of preparing and submitting a proposal is the responsibility of the Contractor and shall not be chargeable in any manner to the City.
6. The successful bidder will be required to furnish a Performance Bond in an amount not less than 100% of the contract price in favor of the City of Birmingham, conditioned upon the faithful performance of the contract, and completion on or before the date specified.
7. Payment will be made within thirty (30) days after invoice. Acceptance by the City is defined as authorization by the designated City representative to this project that all the criteria requested under the Scope of Work contained herein have been provided. Invoices are to be rendered each month following the date of execution of an Agreement with the City.

8. The Contractor will not exceed the timelines established for the completion of this project.
9. The successful bidder shall enter into and will execute the contract as set forth and attached as Attachment A.

CONTRACTOR'S RESPONSIBILITIES

Each bidder shall provide the following as part of their proposal:

1. Complete and sign all forms requested for completion within this ITB.
 - a. Bidder's Agreement (Attachment B - p. 20)
 - b. Cost Proposal (Attachment C - p. 21)
 - c. Iran Sanctions Act Vendor Certification Form (Attachment D - p. 22)
 - d. Agreement (p. 11 – **only if selected by the City**).
2. Provide a description of completed projects that demonstrate the firm's ability to complete projects of similar scope, size, and purpose, and in a timely manner, and within budget.
3. Provide a written plan detailing the anticipated timeline for completion of the tasks set forth in the Scope of Work (p. 9).
4. The Contractor will be responsible for any changes necessary for the plans to be approved by the City of Birmingham.
5. Provide a description of the firm, including resumes and professional qualifications of the principals involved in administering the project.
6. Provide a list of sub-contractors and their qualifications, if applicable.
7. Provide three (3) client references from past projects, include current phone numbers. At least two (2) of the client references should be for projects utilizing the same materials included in the Contractor's proposal.
8. The Contractor will be responsible for the disposal of all material and any damages which occur as a result of any of employees or subcontractors of the Contractor during this project.
9. The contractor will be responsible for getting the building and parking permits at no cost to the contractor.
10. The successful bidder shall provide a Performance Bond in an amount not less than 100% of the contract price in favor of the City of Birmingham, conditioned upon the faithful performance of the contract, and completion on or before the date specified.

11. Provide a project timeline addressing each section within the Scope of Work and a description of the overall project approach. Include a statement that the Contractor will be available according to the proposed timeline.

CITY RESPONSIBILITY

1. The City will provide a designated representative to work with the Contractor to coordinate both the City's and Contractor's efforts and to inspect and verify any work performed by the Contractor.
2. The City will provide access to the City of Birmingham during regular business hours or during nights and weekends as approved by the City's designated representative.

SETTLEMENT OF DISPUTES

The successful bidder agrees to certain dispute resolution avenues/limitations. Please refer to paragraph 17 of the Agreement attached as Attachment A for the details and what is required of the successful bidder.

INSURANCE

The successful bidder is required to procure and maintain certain types of insurances. Please refer to paragraph 12 of the Agreement attached as Attachment A for the details and what is required of the successful bidder.

CONTINUATION OF COVERAGE

The Contractor also agrees to provide all insurance coverages as specified. Upon failure of the Contractor to obtain or maintain such insurance coverage for the term of the agreement, the City may, at its option, purchase such coverage and subtract the cost of obtaining such coverage from the contract amount. In obtaining such coverage, Birmingham shall have no obligation to procure the most cost effective coverage but may contract with any insurer for such coverage.

EXECUTION OF CONTRACT

The bidder whose proposal is accepted shall be required to execute the contract and to furnish all insurance coverages as specified within ten (10) days after receiving notice of such acceptance. Any contract awarded pursuant to any bid shall not be binding upon the City until a written contract has been executed by both parties. Failure or refusal to execute the contract shall be considered an abandoned all rights and interest in the award and the contract may be awarded to another. The successful bidder agrees to enter into and will execute the contract as set forth and attached as Attachment A.

INDEMNIFICATION

The successful bidder agrees to indemnify the City and various associated persons. Please refer to paragraph 13 of the Agreement attached as Attachment A for the details and what is required of the successful bidder.

CONFLICT OF INTEREST

The successful bidder is subject to certain conflict of interest requirements/restrictions. Please refer to paragraph 14 of the Agreement attached as Attachment A for the details and what is required of the successful bidder.

EXAMINATION OF PROPOSAL MATERIALS

The submission of a proposal shall be deemed a representation and warranty by the Contractor that it has investigated all aspects of the ITB, that it is aware of the applicable facts pertaining to the ITB process and its procedures and requirements, and that it has read and understands the ITB. Statistical information which may be contained in the ITB or any addendum thereto is for informational purposes only.

PROJECT TIMELINE

Submitted to MITN:	Friday, March 24, 2023
Pre-bid RSVP deadline:	Wednesday, April 5, 2023 at 230 p.m.
Mandatory Pre-Bid Meeting:	Thursday, April 6, 2023 at 9:30 a.m. 333 North Old Woodward, Birmingham, MI 48009 – N. Old Woodward Garage
Deadline for Technical Questions:	Wednesday, April 12, 2023 at 9:30 a.m.
Deadline for Addendum:	Friday, April 14, 2023 at 9:30 a.m.
Deadline for Submissions:	Friday, April 28, 2023 at 2:00 p.m. – Bids publicly opened 151 Martin Street, Birmingham, MI 48009 – City Commission Room 2 nd floor.
Contract Signature Deadline:	Thursday, May 5, 2023 at 10:00 a.m.
Award of Bid:	Monday, May 8, 2023 7:30 p.m. Birmingham City Commission meeting
Construction Schedule:	Work to begin May 9, 2023 with expected completion by October 31, 2023

The Contractor will not exceed the timelines established for the completion of this project.

SCOPE OF WORK

The Contractor shall perform the following services in accordance with the requirements as defined and noted herein:

1. The primary project objectives of this bid package is to address concrete deterioration at the slab topside and overlay at the middle and south bays of Level 2 and Level 3, concrete deterioration at the slab edges at all levels, and limited concrete deterioration at the underside of all levels. An additional primary objective is to address the concrete and railing distress within the stair towers.
2. The Contractor shall be responsible for the disposal of all materials in a safe and legal manner.
3. The Contractor shall operate in a safe manner and will observe all MIOSHA guidelines.
4. The Contractor shall provide any and all manuals and/or warranty information related to this project to the City upon completion of the project, as specified in this ITB.
5. This section and referenced documents shall constitute the Scope of Work for this project and as such all requirements must be met.

**AGREEMENT BETWEEN THE CITY OF BIRMINGHAM AND _____ For 2023
NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT**

This AGREEMENT, made this _____ day of _____, 2023, by and between, the **CITY OF BIRMINGHAM** having its principal municipal office at 151 Martin Street, Birmingham, MI (hereinafter sometimes called "City"), and _____, Inc., having its principal office at _____ (hereinafter called "Contractor"), provides as follows:

WITNESSETH:

WHEREAS, the City of Birmingham, Michigan, is desirous of hiring a qualified professional firm to furnish labor, equipment, material and supervision necessary to complete repairs as detailed in the City owned parking structure known generally as: N. Old Woodward Ave.

WHEREAS, the City has heretofore advertised for bids for the procurement and performance of services required to perform **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT** as detailed in the specifications for N. Old Woodward Ave, and in connection therewith has prepared a request for sealed Invitation to Bid proposals ("ITB"), which includes certain instructions to bidders, specifications, terms and conditions.

WHEREAS, the Contractor has professional qualifications that meet the project requirements and has made a bid in accordance with such request for cost proposals to perform **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT**.

NOW, THEREFORE, for and in consideration of the respective agreements and undertakings herein contained, the parties agree as follows:

1. **MUTUALLY AGREED:** It is mutually agreed by and between the parties that the documents consisting of the Invitation to Bid to perform **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT** and the Contractor's cost proposal dated _____, 2023 shall be fully incorporated herein by reference and shall become a part of this Agreement, and shall be binding upon both parties hereto. (Attached hereto.) If any of the documents are in conflict with one another, this Agreement shall take precedence, then the ITB.

2. **TERM:** This Agreement shall have a term of _____ from the date stated above, and is renewable upon expiration for _____ month terms. The City shall have the right to unilaterally terminate this Agreement, with or without cause, on thirty (30) days written notice. In the event of termination, the Contractor shall receive compensation for services up to the date the termination takes effect and the City shall be entitled to retain and use the results of all services, goods and information prepared by the Vendor through such date.

3. **FEES.** The City shall pay the Contractor for the performance of this Agreement in an amount not to exceed _____, as set forth in the Contractor's _____, 2023 cost proposal.

4. **TERMS OF PAYMENT:** The Contractor will invoice monthly for all labor supplied and work completed. In no event shall invoices be submitted more than 45 days after completion of services.

Submitted invoices shall include the following detailed information: the type of work performed, the time spent on the work, the individual who performed the work and the per hour billing rate charged. The City may, at its sole discretion demand review and the right to request at any time further detailed accounting information for any or all bills. The right to inspection of any bill and invoice shall never be at any cost or billings to the City, nor shall preparation of said invoices be billed to the City or against the general retainer. Payment terms will be net 30 days unless otherwise specified by the City.

5. **GOOD MORAL CHARACTER:** The Contractor shall employ personnel of good moral character and fitness in performing all services under this Agreement.

6. **INSURANCE SUBMISSION REQUIREMENTS:** The has submitted proof to the City that it meets all City insurance requirements. Insurance, with coverage amounts at no less than the City's minimum requirements, must be held by the Contractor throughout the term of this Agreement. Certificates of insurance as stated below will be required no later than five (5) business days from the date of Contractor's acceptance of the terms of this Agreement.

7. **CONFIDENTIAL AND / OR PROPRIETARY INFORMATION:** The Contractor acknowledges that in performing services pursuant to this Agreement, certain confidential and/or proprietary information (including, but not limited to, internal organization, methodology, personnel and financial information, etc.) may become involved. The Contractor recognizes that unauthorized exposure of such confidential or proprietary information could irreparably damage the City. Therefore, the Contractor agrees to use reasonable care to safeguard the confidential and proprietary information and to prevent the unauthorized use or disclosure thereof. The Contractor shall inform its employees of the confidential or proprietary nature of such information and shall limit access thereto to employees rendering services pursuant to this Agreement. The Contractor further agrees to use such confidential or proprietary information only for the purpose of performing services pursuant to this Agreement.

8. **INDEPENDENT CONTRACTOR:** The Contractor and the City agree that the Contractor is acting as an independent Contractor with respect to the Contractor 's role in providing services to the City pursuant to this Agreement, and as such, shall be liable for its own actions and neither the Contractor nor its employees shall be construed as employees of the City. Nothing contained in this Agreement shall be construed to imply a joint venture or partnership and neither party, by virtue of this Agreement, shall have any right, power or authority to act or create any obligation, express or implied, on behalf of the other party, except as specifically outlined herein. Neither the City nor the Contractor shall be considered or construed to be the agent of the other, nor shall either have the right to bind the other in any manner whatsoever, except as specifically provided in this Agreement, and this Agreement shall not be construed as a contract of agency. The Contractor shall not be entitled or eligible to participate in any benefits or privileges given or extended by the City, or be deemed an employee of the City for purposes of federal or state withholding taxes, FICA taxes, unemployment, workers' compensation or any other employer contributions on behalf of the City.

9. **COMPLIANCE WITH LAWS:** The Contractor agrees to fully and faithfully carry out the duties of set forth herein using its best efforts in accomplishing all assignments from the City, and further, in addition to upholding all federal, and state laws and applicable codes of

professional conduct to which the Contractor is subject, Contractor hereby agrees to be bound by all Federal, State, or City of Birmingham ordinances, rules, regulations and policies as are amended from time to time, and including without limitation the Fair Labor Standards Act, the Equal Employment Opportunity rules and regulations, the Transportation Safety Act and the Occupational Safety and Health Acts.

10. NON-COMPLIANCE WITH INSURANCE REQUIREMENTS: Failure to deliver and maintain insurance in accordance with the terms of this Agreement will be cause for the City, by and through its City Manager, to terminate this Agreement, or at the City's option, the City may purchase on the open market such required insurance and shall be entitled to charge any additional cost to the Contractor, either by offset to any amounts due and owing Contractor for services provided to the City, or, by separate bill and demand for payment. Nothing in this paragraph shall be deemed to create or be interpreted as establishing a "for cause" termination; Contractor agrees and understands that its engagement is at will and may be terminated by the City Manager for any cause or no cause.

11. INDEMNIFICATION: To the fullest extent permitted by law, the Contractor and any entity or person for whom the Contractor is legally liable, agrees to be responsible for any liability, defend, pay on behalf of, indemnify, and hold harmless the City of Birmingham, its elected and appointed officials, employees and volunteers and others working on their behalf against any and all claims, demands, suits, or loss, including all costs and reasonable attorney fees connected therewith, and for any damages which may be asserted, claimed or recovered against or from the City, its elected and appointed officials, employees, volunteers or others working on their behalf, by reason of personal injury, including bodily injury and death and/or property damage, including loss of use thereof, which arise out of the acts, errors or omissions of the Contractor including its employees and agents, in the performance of this Agreement. Such responsibility shall not be construed as liability for damage caused by or resulting from the sole act or omission of its elected or appointed officials, employees, volunteers or others working on behalf of the City.

12. STANDARD INSURANCE REQUIREMENTS:

The Contractor shall maintain during the life of this Agreement the applicable types of insurance coverage and minimum limits as set forth below:

A. Workers' Compensation Insurance:

For Non-Sole Proprietorships: Contractor shall procure and maintain during the life of this Agreement, Workers' Compensation Insurance, including Employers Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

For Sole Proprietorships: Contractor shall complete and furnish to the City prior to the commencement of work under this Agreement a signed and notarized Sole Proprietor Form, for sole proprietors with no employees or with employees, as the case may be.

B. Commercial General Liability Insurance: Contractor shall procure and maintain during the life of this Agreement, Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than **\$1,000,000** per occurrence combined single limit, Personal Injury, Bodily Injury and Property Damage. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractor Coverage; (D) Broad Form General Liability Extensions or equivalent; (E) Deletion of all Explosion, Collapse and Underground (XCU) Exclusions, if applicable.

C. Motor Vehicle Liability: Contractor shall procure and maintain during the life of this Agreement Motor Vehicle Liability Insurance, including all applicable no-fault coverages, with limits of liability of not less than \$1,000,000 per occurrence combined single limit Bodily Injury and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

D. Pollution Liability Insurance: Contractor shall procure and maintain during the life of this Agreement Pollution Liability Insurance, with limits of liability of \$1,000,000, per occurrence preferred, but claims made accepted.

E. Additional Insured: Commercial General Liability and Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating the following **Additional Insureds: The City of Birmingham, including all elected and appointed officials, all employee and volunteers, all boards, commissions and/or authorities and board members, including employees and volunteers thereof.** This coverage shall be primary to any other coverage that may be available to the additional insured, whether any other available coverage by primary, contributing or excess.

F. Professional Liability: If applicable, professional liability insurance with limits of not less than \$2,000,000 per claim if Contractor will provide services that are customarily subject to this type of coverage.

G. Coverage Expiration: If any of the above coverages expire during the term of this Agreement, the Contractor shall deliver renewal certificates and/or policies to the City at least (10) days prior to the expiration date.

H. Proof of Insurance Coverage: The Contractor shall provide the City of Birmingham at the time the Agreement is returned for execution, Certificates of Insurance and/or policies, acceptable to the City of Birmingham, as listed below.

- 1) Two (2) copies of Certificate of Insurance for Workers' Compensation Insurance, or a signed and notarized copy of the Sole Proprietor Form;
- 2) Two (2) copies of Certificate of Insurance for Commercial General Liability Insurance;
- 3) Two (2) copies of Certificate of Insurance for Vehicle Liability Insurance;
- 4) Two (2) copies of Certificate of Insurance for Professional Liability Insurance, if applicable;

- 5) If so requested, Certified Copies of all policies mentioned above will be furnished.

I. Maintaining Insurance: Upon failure of the Contractor to obtain or maintain such insurance coverage for the term of the Agreement, the City of Birmingham may, at its option, purchase such coverage and subtract the cost of obtaining such coverage from the Agreement amount. In obtaining such coverage, the City of Birmingham shall have no obligation to procure the most cost-effective coverage but may contract with any insurer for such coverage.

13. **WRITTEN NOTICES:** All notices required to be sent pursuant to this Agreement shall be mailed to the following addresses:

City: City of Birmingham
151 Martin Street
Birmingham, MI 48009
Attn: Parking Systems Manager, Aaron Ford

Contractor: _____

Attn: _____

14. **COVID:** The Contractor shall follow all of the City's COVID-19 safety protocols while on City property. Additionally, Contractor's staff which will be in physical contact with city staff must have current vaccinations against COVID-19. The City, at its discretion, may ask for proof of vaccination of Contractor's staff. Failure to provide proof of vaccination when requested will cause the City to request un-vaccinated personnel to leave, request alternate staff, and if the Contractor is unable to comply, this violation of safety protocols will constitute a breach of contract by the Contractor.

15. **AMENDMENTS:** No amendment, modification or supplement to this Agreement shall be binding unless it is in writing and signed by authorized representatives of the parties.

16. **WAIVER OF BREACH:** No waiver by either party of any breach of any of the terms, covenants or conditions herein contained by the other party shall be construed as a waiver of any succeeding breach of this same or of any other term, covenant, or condition.

17. **COMPLETE AGREEMENT:** The parties agree that the conditions set forth in this Agreement sets forth all terms and conditions of the Contractor's agreement with the City of Birmingham. This Agreement supersedes all prior agreements or understandings between the parties. There are no promises, conditions, or understandings other than those stated herein, and, that any prior negotiations, terms or conditions discussed between the City and the Contractor shall not constitute a part of this Agreement. The term "agreement" as used in this clause shall

include any future written amendments, modifications, or supplements made in accordance herewith.

18. **DIRECT OR INDIRECT INTEREST:** If, after the effective date of this Agreement, any official of the City, or spouse, child, parent or in-law of such official or employee shall become directly or indirectly interested in this Agreement or the affairs of the Contractor, the City shall have the right to terminate this Agreement without further liability to the Contractor if the disqualification has not been removed within thirty (30) days after the City has given the Contractor notice of the disqualifying interest. Ownership of less than one percent (1%) of the stock or other equity interest in a corporation or partnership shall not be a disqualifying interest. Employment shall be a disqualifying interest.

19. **FAILURE TO PERFORM.** If Contractor fails to perform its obligations hereunder, the City may take any and all remedial actions provided by the general specifications or otherwise permitted by law.

20. **LEGAL PROCEEDINGS:** Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled either by commencement of a suit in Oakland County Circuit Court, the 48th District Court or by arbitration. If both parties elect to have the dispute resolved by arbitration, it shall be settled pursuant to Chapter 50 of the Revised Judicature Act for the State of Michigan and administered by the American Arbitration Association with one arbitrator being used, or three arbitrators in the event any party's claim exceeds \$1,000,000. Each party shall bear its own costs and expenses and an equal share of the arbitrator's and administrative fees of arbitration. Such arbitration shall qualify as statutory arbitration pursuant to MCL §600.5001 et seq., and the Oakland County Circuit Court or any court having jurisdiction shall render judgment upon the award of the arbitrator made pursuant to this Agreement. The laws of the State of Michigan shall govern this Agreement, and the arbitration shall take place in Oakland County, Michigan. In the event that the parties elect not to have the matter in dispute arbitrated, any dispute between the parties may be resolved by the filing of a suit in a federal or state court with jurisdiction over Oakland County, Michigan.

21. **RESPONSE TO REQUESTS FOR PROPOSALS:** The Contractor shall be held to and bound by all terms, conditions, warranties and representations which it made in its written response dated _____, to the City's Request for Proposals dated _____. In the event of a conflict in any of the terms of this Agreement and the Contractor's _____ (date of response) response, the terms of this Agreement shall prevail.

22. **FAIR PROCUREMENT OPPORTUNITY:** Procurement for the City of Birmingham will be handled in a manner providing fair opportunity for all businesses. This will be accomplished without abrogation or sacrifice of quality and as determined to be in the best interest of the City of Birmingham.

IN WITNESS WHEREOF, the parties hereto agree to be bound by the above terms and conditions, and Contractor, by its authorized signature below, expressly accepts this Agreement upon the above provided terms and conditions contained in this Agreement as of the date and year above written.

CONTRACTOR

By: _____
CONTRACTOR

Its: INSERT TITLE HERE

STATE OF MICHIGAN)
) ss:
COUNTY OF OAKLAND)

On this _____ day of _____, 20____, before me personally appeared _____, who acknowledged that with authority on behalf of _____ to do so he/she signed this Agreement.

Notary Public
_____ County, Michigan
Acting in _____ County, Michigan
My commission expires: _____

CITY OF BIRMINGHAM

By: _____
Therese Longe, Mayor

By: _____
Alexandria D. Bingham, City Clerk

Approved:

Thomas M. Markus, City Manager
(Approved as to substance)

Aaron Ford, Parking Systems Manager
(Approved as to substance)

Mark Gerber, Director of Finance
(Approved as to financial obligation)

Mary M. Kucharek, City Attorney
(Approved as to form)

ATTACHMENT A

ATTACHMENT B - BIDDER'S AGREEMENT
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

In submitting this proposal, as herein described, the Contractor agrees that:

1. They have carefully examined the specifications, terms and Agreement of the Invitation to Bid and all other provisions of this document and understand the meaning, intent, and requirement of it.
2. They will enter into a written contract and furnish the item or items in the time specified in conformance with the specifications and conditions contained therein for the price quoted by the proponent on this proposal.

PREPARED BY
(Print Name)

DATE

TITLE

DATE

AUTHORIZED SIGNATURE

E-MAIL ADDRESS

COMPANY

ADDRESS

PHONE

NAME OF PARENT COMPANY

PHONE

ADDRESS

ATTACHMENT C - COST PROPOSAL

For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

In order for the bid to be considered valid, this form must be completed in its entirety.
The cost for the Scope of Work as stated in the Invitation to Bid documents shall be a lump sum, as follows:

Attach technical specifications for all proposed materials as outlined in the Contractor's Responsibilities section of the ITB (p. 6)

COST PROPOSAL	
ITEM	BID AMOUNT
Materials & Equipment	\$
Labor	\$
Miscellaneous (Attach Detailed Description)	\$
TOTAL BID AMOUNT	\$
ADDITIONAL BID ITEMS	
	\$
	\$
GRAND TOTAL AMOUNT	\$

UNIT COST BID ITEMS	
	\$ per

Firm Name_____

Authorized signature_____ Date_____

ATTACHMENT D - IRAN SANCTIONS ACT VENDOR CERTIFICATION FORM
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

Pursuant to Michigan Law and the Iran Economic Sanction Act, 2012 PA 517 ("Act"), prior to the City accepting any bid or proposal, or entering into any contract for goods or services with any prospective Vendor, the Vendor must certify that it is not an "Iran Linked Business", as defined by the Act.

By completing this form, the Vendor certifies that it is not an "Iran Linked Business", as defined by the Act and is in full compliance with all provisions of the Act and is legally eligible to submit a bid for consideration by the City.

PREPARED BY
(Print Name)

DATE

TITLE

DATE

AUTHORIZED SIGNATURE

E-MAIL ADDRESS

COMPANY

ADDRESS

PHONE

NAME OF PARENT COMPANY

PHONE

ADDRESS

TAXPAYER I.D.#

CITY OF BIRMINGHAM
2023 NORTH OLD WOODWARD PARKING STRUCTURE
REPAIR PROJECT
333 NORTH OLD WOODWARD AVE.
BIRMINGHAM, MICHIGAN
WJE No. 2022.0566.1
April 4, 2023
Addendum 1

Prepared by
WISS, JANNEY, ELSTNER ASSOCIATES, INC.
30700 Telegraph Road, Suite 3580
Bingham Farms, Michigan 48025
248.593.0900

**SECTION 00 01 10
TABLE OF CONTENTS**

Section Number	Section Title	Pages
	Division 00 - Procurement and Contracting Requirements	
00 41 44	Bid Form	00 41 44-1 to 5
	Division 01 - General Requirements	
01 11 00	Summary of Work	01 11 00-1 to 6
01 21 00	Allowances	01 21 00-1 to 2
01 22 00	Unit Prices	01 22 00-1 to 11
	Division 02 - Existing Conditions	
02 01 11	Shoring	02 01 11-1 to 3
	Division 03 - Concrete	
03 01 31	Concrete Removal and Surface Preparation	03 01 31-1 to 8
03 01 34	Concrete Replacements	03 01 34-1 to 15
03 15 11	Expansion Joint Seals	03 15 11-1 to 5
	Division 04 - Masonry	
04 01 20.52	Brick Masonry Cleaning	04 01 20.52-1 to 8
	Division 05 - Steel	
05 04 00	Miscellaneous Steel	05 04 00-1 to 6
	Division 07 - Thermal & Moisture Protection	
07 18 00	Traffic Coating	07 18 00-1 to 10
07 92 00	Joint Sealants	07 92 00-1 to 7
	Division 09 - Finishes	
09 97 24	Architectural Coatings (Non-Elastomeric)	09 97 24-1 to 10
	Division 31 17 23.13 - Painted Pavement Markings	
31 17 23.13	Painted Pavement Markings	31 17 23.13-1 to 5

END OF SECTION 00 01 10

SECTION 00 41 44
BID FORM

PROJECT: 2023 North Old Woodward Parking Structure Repair Project
333 North Old Woodward Ave.
Birmingham, Michigan

BID DUE: Refer to City of Birmingham bidding instructions.

SUBMITTED TO: Aaron Ford
City of Birmingham
Email: aford@bhamgov.org

COPY TO: Wiss, Janney, Elstner Associates, Inc.
Attn: Mr. Justin Barden, PE
Email: jbarden@wje.com
Phone: 248-593-0900

Wiss, Janney, Elstner Associates, Inc.
Attn: Mr. Matthew Lewis, PE
Email: mlewis@wje.com
Phone: 248-593-0900

SUBMITTED BY: _____
Bidder name

Bidder address

Date

Bidder certifies that:

- A. Bidder has carefully read and understands Bidding Documents;
- B. Bidder has visited site and become familiar with local conditions under which Work is to be performed, including verifying visible conditions, such as dimensions, materials, and attachments to remain, on existing facility; and
- C. Bidder has correlated Bidder's personal observations with requirements of Bidding Documents. Bidding Documents include Project Manual and Drawings prepared by WJE and dated March 17, 2023 and addenda, as well as bidding documents prepared by the City of Birmingham.

Bidder shall notify Architect/Engineer of discrepancies, omissions, conflicts, or unclear meaning within Contract Documents; Architect/Engineer will interpret Contract Documents and, if necessary, issue written addendum. Contracted Work will be based on Architect/Engineer's interpretation of Contract Documents.

Bidder acknowledges receipt of following addenda.

No. _____ Dated _____
No. _____ Dated _____

Bidder may not withdraw Bid within 60 calendar days after Bid Due date.

Bidder agrees that Owner has right to waive informalities and irregularities in Bid received and to accept Bid which, in Owner's judgment, is in Owner's own best interests.

NOTE: Bidder shall state Unit Price Bid and Total Bid amount for each unit price item. Total Bid amount for each item shall be product of Estimated Quantity multiplied by Unit Price. Unit Price Bid and Total Bid amounts shall be written numerically in spaces provided.

GRAND TOTAL shall be sum of Total Bid amounts for various items and will be Contract Sum written in Owner-Contractor Agreement.

All words and numbers shall be written in non-erasable medium.

LUMP SUM PORTION OF BASE BID

Per Section 01 11 00 - Summary of Work

Type of Work	Total Bid
1. General Conditions	\$ _____
2. Performance Bond and Labor and Material Payment Bond	\$ _____
3. Installation of traffic-bearing membrane (traffic coating) in the three stair towers	\$ _____
4. Installation of new expansion joint compression seal at the three roof level stair towers and one snow shoot	\$ _____
5. Replace damaged and missing drain covers, and clean drain bowls	\$ _____
Sum of Lump Sum Bid Items 1 through 5:	Subtotal L1: \$ _____

ALLOWANCE PORTION OF BASE BID

Per Section 01 21 00 - Allowances

Type of Work	Total Bid
6. Replace cracked and damaged drain lines at new drains with new cast iron pipes (allowance)	\$ 10,000
Sum of Allowance Bid Items:	Subtotal A1: \$ 10,000

UNIT PRICE PORTION OF BASE BID
Per Section 01 22 00 - Unit Prices

Item	Description	Est. Qty.	Units	Unit Price	Total Bid
7.	Concrete overlay repair (Keynote 7)	2000	SF	\$ _____	\$ _____
8.	Partial-depth topside concrete slab repair (Keynote 8)	900	SF	\$ _____	\$ _____
9.	Partial-depth underside concrete slab repair (Keynote 9)	100	SF	\$ _____	\$ _____
10.	Concrete curb repair (Keynote 10)	100	SF	\$ _____	\$ _____
11.	Slab edge concrete repair (Keynote 11)	100	SF	\$ _____	\$ _____
12.	Slab on ground repair (Keynote 12)	50	SF	\$ _____	\$ _____
13.	Formed vertical concrete repair (Keynote 13)	150	SF	\$ _____	\$ _____
14.	Stair tower - partial-depth topside concrete slab repair (Keynote 14)	500	SF	\$ _____	\$ _____
15.	Stair tower - full-depth concrete slab repair (Keynote 15)	150	SF	\$ _____	\$ _____
16.	Stair tower stairs - partial-depth concrete topside repair (Keynote 16)	400	SF	\$ _____	\$ _____
17.	Stair tower stairs - partial-depth concrete underside repair (Keynote 17)	50	SF	\$ _____	\$ _____
18.	Stair tower railing post base replacement (Keynote 18)	35	EA	\$ _____	\$ _____
19.	Supplemental epoxy-grouted steel dowels	750	EA	\$ _____	\$ _____
20.	Supplemental steel reinforcement	2	ton	\$ _____	\$ _____
21.	Localized replacement of concrete masonry units (Keynote 21)	20	EA	\$ _____	\$ _____
22.	Localized repointing of masonry (Keynote 22)	300	LF	\$ _____	\$ _____
23.	Localized replacement of clay masonry bricks (Keynote 23)	60	EA	\$ _____	\$ _____
24.	Replace sealant at concrete overlay control joints (Keynote 24)	10,000	LF	\$ _____	\$ _____
25.	Replace sealant at cove (Keynote 25)	1,000	LF	\$ _____	\$ _____
26.	Rout and seal cracks in slab (Keynote 26)	3,500	LF	\$ _____	\$ _____
27.	Drain replacement (Keynote 27)	10	EA	\$ _____	\$ _____
28.	Brick Masonry Cleaning (Keynote 28)	400	SF	\$ _____	\$ _____
Sum of Unit Price Bid Items 7 through 28:				Subtotal U1:	\$ _____

SUMMARY PORTION OF BASE BID

Subtotal L1: \$ _____

Subtotal A1: \$ 10,000 _____

Subtotal U1: \$ _____

Grand Total (Sum of Subtotals): \$ _____

Grand Total (in words): _____

_____ Dollars

CONSTRUCTION SCHEDULE

The Contractor agrees to commence work under the Contract on or before a date to be specified in a written "Notice to Proceed." The Contractor proposes to complete all Base Bid work within _____ calendar days from the date specified in the Notice to Proceed.

The selected Contractor shall submit a detailed construction/work sequence schedule describing the work to be performed in each phase on an event by event basis, together with an estimate of time necessary to complete each phase of the Project.

ALTERNATE PORTION OF BASE BID

Per Section 01 11 00 - Summary of Work

Alternate bid amount is net adjustment to Contract Sum to incorporate Alternate into Work.

Type of Work	Total Bid
29. Alternate 1 – Architectural coating (non-elastomeric) at the following locations:	
▪ Cast in place concrete columns.	
▪ Cast in place concrete walls, including all faces of the internal walls at the roof level adjacent to the ramp, at the inside/interior face of the perimeter walls at the roof level, and at the inside/interior face of the perimeter and internal ramp walls at the first level.	
▪ Cast in place concrete ceilings (underside of elevated slabs).	
▪ Cast in place concrete stairs and landings (underside of landings, underside of risers, and exposed vertical surfaces (sides) of risers and landings).	
▪ Concrete masonry units (CMU) at the interior-facing walls of the stair towers	
▪ Concrete masonry units (CMU) at the exterior- (garage) facing walls of the mechanical rooms, restroom, and offices.	
▪ Steel railings within the stair towers, including the new railing post base plates.	\$ _____
Sum of Alternates:	Subtotal A1: \$ _____

SUBCONTRACTORS

Indicate portion(s) of work to be completed by a subcontractor and name of subcontractor:

Portion of Work	Subcontractor (if used)
Waterproofing	_____
Concrete Repairs	_____
Caulking	_____
Plumbing	_____
Painting	_____
Other	_____

BIDDER'S ENDORSEMENT

I hereby certify that all statements herein are made on behalf of _____

(Name and Address of Corporation, Partnership, or Person submitting bid)

of the City of _____ State of _____

that I have examined and carefully prepared this Bid from the plans and specifications, and have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

(Signature)

(Title)

END OF SECTION 00 41 44

SECTION 01 11 00 SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

- F. Section Includes: Description of existing conditions and Work scope, and Contractor duties and use of premises.

1.2 CONTRACTOR DUTIES

- A. Except as specifically noted, provide and pay for:
1. Labor, materials, and equipment.
 2. Tools, construction equipment, and machinery.
 3. Water, heat, power, and lights required for construction beyond those available at facility.
 4. Other facilities and services necessary for proper execution and completion of Work.
 5. Legally required sales, consumer, and use taxes.
 6. Permits, government fees, and licenses as necessary for proper execution and completion of Work and as applicable at time of receipt of bids.
- B. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities having jurisdiction, which bear on performance of Work.
1. Take necessary safety precautions to prevent injury to construction personnel, non-construction personnel, Owner's property, and adjacent facilities.
 2. Perform work in a manner to minimize hazards due to the disturbance of lead containing materials (paint) and comply with MIOSHA requirements for assessing, monitoring, and protecting employees from lead hazard.
 3. Give required notices.
 4. Products shall comply with local regulations, including environmental restrictions.
 5. Promptly submit written notice to Architect/Engineer of observed variance of Contract Documents from legal requirements. It is not the Contractor's responsibility to make certain that Drawings and Specifications comply with codes and regulations.
 - a. Propose appropriate modifications to Contract Documents for necessary changes.
 - b. Assume responsibility for Work known to be contrary to such requirements, which is performed without notice.
- C. Enforce strict discipline and good order among employees. Do not employ unfit persons or persons not skilled in their assigned tasks.
- D. Provide 24-hour emergency contact information for Contractor and major subcontractors, including names and telephone numbers.

1.3 PROJECT CONDITIONS

- A. **Description of Existing Structure:**
1. The parking structure was constructed in 1966 and has five levels of parking with a centralized ramp system. The structural system on the supported levels consists of a two-way slab system comprised of reinforced concrete slabs supported on columns with drop panels. Level 1 is a reinforced concrete slab on ground, and Level 5 is uncovered rooftop

parking. The supported slabs are approximately 15 inches thick, which includes a concrete overlay that varies in thickness from approximately 1-1/2 to 3 inches. A traffic-bearing membrane (coating) is present on the roof level. The structure is square in plan with approximate dimensions of 200 feet by 200 feet, for a total area of 200,000 square feet of floor space between all levels. The facade at the corner towers is primarily brick masonry cladding with concrete masonry unit (CMU) backup; additionally, precast concrete units with an exposed aggregate finish extend from grade to the top of the corner towers, surrounding the windows and doors. A prestressed cable vehicle barrier system runs between the four corner towers.

B. Description of Deterioration. Deterioration of the structure includes, but is not limited to:

1. Concrete slab and overlay:
 - a. Unsound (delaminated) concrete is present on the topside of the elevated concrete slabs at the middle and south bays of Level 2 and Level 3.
 - b. Spalled, loose, and delaminated concrete is present in small, localized areas on the underside of some elevated levels.
 - c. Unsound concrete and spalls are present at localized areas at the interior slab edges.
 - d. Unsealed cracks are present in many locations on the topside of the Level 2-4 slabs. A traffic coating was recently installed on Level 5.
2. Stair towers:
 - a. Spalled and delaminated concrete is present on the topside and underside of the stair tower landings (slabs). Spalled and unsound concrete is present in several locations on the topside of the steps, especially at the nosing. Spalled and unsound concrete is also present on the underside of the steps in localized areas.
 - b. The bases of the stair tower railing posts are commonly corroded, and the connection of the railing posts to concrete slab is often failed.
 - c. CMU is spalled in some locations at the bottom of the walls, and the mortar at the brick masonry cladding is deteriorated in multiple locations.

1.4 WORK SCOPE

- A. The primary project objectives of this bid package are to address concrete deterioration at the slab topside and overlay at the middle and south bays of Level 2 and Level 3, concrete deterioration at the slab edges at all levels, and limited concrete deterioration at the underside of all levels. An additional primary objective is to address the concrete and railing distress within the stair towers.
- B. Work includes, but is not limited to, the following activities:
 1. Concrete overlay repair
 2. Partial-depth topside and underside slab repairs
 3. Concrete curb repair
 4. Formed slab edge concrete repairs
 5. Slab on ground repairs
 6. Formed vertical concrete repairs
 7. Concrete repairs in stair towers
 8. Stair tower railing post base replacement
 9. Replacement and repair of CMU and brick masonry
 10. Replacement of sealant at construction joints
 11. Replacement of sealant at coves
 12. Routing and sealing of cracks
 13. Drain and drain component replacement
 14. Installation of traffic-bearing membrane within the stair towers

1.5 LUMP SUM WORK ITEMS

- A. Lump Sum Item 1: General Conditions - All work defined in the Contract Documents not included in the other work items below. This includes, but is not limited to, supervision; mobilization; coordination and meetings; permits; personnel lifts; dust protection; submittals; mock-ups; shoring for concrete repairs; restriping of disrupted pavement markings; concrete material testing; protection of existing construction from damage; dumpsters; job site cleaning; temporary facilities and controls; temporary traffic control and signage; barricades; and project close out.
- B. Lump Sum Item 2: Performance Bond and Labor and Material Payment Bond, each in the amount of 100 percent of the contract sum, held for a minimum of 1 year after acceptance of work.
- C. Lump Sum Item 3: Installation of traffic-bearing membrane (traffic coating) in the three stair towers - This item includes, but is not limited to:
 - 1. Furnishing labor and materials
 - 2. Abrasive shotblasting horizontal surfaces to be coated, following concrete repairs
 - 3. Abrasive vertical surfaces to be coated, following wall and concrete repairs
 - 4. Air blast cleaning of all surfaces
 - 5. Protection of prepared surfaces from contamination until membrane installation
 - 6. New cove sealant at all interfaces between vertical and horizontal surfaces
 - 7. Detail strip of basecoat of membrane over all joints, cracks, and tie-ins
 - 8. Membrane system installation
 - 9. Upturning membrane at vertical surfaces
 - 10. Removing and resetting stair tower cover plates in bead of sealant
 - 11. Phasing of work to allow two stair towers open at any given time
- D. Lump Sum Item 4: Installation of new expansion joint compression seal at the three roof level stair towers and one snow shoot. This includes removal of existing sealant, foam board, and grinding of concrete edges as required to install new compression seals and silicone sealant. The new expansion joint seals shall have factory formed joints. Refer to detail 6/S-503. Concrete repairs adjacent to joints shall be paid per Unit Price Items 7, 8, 9, and 11, as appropriate. Masonry repairs shall be paid per Unit Price Items 22 and 23, as appropriate.
- E. Lump Sum Item 5: Replace damaged and missing drain covers and clean drain bowls - This item includes: at each floor drain on Levels 1-4, remove each drain grate and drain strainer, remove debris, and clean each drain; replace all damaged and missing floor drain grates and strainers using compatible materials and drain grates intended for vehicular traffic; reinstall drain grates and drain bowls. Notify engineer if components other than grates are damaged. Repair damaged drain lines per Allowance Item 1. Replace damaged drains per Unit Price Item 27. Replacement of (12) drain grates is assumed.

1.6 UNIT PRICE WORK ITEMS

- F. Refer to Section 01 22 00 for description of work and basis for payment for unit price items on the east elevation.
- G. Concrete Repair Items
 - 1. Concrete overlay repair (Keynote 7)
 - 2. Partial-depth topside concrete slab repair (Keynote 8)
 - 3. Partial-depth underside concrete slab repair (Keynote 9)
 - 4. Concrete curb repair (Keynote 10)
 - 5. Slab edge concrete repair (Keynote 11)

6. Slab on ground repair (Keynote 12)
7. Formed vertical concrete repair (Keynote 13)
8. Stair tower - Partial-depth topside concrete slab repair (Keynote 14)
9. Stair tower - Full-depth concrete slab repair (Keynote 15)
10. Stair tower stairs - Partial-depth topside concrete slab repair (Keynote 16)
11. Stair tower stairs - Partial-depth underside concrete slab repair (Keynote 17)
12. Stair tower railing post base replacement (Keynote 18)
13. Supplemental steel reinforcement
14. Supplemental epoxy-grouted steel dowels

H. Masonry Repair Items

1. Localized replacement of concrete masonry units (Keynote 21)
2. Localized repointing at brick masonry (Keynote 22)
3. Localized replacement of clay brick masonry units (Keynote 23)
4. Localized brick masonry cleaning (Keynote 28)

I. Waterproofing Repair Items

1. Replace sealant at concrete overlay control joints (Keynote 24)
2. Replace sealant at cove (Keynote 25)
3. Rout and seal cracks in slab (Keynote 26)
4. Drain replacement (Keynote 27)

1.7 ALTERNATE WORK ITEMS

A. Alternate 1 – Architectural coating (non-elastomeric) at the following locations:

1. Cast in place concrete columns.
 2. Cast in place concrete walls, including all faces of the internal walls at the roof level adjacent to the ramp, at the inside/interior face of the perimeter walls at the roof level, and at the inside/interior face of the perimeter and internal ramp walls at the first level.
 3. Cast in place concrete ceilings (underside of elevated slabs).
 4. Cast in place concrete stairs and landings (underside of landings, underside of risers, and exposed vertical surfaces (sides) of risers and landings).
 5. Concrete masonry units (CMU) at the interior-facing walls of the stair towers
 6. Concrete masonry units (CMU) at the exterior- (garage) facing walls of the mechanical rooms, restroom, and offices.
 7. Steel railings within the stair towers, including the new railing post base plates.
- Refer to specification section 09 97 24.

1.8 SCHEDULE

- A. Schedule: It is anticipated that work will begin in May 2023 with project completion by the end of October, 2023. Contactor shall provide adequate manpower as required to meet the project schedule.
- B. Work to the lot west of the parking structure, separate from this repair project, is anticipated to begin in late April or early May. Coordinate with Owner as required.

1.9 CONTRACTOR USE OF PREMISES

- A. Confine operations at Site to areas permitted by law, ordinance, permits, and Contract Documents.
- B. Owner will occupy premises outside of Work area during construction period.

1. Cooperate with Owner to minimize conflicts and facilitate Owner usage.
 2. Perform Work to avoid interference with Owner's day-to-day operations. Notify Owner's Representative at least 72 hours in advance of activities that will affect Owner's operations.
 - a. Maintain utilities serving areas occupied by Owner or others. Do not interrupt utilities unless approved in writing in advance by Owner's Representative. Notify Owner's Representative at least 72 hours in advance of interruption. Provide temporary utility services if required.
 3. Maintain vehicular, pedestrian, and emergency access to portions of facility that are in use. Keep entrances and exits clear of stored materials and construction equipment.
 - a. Short interruptions in access may be permitted if approved in advance in writing by the Owner's Representative.
 - b. Schedule deliveries to minimize interruptions.
 4. Do not disturb Site outside of Work area.
 5. Provide temporary protection around existing equipment and stored materials as required.
 6. Minimize damage to building weatherproofing system during construction period, and promptly repair damage caused by construction operations. Protect building and occupants in Work area.
 7. Notify the Owner's Representative at least one week in advance of when portions of Work area will be removed from use or returned to use.
- C. Minimize interference with adjacent walkways and facilities.
- D. Additional storage or operational area outside of Work area, either inside or outside of building, shall be coordinated in advance with the Owner's Representative.
1. Construction equipment, tools, etc., shall not be stored in areas of Owner's continued use.
 2. Do not unreasonably encumber Site with materials or equipment.
 3. Do not load Project structure with weight that will endanger Project structure.
 4. Assume full responsibility for Site security and protection and safekeeping of products stored at Site.
 5. Obtain and pay for additional storage areas needed for operations.
- E. Construction activities shall be limited to the following times:
1. Mondays through Fridays 7:00 AM to 7:00 PM.
 2. Saturday 7:00 AM to 7:00 PM when mutually agreed upon with Owner.
 3. Only as permitted by ordinance, if more restrictive than above.
- F. Contractor is not responsible for damage to electrical conduits embedded in concrete. Owner will pay for necessary electrical repairs.

1.10 OWNER OCCUPANCY

- A. Owner will occupy areas outside of Work area where construction has been completed, before Substantial Completion. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building. Occupancy shall not constitute acceptance of total Work; assume responsibility for Work in re-occupied areas not in conformance with Contract Documents.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION 01 11 00

SECTION 01 21 00

ALLOWANCES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for allowances.

1.2 ALLOWANCE ADJUSTMENT

- A. As Work covered by allowance becomes known, submit cost proposal to Architect/Engineer for Work. See Section 01 20 10.
1. Provide cost proposals from more than one source upon request.
 2. Provide breakdown of cost proposal upon request.
 3. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins. Prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed, upon request.
 4. Include costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other associated expenses as part of allowance.
 5. Include recommendations that are relevant to performing Work.
- B. Owner will execute Change Order to authorize Allowance Work.
1. Advise Architect/Engineer of date when Allowance Work must be authorized to avoid delaying Work.
- C. Submit invoices and delivery slips to show actual quantities of materials delivered to site for Allowance Work.
- D. Coordinate materials and their installation for Allowance Work with related materials and installations to ensure that Allowance Work is integrated and interfaced with related work. Furnish templates as required to coordinate installation.
- E. At Project closeout, credit unused Allowance amounts to Owner.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.1 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1 (Bid Form No. 6): Lump-Sum Allowance:
1. Include the sum of \$10,000 to replace the damaged drain lines with new cast iron pipes where floor drains are to be replaced, as required.
 2. Work shall comply with the Michigan Plumbing Code.
 3. Actual work performed will depend on the inspection of the conditions at floor drain replacement locations.

4. This allowance includes material cost, receiving, handling, and installation, and Contractor overhead and profit.

END OF SECTION

SECTION 01 22 00
UNIT PRICES

PART 1 - GENERAL

1.1 PAYMENT OF UNIT PRICE QUANTITIES

- A. A portion of the work is to be paid for on a Unit Price basis based on actual quantities. The work items and basis of payment are listed below. These activities are described in Section 01 11 00 - Summary of Work and in the Drawings and are to be completed as per the Specification.
1. Definition: Unit price, stated on the Bid Form, is the price per unit of measurement for materials and services for a specific Work activity. The Contract Sum may be increased or decreased by Unit Price adjustment, based on the difference between the estimated bid quantity and the actual Work quantity.
 2. Payment Procedures:
 - a. As part of Project closeout, the Contract Sum will be modified by the unit price times the variation in the actual Work quantity from the estimated quantity included in the Bid Form, based on quantities measured by the Contractor and approved by the Architect/Engineer.

Bid Item	Type of Work	Unit
7	Concrete overlay repair (Keynote 7)	
	The cost of this work includes:	
	<ul style="list-style-type: none"> a) Furnishing labor and materials b) Partial-depth removal and disposal of sound and unsound concrete (average thickness of 3 inches) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and air blasting with compressed air e) Forming and recasting repair with ready-mix concrete or proprietary repair concrete f) Providing control joints in slab to match existing g) Curing 	
	Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.	
	Payment based on surface area (square foot) of concrete repaired.	\$/sq ft

Bid Item	Type of Work	Unit
8	<p>Partial-depth topside concrete slab repair (Keynote 8)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Partial-depth removal and disposal of sound and unsound concrete (average thickness of 6 inches, including 3 inches of overlay) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air e) Coating exposed steel with two layers of corrosion-inhibiting coating f) Recasting repair with ready-mix concrete or proprietary repair concrete g) Providing control joints in slab to match existing h) Curing <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft
9	<p>Partial-depth underside concrete slab repair (Keynote 9)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Shoring c) Removal and disposal of sound and unsound concrete (average thickness of 3 inches) d) Sawcutting edges of removal area e) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air f) Coating exposed steel with two layers of corrosion-inhibiting coating g) Forming and pumping repair area with ready-mix concrete or proprietary repair concrete h) Curing i) Stripping forms <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft

Bid Item	Type of Work	Unit
10	<p>Concrete curb repair (Keynote 10)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Partial-depth removal and disposal of sound and unsound concrete (average thickness of 3 inches) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air e) Coating exposed steel with two layers of corrosion-inhibiting coating f) Forming and recasting repair with ready-mix concrete or proprietary repair concrete g) Curing <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft
11	<p>Formed slab edge concrete repair (Keynote 11)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Shoring c) Removal and disposal of sound and unsound concrete (average thickness of 4 inches) d) Sawcutting edges of removal area e) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air f) Coating exposed steel with two layers of corrosion-inhibiting coating g) Restoring the section with formed and poured ready-mix concrete or proprietary flowable repair concrete h) Curing i) Stripping forms <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft

Bid Item	Type of Work	Unit
12	<p>Slab on ground repair (Keynote 12)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Removal and disposal of sound and unsound concrete (average depth of 5 inches) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air e) Coating exposed steel with two layers of corrosion-inhibiting coating f) Installing new dowels and reinforcing steel shown in the details g) Compacting existing subgrade and adding crushed stone as necessary h) Forming and recasting repair with ready-mix concrete or proprietary repair concrete i) Providing control joints in slab to match existing j) Curing <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft
13	<p>Formed vertical concrete repair (Keynote 13)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Removal and disposal of sound and unsound concrete (average depth of 4 inches) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air e) Coating exposed steel with two layers of corrosion-inhibiting coating f) Forming and recasting repair with ready-mix concrete or proprietary repair concrete g) Curing h) Stripping forms <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft

Bid Item	Type of Work	Unit
14	<p>Stair tower - Partial-depth topside concrete slab repair (Keynote 14)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Partial-depth removal and disposal of sound and unsound concrete (average thickness of 3 inches) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air e) Coating exposed steel with two layers of corrosion-inhibiting coating f) Recasting repair with ready-mix concrete or proprietary repair concrete g) Providing control joints in slab to match existing h) Curing <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/SF
15	<p>Stair tower - Full-depth concrete slab repair (Keynote 15)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Shoring c) Removal and disposal of sound and unsound concrete (7inch nominal thickness) d) Sawcutting edges of removal area e) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air f) Coating exposed steel with two layers of corrosion-inhibiting coating g) Forming and recasting repair with ready-mix concrete or proprietary repair concrete h) Curing i) Stripping of forms <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft

Bid Item	Type of Work	Unit
16	<p>Stair tower stairs - Partial-depth topside concrete slab repair (Keynote 16)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Partial-depth removal and disposal of sound and unsound concrete (average thickness of 3 inches) c) Sawcutting edges of removal area d) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air e) Coating exposed steel with two layers of corrosion-inhibiting coating f) Forming stair edge and recasting repair with ready-mix concrete or proprietary repair concrete g) Curing h) Stripping of forms <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft
17	<p>Stair tower stairs - Partial-depth underside concrete slab repair (Keynote 17)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Shoring c) Removal and disposal of sound and unsound concrete (average thickness of 3 inches) d) Sawcutting edges of removal area e) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air f) Coating exposed steel with two layers of corrosion-inhibiting coating g) Forming and pumping repair area with ready-mix concrete or proprietary repair concrete h) Curing i) Stripping forms <p>Note: The installation of supplemental steel reinforcing and dowels are paid under separate unit price items.</p> <p>Payment based on surface area (square foot) of concrete repaired.</p>	\$/sq ft

Bid Item	Type of Work	Unit
18	<p>Stair tower railing post base replacement (Keynote 18)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Cutting of existing railing post c) Shoring/supporting of railing to remain d) Partial-depth removal and disposal of sound and unsound concrete as required to remove existing embedded post anchorage (6inch depth by 8inch width assumed) e) Sawcutting edges of removal area f) Sandblasting clean exposed concrete and steel reinforcing steel and air blasting with compressed air g) Coating exposed steel with two layers of corrosion-inhibiting coating h) Forming landing or stair edge and recasting repair with ready-mix concrete or proprietary repair concrete i) Curing j) Stripping of forms k) Fabrication of new railing post base l) Installation of new railing post base with epoxy anchors m) Placement of existing railing post into new base and welding of existing post to new base n) Refer to detail 5/S-502 <p>Note: The installation of supplemental steel reinforcing and dowels for the concrete repair are paid under separate unit price items.</p> <p>Payment based on each railing post base installed.</p>	\$/each
19	<p>Supplemental steel reinforcement</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing and installing epoxy-coated (shop applied) conventional steel reinforcement in concrete repairs <p>Payment based on weight (ton) of steel installed.</p>	\$/ton

Bid Item	Type of Work	Unit
20	Supplemental Dowels The cost of this work includes: <ul style="list-style-type: none"> a) Furnishing labor and materials b) Drilling holes for dowels c) Cleaning holes in accordance with manufacturer instructions d) Filling holes with adhesive grout e) Coordinating with and permitting inspector access to inspect holes after cleaning f) Installing dowels in accordance with manufacturer instructions g) Coating exposed portions of dowel with two layers of corrosion-inhibiting coating after installation 	
	Payment based on each dowel installed.	\$/each
21	Localized replacement of concrete masonry units (Keynote 21) The cost of this work includes: <ul style="list-style-type: none"> a) Removing existing units b) Installing new units in-kind c) Coating new units to match existing 	
	Payment based on each units replaced.	\$/each
22	Repointing of brick masonry (Keynote 22) The cost of this work includes: <ul style="list-style-type: none"> a) Removing existing mortar b) Cleaning and preparing surfaces for new mortar c) Installing new mortar in lift per details 	
	Payment based on length (linear feet) of mortar replaced.	\$/ft
23	Localized replacement of concrete masonry units (Keynote 21) The cost of this work includes: <ul style="list-style-type: none"> a) Removing existing units b) Installing new units in-kind 	
	Payment based on surface area (square foot) replaced.	\$/sq ft

Bid Item	Type of Work	Unit
24	<p>Replace sealant at concrete overlay control joints (Keynote 24)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Removing existing sealant c) Routing joint d) Preparing concrete surface for new sealant e) Installing backer rod or bond breaker f) Applying primer for sealant g) Installing sealant h) Permitting sealant to cure adequate time <p>Note: Replacement of concrete as required to restore the joint profile and address deterioration will be paid under separate unit price items.</p> <p>Payment based on length (linear feet) of sealant replaced.</p>	\$/ft
25	<p>Replace sealant at cove (Keynote 24)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Removing existing sealant and preparing concrete to received new sealant c) Installing backer rod or bond breaker d) Applying primer for sealant e) Installing sealant f) Permitting sealant to cure adequate time <p>Payment based on length (linear feet) of joint seal replaced.</p>	\$/ft
26	<p>Rout and seal cracks in slab (Keynote 14)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Existing sealant removal, if present c) Routing crack d) Installing backer rod or bond breaker e) Applying primer f) Installing sealant g) Permitting sealant to cure adequate time <p>Payment based on length (linear feet) of sealing cracks.</p>	\$/ft

Bid Item	Type of Work	Unit
27	<p>Drain replacement (Keynote 27)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Removing existing damaged drain c) Installing new drain d) Attach new drain to plumbing <p>Note: The concrete removal and repair required to replace drain are paid under separate unit price items. The installation of supplemental steel reinforcing and dowels are also paid under separate unit price items. Repairs to damaged drain lines are to be paid per Allowance Item 1.</p>	
	Payment based each drain replaced.	\$/each
28	<p>Brick Masonry Cleaning (Keynote 28)</p> <p>The cost of this work includes:</p> <ul style="list-style-type: none"> a) Furnishing labor and materials b) Cleaning of brick masonry 	
	Payment based on surface area (square foot) cleaning.	\$/sq ft

1.2 MEASUREMENT OF QUANTITIES

- A. Measure work to be performed on a unit price basis according to the methods described in 1, 2, and 3 below. Payment will be made for work actually performed, based on quantities recorded by the Contractor and approved by the Engineer. Unless stated otherwise, records described below shall consist of both plan view drawings and tables cross-referenced to the drawings with the required data. Unless otherwise stated, the Engineer will verify the accuracy of the record by visual examination of the work performed and measurement of the quantities with a measuring wheel or similar method.
1. Unit Price Items 7 to 18 and 21 to 28: The Contractor shall maintain a record of the location and quantity for each repair completed.
 2. Unit Price Items 18 and 19: The Contractor shall maintain a record of the location and quantity or weight of supplemental steel installed for each repair.
 3. The Contractor shall submit this record to the Engineer on a weekly basis.
- B. The Contractor shall notify the Owner's Representative and the Engineer at once in writing of any unit price work that deviates materially from the prescribed basis for bidding and for which an adjustment in Unit Price is desired. The Contractor shall measure and quantify all such deviations, subject to verification by the Engineer, prior to any repair work which might make verification impossible. No adjustments in Unit Prices will be considered unless supporting field measurements are provided, and subject to the Owner's Representative's prior approval. Adjustments will only be considered if all repairs of a given type have been measured and all deviations, both plus and minus, have been included in the determination of the average deviation from the Unit Price basis.

END OF SECTION 01 22 00

**SECTION 02 01 11
SHORING**

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Supply, installation, and removal of temporary shoring to support structural elements vertically.
- B. Related Sections:
 - 1. Section 01 11 00 - Summary of Work
 - 2. Section 01 22 00 - Unit Prices
 - 3. Section 03 01 31 - Concrete Removal and Surface Preparation
 - 4. Section 03 01 34 - Concrete Replacements

1.2 PAYMENT

- A. Include the following in General Conditions or unit prices as applicable:
 - 1. Design of shoring, developing shoring procedures, preparing shoring submittals, and providing and installing shoring.

1.3 COORDINATION

- A. Coordinate with Owner's Representative and with other trades to ensure that shoring does not interfere with Owner use of Site or work of other trades.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's literature and technical data indicating type of shoring proposed for use and safe load-carrying capacity of shoring for heights and lengths of shoring components to be used.
- B. Shop Drawings: Shop drawings showing locations, distribution, and quantity of shoring. Include connection and bearing details. Shop drawings shall be prepared by or under supervision of qualified, licensed Structural Engineer and shall be sealed by engineer.
- C. Design Calculations: Calculations prepared by or under supervision of qualified, professional engineer licenced in Michigan, and sealed by engineer, indicating that shoring meets design criteria.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store shoring materials in approved storage area at Site, such that materials do not interfere with Owner's continued use of facility.
- B. Limit stored materials on structure to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.

1.6 PROJECT CONDITIONS

- A. Comply with Owner's limitations and restrictions for Site use and accessibility.

PART 2 PRODUCTS

2.1 MANUFACTURED ASSEMBLIES

- A. Design Criteria:
 - 1. Design for dead load and minimum 20-pound-per-square-foot construction load over tributary area of member being repaired, as follows:
 - a. Design shall include a minimum factor of safety of 2.0.
 - b. Design spreaders to distribute load over an effective area to result in a 2,500 psf or less bearing pressure on the concrete slab.
 - c. Consider removal of loads from member and transfer of loads into structure below, without overloading structural members.
 - d. Detail shoring to avoid interference with Owner operations.
 - e. Consider shoring stiffness relative to stiffness of members being shored.
- B. Shoring: Steel posts, steel frames, or other steel assemblies with sufficient capacity to support calculated shoring loads at spacing and positioning shown on shop drawings.
 - 1. Adjustable through positive means, such as screw jacks, to achieve tight fit to structure above and below and to compensate for elastic shortening of shores during loading and service.
 - 2. Use undamaged components, including bracing, supplied by shoring manufacturer.

2.2 ACCESSORIES

- A. Spreaders:
 - 1. At bottom of shores: steel or timber cribbing with minimum a minimum cross section of 3-1/2 inches by 3-1/2 inches, or other material; with sufficient bearing area and length to distribute shoring reactions into supporting structural element below.
 - 2. At top of shores: Timber or steel spreader beams or wood bearing pads; to fully support member being shored without damage to member surface.
- B. Shims: Wood or steel; at bearing points above shores to ensure tight contact with shored member.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements and other conditions affecting installation or performance of shoring Work.
 - 1. Ensure that work done by other trades is complete and ready for shoring Work.
 - 2. Notify Engineer in writing of conditions which may adversely affect installation or performance of shoring Work and recommend corrections.
 - 3. Do not proceed with shoring Work until adverse conditions have been corrected and reviewed by Engineer.
 - 4. Commencing shoring Work constitutes acceptance of Work surfaces and conditions.

3.2 INSTALLATION

- A. Install shoring in accordance with manufacturer's recommendations and approved shop drawings at designated locations and at additional locations designated by Engineer.

Installed assembly shall be of such quality that assembly will support imposed loads without excessive settlement or deflection.

1. Position to avoid interference with Owner operations.
 2. Install snug, plumb, and square. Install cross-bracing recommended by shoring manufacturer and shoring designer to prevent buckling failure of individual members and overall shoring stability failure. Extend shoring above and below level of repair work as required by shoring design.
 3. Install spreader beams or bearing pads and shims as necessary, and adjust shores to ensure tight, uniform fit against structural element to be supported. Minimize differential loading of vertical shoring members.
 4. Install timber cribbing wood or wood bearing pads as necessary to distribute loads into supporting elements. If more than 1 layer of cribbing is required, install each successive layer perpendicular to preceding layer.
 5. If shoring is to be placed on coated or finished surface, protect surface from damage with plywood, plastic sheets, or other means.
- B. Preload shores with screw jacks to bring shoring into a uniform, snug-tight condition.
- C. Protect shores from damage from construction activities, Owner use of facility, and other causes.
- D. Check shores daily and adjust as necessary to maintain snug condition, plumbness, and full effectiveness.
- E. Modify and adjust shoring as required to meet conditions of work and to ensure Project safety.

3.3 REMOVAL OF SHORES

- A. Remove shores when compressive strength of repair concrete exceeds 75 percent of its specified 28-day strength. Contractor may elect to have additional concrete strength tests performed at his own expense, to confirm when repair concrete meets removal requirements.
- B. Store shoring materials in approved storage area at Site, such that materials do not interfere with Owner's continued use of facility. Promptly remove shoring materials from Site when no longer needed for work.

END OF SECTION 03 01 01

SECTION 03 01 31
CONCRETE REMOVAL AND SURFACE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Concrete removal and surface preparation prior to concrete replacement, including:
 - 1. Removal of unsound and sound concrete.
 - 2. Preparation of concrete and steel surfaces.
 - 3. Coating reinforcing bars and embedded steel with corrosion-inhibiting material.
 - 4. Supply and installation of supplemental epoxy-coated reinforcing bars.
 - 5. Supply and installation of epoxy-grouted steel dowels.
- B. Related Sections:
 - 1. Section 01 22 00 - Unit Prices
 - 2. Section 02 01 11 - Shoring
 - 3. Section 03 01 34 - Concrete Replacements

1.2 UNIT PRICES

- A. Perform the following Work on unit price basis:
 - 1. Concrete removal and surface preparation. Included in vertical and overhead concrete unit prices.
 - 2. Supply and installation of supplemental steel reinforcement. Payment based on nominal weight of bars installed.
 - 3. Supply and installation of epoxy-grouted dowels. Payment based on number of dowels installed.

1.3 COORDINATION

- A. Coordinate with Owner's Representative and with other trades to ensure that adjacent areas are not adversely affected by concrete removal Work.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's literature and technical data for corrosion-inhibiting coating material, and epoxy for epoxy-grouted dowels, indicating applicability of product for proposed use.
- B. Certificates:
 - 1. For installer of epoxy-grouted dowels: ACI-CRSI Certification as Adhesive Anchor Installer.
- C. Epoxy-Coated Reinforcing Steel:
 - 1. Mill test reports for steel reinforcement, indicating conformance with ASTM A615/A615M.
 - 2. Certification from CRSI indicating that coating applicator is certified by CRSI Epoxy Plant Certification Program.

3. Certification statement from coating applicator that material, coating process, and coating properties conform to ASTM A775/A775M, including preheat temperatures, cure times, thickness checks, holidays detected, and bend test results for each bar size.
- D. Confinement, Collection, and Disposal Plan: Written plan for confining, collecting, and disposing of broken concrete, sandblast grit, dust, debris, existing reinforcing, and other waste material resulting from removal operations and surface preparation.

1.5 QUALITY ASSURANCE

- A. Mockups: Demonstrate adequacy of concrete removal and surface preparation procedures as part of mockups in 03 01 34 and 03 01 35.
- B. Qualifications for Installer of Epoxy-Grouted Dowels: Experienced individual with current ACI-CRSI certification as Adhesive Anchor Installer.
 1. Applicable only for anchors in horizontal or upwardly inclined orientations.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials according to manufacturer's recommendations and in such manner as to prevent damage to materials or structure.
- B. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.
- C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application, or have been exposed to moisture.
- D. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature and humidity range required by material manufacturer.
- E. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.
- F. Conspicuously mark damaged or opened containers or containers with contaminated materials, and remove from Site as soon as possible.
- G. Remove materials that cannot be applied within stated shelf life from Site and replace with new materials.

1.7 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to start of concrete removal Work. Notify Engineer of conditions found to be different than those indicated in the Contract Documents. Engineer will review situation and inform Contractor and Installer of changes.
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.

- C. Dust, Fume, and Noise Controls:
 - 1. Confine dust and debris to Work area and prevent from entering portions of facility that remain in use.
 - 2. Direct equipment exhaust away from occupied spaces. Vent equipment operating within structure to outside or condition exhaust gases with catalytic converter.
 - 3. Operate equipment at noise levels conforming to requirements of city, state, and federal laws and codes, and Owner limitations.
- D. Maintain adequate ventilation during preparation and application of materials.

1.8 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials or mislocation of embedded elements such as reinforcing steel, which may interfere with proper execution of the Work.
 - 1. Notify Engineer of conditions that may interfere with proper execution of the Work prior to proceeding with Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Corrosion-Inhibiting Coating Materials: Use material specifically intended for reinforcing steel embedded in concrete.
 - 1. Zinc-rich Steel Primer:
 - a. MasterProtect P 8100 AP, supplied by BASF Construction Chemicals, LLC.
 - b. ECB - Electro-Chemical Barrier, supplied by Conproco,
 - c. or approved equal.
 - 2. Epoxy Coating:
 - a. Sikadur 32 Hi-Mod by Sika Corporation
 - b. or approved equal.
 - 3. Cementitious Coating:
 - a. Sika Armatex 110 EpoCem by Sika Corporation
 - b. or approved equal
- B. Epoxy-Coated Reinforcing Bars: Deformed bars with 60,000 psi minimum yield strength conforming to ASTM A615/A615M, Grade 60. Sizes as shown on Drawings or directed by Engineer.
 - 1. Reinforcing bars shall be shop-coated with fusion-bonded protective coating of epoxy powder applied by electrostatic spray method or electrostatic fluidized-bed method in accordance with ASTM A775/A775M.
 - a. Reinforcing bars shall be supplied by certified CRSI epoxy-coating application plant. Furnish certification statement with each shipment.
 - b. Repair Material: Liquid, two-part, epoxy repair material; supplied by epoxy resin manufacturer and complying with requirements of ASTM A775A/A775M.
 - 2. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Bar supports shall be manufactured from steel wire, plastic, or precast concrete in accordance with "Bar Support Specifications and Standard Nomenclature" in CRSI *Manual of Standard Practice*.

- a. With epoxy-coated reinforcing steel, use metal chairs and supports coated with epoxy, plastic, or other inert dielectric polymer coating.
3. Plastic-Coated Tie Wire: Wire used to secure bars during concrete placement shall be 16-gauge steel wire, and shall be plastic coated to protect the reinforcing coating from physical damage.
- C. Steel Wire and Welded Wire Reinforcement, Plain and Deformed: Steel wire and welded wire reinforcement shall conform with 65,000 pounds per square inch minimum yield strength conforming to ASTM A1064.
 1. Epoxy coated wire and welded wire reinforcement shall conform to the requirements of ASTM A884.
 2. Welded Wire Reinforcement shall be epoxy coated 6x6-W4xW4, unless otherwise approved by Engineer based on existing reinforcing. Use epoxy coated 6x6-W4xW4 for all new installations where not otherwise specified
- D. Epoxy-Grouted Dowels:
 1. Dowels: ASTM A615/A615M, Grade 60, uncoated steel bars, cut true to length with ends square and free of burrs.
 2. Epoxy-Adhesive for Dowels: Adhesive must be supplied in pre-measured sausages. Use one of the following:
 - a. HIT-HY 200-R hybrid adhesive supplied by Hilti, Inc.
 - b. AC100+ Gold vinylester supplied by Powers Fasteners.
 - c. Or approved equal.

2.2 FABRICATION

- A. Fabricate and detail steel reinforcement to shapes and dimensions shown on Drawings in accordance with and within fabricating tolerances shown in CRSI's *Manual of Standard Practice*.
- B. Bends and hooks shall conform to dimensions defined as "ACI Standard Hooks" in CRSI's *Manual of Standard Practice* unless otherwise shown on Drawings.
- C. Welded Wire Reinforcing shall conform to the recommendations of the Wire Reinforcing Institutes WWR 400-R-03.
- D. Do not bend or straighten reinforcing bars in manner that will injure coating material. Reduce rate of bending as necessary to minimize cracking or debonding of coating. Promptly coat visible cracking or debonding of coating in bending area and elsewhere, except that hairline cracks, 0.003 inches or less in width, at base of bar deformation need not be coated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements and other conditions affecting concrete removal Work.
 1. Ensure that work done by other trades is complete and ready for concrete removal Work.
 2. Verify that areas and conditions under which concrete removal Work is to be performed permit proper and timely completion of Work.

3. Notify Engineer in writing of conditions which may adversely affect concrete removal Work and recommend corrections.
4. Do not proceed with concrete removal Work until adverse conditions have been corrected and reviewed by Engineer.
5. Commencing concrete removal Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Take precautions to ensure safety of people, including building users, and workmen, and animals, and protection of property, including adjacent building elements, equipment, landscaping, and motor vehicles.
- B. Prevent construction debris and other materials from coming into contact with building users, motor vehicles, building equipment landscaping, and other surfaces that could be harmed by such contact.
- C. Limit access to Work areas.
- D. Erect temporary protective canopies, as necessary, over occupied areas that must remain in service during Work.
- E. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 EQUIPMENT

- A. Pneumatic Chipping Hammers:
 1. Nominal 30-lb class or less for removal of concrete at repair areas.
 2. Nominal 15-lb class or less for detail work adjacent to and beneath reinforcing steel.
- B. Saws capable of sawcutting concrete to specified depth.
- C. Sandblasting equipment capable of removing laitance, dirt, loose pieces of concrete, and surface contaminants from exposed concrete surfaces and rust, concrete, and surface contaminants from exposed steel surfaces.
- D. High-pressure, oil-free compressed air equipment capable of removing dust and dirt from exposed concrete removal areas.
- E. Percussive or rotary drilling equipment for making holes in concrete substrate for dowel installation.

3.4 CONCRETE REMOVAL AND SURFACE PREPARATION

- A. Sound perimeter concrete surfaces and mark with paint areas of unsound concrete. Engineer will review markings before concrete removal Work begins. Provide a minimum of 24 hours advance notice to Engineer prior to commencing concrete removal.

- B. Prior to concrete removal Work:
 - 1. Remove abandoned plumbing and electrical lines and associated fixtures that interfere with Work. Shore active plumbing and electrical lines and reattach at completion of Work. Owner will relocate active plumbing and electrical lines that cannot be temporarily supported.
 - 2. Install shoring as specified or directed by Engineer.
 - 3. Develop plan for confining and disposing of broken concrete and other debris from removal Work.
 - 4. Develop and implement plan for assessing and monitoring lead hazard during concrete removal. Perform removal to minimize hazards due to the disturbance of lead paint.
- C. Concrete removal areas:
 - 1. Where possible, make rectangular in shape in plan.
 - 2. Avoid re-entrant corners.
 - 3. Extend at least 4 inches beyond edge of unsound concrete.
- D. Create square edges of removal areas.
 - 1. Sawcut 3/4 inch at top surface removal areas. Do not saw through reinforcing steel, embedded electrical conduits, or other embedments.
 - 2. Chip or sawcut square edges of overhead and vertical removal areas at least 1/2 inch deep.
- E. Remove unsound concrete and, as necessary, sound concrete to create minimum removal depth of 2 inches and gaps around partially exposed reinforcing bars of at least 3/4 inches.
 - 1. Exercise care to avoid cracking underlying sound concrete, punching through member, or damaging embedments such as electrical conduit.
 - 2. Limit chipping hammer size and impact angle to minimize damage to sound concrete. Impact angle shall be no more than 60 degrees to surface.
 - 3. Avoid abrupt changes in depth of removal.
- F. Prepare concrete surfaces in repair areas to have a minimum peak-to-valley surface roughness of approximately 1/4 inch, meeting the requirements of ICRI CSP 7. Achieve preparation using chipping hammers or by scarification.
- G. At full-depth removal areas, slope removal area edges downward and inward at a slope of one to one.
- H. Notify Engineer and Owner's Representative of embedded electrical conduit encountered in removal areas. Proceed as directed by Engineer and Owner's Representative. Unless otherwise directed, remove abandoned conduit and wires in removal area.
- I. Inspect and sound concrete surfaces in and around removal areas. Remove additional unsound concrete. Sawcut or chip square new removal area perimeter as necessary.
- J. Sandblast clean surfaces of removal area, including vertical edges, to remove surface contaminants, loose pieces of concrete, and concrete that is bruised or micro-fractured and to roughen surfaces. Clean removal area surfaces with dry, oil-free compressed-air jet.
- K. Inspect prepared concrete surfaces and remedy defects. Allow Engineer at least 48 hours to observe prepared surfaces prior to patch placement.

3.5 REINFORCEMENT PREPARATION

- A. Leave existing reinforcing in place unless otherwise directed by Engineer.
- B. Notify Engineer of reinforcing bars that are incorrectly located or have less than 1/2 inch of concrete cover; are damaged or fractured; or have lost more than twenty percent of their original cross-sectional area at any point. Engineer will determine remedial action.
- C. Sandblast clean exposed steel surfaces, including existing reinforcement and embedments, to SSPC-SP 6/NACE No. 3 finish, with minimal rust or concrete debris. Clean steel surfaces with dry, oil-free compressed-air jet. Exercise care to clean undersides of reinforcing bars.
- D. Inspect prepared steel surfaces and clean remaining contaminants. Allow Engineer at least 24 hours to observe prepared surfaces prior to coating steel.
- E. Apply two coats of corrosion-inhibiting material on exposed steel surfaces.
 - 1. Batch, mix, and apply material according to recommendations of material supplier.
 - 2. Exercise care to coat difficult-to-reach surfaces, such as undersides of reinforcing bars.
 - 3. Minimize spillage on concrete surfaces. Remove materials that will act as bond breaker by chipping or other means.
 - 4. Inspect coated steel surfaces and apply additional coats to uncoated or thinly-coated areas. Allow Engineer at least 24 hours to observe prepared coated surfaces prior to concrete placement.

3.6 INSTALLATION OF EPOXY-GROUTED STEEL DOWELS

- A. Remove and replace unsound concrete at dowel locations.
 - 1. Holes shall be dry-drilled using percussive tool. Other methods of drilling must be submitted to the Engineer for approval.
 - 2. Locate existing reinforcement with reinforcing bar locator and position holes to avoid existing reinforcement.
 - 3. Do not damage existing reinforcement.
 - 4. Make hole diameter at least 1/8 inch larger than dowel diameter, unless otherwise recommended by epoxy manufacturer.
 - 5. Remove epoxy from end of dowel, if present, to be epoxied into concrete.
- B. Clean holes with stiff brush and dry, oil-free compressed-air jet to remove loose concrete, dust, and debris. Repeat brushing and blowing out hole until dust-free air emanates from hole.
- C. Inject epoxy with tube into back of hole and fill hole to front, withdrawing tube to prevent entrapped air.
 - 1. Discard initial portion of epoxy according to manufacturer's directions. Change mixing tubes as recommended by the material manufacturer.
 - 2. Install sufficient material to completely fill annular space around dowel.
- D. Insert dowel to bottom of hole and secure in center of hole, perpendicular to surface, until epoxy has set.
- E. Promptly remove excess epoxy.
- F. Apply two coats of corrosion-inhibiting material on exposed steel surfaces per Article 3.5 for dowels without shop applied epoxy coating.

3.7 NEW STEEL REINFORCEMENT

- A. General: Comply with CRSI Manual of Standard Practice for placing reinforcement
- B. Clean reinforcement of loose rust and mill scale, earth, ice and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Do not weld reinforcement unless specifically approved by Architect/Engineer.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges of adjoining sheets at least one mesh spacing plus 2 inches. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- G. Where directed by Architect/Engineer, coat new bars in accordance with requirements for existing reinforcing.
- H. Epoxy-Coated Reinforcement as directed by Architect/Engineer: Use epoxy coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963.

3.8 CLEANING

- A. Remove and legally dispose of concrete and steel debris, sandblast materials, and excess materials.

END OF SECTION 03 01 31

**SECTION 03 01 34
CONCRETE REPLACEMENTS**

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Supply and placement of cast-in-place concrete for replacement applications, including formwork, reinforcement, concrete materials, mix design, batching procedures, placement procedures, finishes, and curing. Proprietary cementitious replacement materials are also included.
- B. Related Sections:
 - 1. Section 01 22 00 – Unit Prices
 - 2. Section 03 01 01 – Shoring
 - 3. Section 03 01 31 – Concrete Removal and Surface Preparation

1.2 REFERENCES

- A. Definitions:
 - 1. Cementitious Materials: Portland cement alone or in combination with one or more of fly ash, silica fume, and other pozzolans, or slag cement.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for concrete replacement Work.
 - b. To avoid or minimize work on, or in immediate vicinity of, concrete replacement Work in progress.
 - c. To ensure that subsequent work will not adversely affect completed concrete replacements.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and mixing and application or placement instructions.
 - 1. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
- B. Design Mixes: For each concrete mix, including required test reports.
 - 1. Proportions of materials.
 - 2. Mill tests and certification for cement, fly ash, and slag cement. Certification for silica fume.
 - 3. Sieve analysis for fine and coarse aggregate.
 - 4. Test results for deleterious substances in aggregates and potential aggregate reactivity.
 - 5. Slump during laboratory tests.

6. Air content during laboratory tests.
 7. Three-, seven-, and 28-day laboratory compression test results. Minimum three cylinders at each test age.
 8. Indicate:
 - a. Amount of mix water to be withheld for later addition at Site.
 - b. Range of high-range, water-reducing admixture dosage that may be added at Site without adversely affecting hardened concrete.
- C. Field Quality Control: Batch tickets for ready-mix concrete.

1.5 QUALITY ASSURANCE

- A. Contractor Qualifications: Experienced firm that has successfully completed concrete replacement work similar in material, design, and extent to that indicated for the Project. Must have successful construction with specified materials in local area in use for minimum of five years.
1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foremen during the course of the Project except for reasons beyond the control of Contractor; inform Architect/Engineer in advance of any changes.
- B. Ready-Mix Supplier Qualifications: ASTM C94/C94M; Certification of Production Facilities and Delivery Vehicles by National Ready Mixed Concrete Association.
- C. Mockups: Construct mockup to demonstrate construction procedures, quality of Work, and aesthetic effects.
1. Construct mockups on existing members, at locations designated by Architect/Engineer, under same weather conditions expected during Work. Provide access to mockup locations.
 2. Architect/Engineer will observe concrete removal and surface preparation work, prepared concrete removal areas, and installation of repair material. Notify Architect/Engineer and Owner's Representative at least seven days in advance of when mockups will be constructed.
 3. Photograph concealed portions of approved mockup before concealing, and retain photographs at Site.
 4. Sound surfaces after form removal to identify delaminations in repair and examine surfaces for evidence of segregation and poor consolidation..
 5. If Architect/Engineer or Owner's Representative determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved. Remove and replace mockups that are not approved.
 6. Approved mockups shall be maintained in undisturbed condition throughout Project as basis for acceptance of completed work and may become part of completed Work if undisturbed at time of Substantial Completion.
 7. Do not order materials or proceed with repair Work until mockups have been approved by Architect/Engineer and Owner's Representative.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials according to manufacturer's recommendations and in such manner as to prevent damage to materials or structure.

- B. Deliver, store, and handle reinforcing steel to prevent bending and damage.
 - 1. Avoid damaging reinforcement coating.
 - 2. Repair damaged reinforcement coating according to ASTM D3963/D3963M.
- C. For proprietary materials:
 - 1. Deliver materials to Site in original bags and containers with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.
 - 2. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application, or have been exposed to moisture.
 - 3. Store materials in original, undamaged bags or containers in a clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Manufacturer's standard packaging and covering is not considered adequate weather protection.
- D. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.
- E. Conspicuously mark damaged or opened bags or containers or bags or containers with contaminated materials, and remove from Site promptly.
- F. Remove materials that cannot be applied within stated shelf life from Site and replace with new materials.

1.7 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to the start of concrete replacement Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor of changes.
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.

1.8 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
 - 1. Notify Architect/Engineer of conditions that may interfere with proper execution of the Work or jeopardize performance of the Work, prior to proceeding with the Work.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Forms: Plywood, lumber, metal, plastic, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
 - 1. Use panels that will provide continuous, true, and smooth concrete surfaces.
 - 2. Furnish panels in largest practicable sizes to minimize number of joints.

3. Do not use rust-stained, steel, form-facing material.
 4. For Smooth-Form Finish: Use form-facing material capable of producing smooth, uniform texture on concrete. Do not use form-facing materials with raised grain, torn surfaces, worn edges, dents, or other defects that will impair texture of concrete surface.
- B. Accessories:
1. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 inch by 3/4 inch minimum.
 2. Form Ties: Factory-fabricated; removable or snap-off metal or glass-fiber-reinforced plastic form ties; designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - a. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of the exposed concrete surface.
 - b. Furnish ties that, when removed, will leave holes not larger than 1 inch in diameter in the concrete surface.
 3. Form-Release Agent: Commercially-formulated form-release agent that will not bond with, stain, or adversely affect the concrete surface and will not impair subsequent treatments of the concrete surface.
 - a. Formulate form-release agent with rust inhibitor for steel, form-facing materials.

2.2 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of same brand from same manufacturer's plant, each aggregate from one source, and admixtures through one source from single manufacturer.
- B. Portland Cement: ASTM C150/C150M, Type I or II.
- C. Fly Ash: ASTM C618, Class F or C.
- D. Ground-Granulated Blast-Furnace Slag (GGBFS): ASTM C595.
- E. Silica Fume: ASTM C1240, amorphous silica.
- F. Aggregates: ASTM C33/C33M; from single source with documented record of at least ten years of satisfactory service using similar aggregates and cementitious materials in similar applications and service conditions.
1. Coarse Aggregates: Uniformly graded; 3/8-inch nominal maximum size; Class 4S.
 2. Alkali Reactivity: Coarse and fine aggregates shall have expansion indicative of innocuous behavior; that is, less than 0.10 percent expansion after 16 days when tested according to ASTM C1260; or mitigating measures shall be included in concrete mix.
 - a. Provide ASTM C1260 test results for aggregates proposed for use, performed within last year.
 - b. If reported expansion is 0.10 percent or more at 16 days after casting, use mitigation measures shown to render innocuous results when tested according to ASTM C1260 or provide coarse and fine aggregates from a remote source, with expansion indicative of innocuous behavior when tested according to ASTM C1260. ASTM C1293 procedure may be substituted for ASTM C1260.
- G. Water: Potable.

2.3 ADMIXTURES:

- A. General: Admixtures certified by manufacturer to contain no more than 0.1 percent chloride ions and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
 - 1. Air-Entraining Admixture: ASTM C260/C260M.
 - 2. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 3. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 4. Water-Reducing and Accelerating Admixture: ASTM C494/C494M, Type E.
 - 5. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D

2.4 PROPRIETARY REPLACEMENT MATERIALS

- A. For Formed Vertical and Overhead Replacements: Pre-bagged concrete containing aggregate. Use one of the following or approved equal:
 - 1. MS-S10 Self-Consolidating Concrete by King Packaged Materials Company.
 - 2. Sikacrete 211 SCC by Sika Corporation.
- B. For Horizontal Partial-Depth and Full-Depth Replacements: Pre-bagged concrete containing aggregate. Use one of the following or approved equal:
 - 1. MS-S10 Self-Consolidating Concrete by King Packaged Materials Company.
 - 2. Sikacrete 211 SCC by Sika Corporation.
- C. For Trowel-Applied Vertical and Overhead Replacements: Polymer- or silica-fume-modified, cementitious, non-sag mortar that is specifically intended for this application. Only to be used at locations approved by Architect/Engineer. Use one of the following or approved equal:
 - 1. MasterEmaco N 400 by BASF Construction Chemicals, LLC.
 - 2. SikaTop 123 Plus by Sika Corporation.
 - 3. Mapei Planitop X, by Mapei.
 - 4. SikaQuick VOH, by Sika Corporation.
- D. Do not use proprietary replacement materials that contain added gypsum.

2.5 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C171, white burlap-polyethylene sheet.
- B. Water: Potable.
- C. Membrane-Forming Curing Compound: ASTM C309, Type 1; Solvent-borne; VOCs less than 350 g/L and legal limits compatible with new coating. Silicate materials shall not be used.

2.6 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mixes or field-test data, according to ACI 301.
 - 1. Use qualified independent testing agency conforming to requirements of ASTM C1077 for preparing, testing, and reporting proposed mix designs for laboratory trial mix basis.
- B. Partial Depth and Full Depth Replacements: Proportion normal-weight concrete mix as follows:
 - 1. 28-day Compressive Strength: 5,000 pounds per square inch.

2. Fly Ash or Slag Cement: Include 20 to 25 percent by mass of total cementitious materials, as cement replacement, unless otherwise approved.
 3. Silica Fume: Maximum 10 percent by mass of total cementitious materials, as cement replacement, unless otherwise approved.
 4. Maximum Water-Cementitious Materials Ratio, by weight: 0.40
 5. Slump: 4 inches maximum.
 - a. With High-Range, Water-Reducing Admixture:
 - 1) 2- to 4-inch slump prior to adding admixture.
 - 2) 8 inches maximum slump after admixture is added.
 6. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having air content of 6 (+/- 1.5) percent, unless otherwise indicated.
 7. Admixtures: Use admixtures according to manufacturer's written instructions.
 - a. Use water-reducing admixture. Alternately use high-range, water-reducing admixture (superplasticizer), as required, for placement and workability.
 - b. Use retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - c. Use calcium nitrite based corrosion Inhibiting admixture with a minimum dosage of 3 gal/ yd³
 8. Shrinkage: 600 micro-strain maximum at 90 days when tested according to ASTM C157.
 9. Bond Strength: ASTM C1583/1583M, ICRI Guide for Using In-Situ Tensile Pull-off Tests to Evaluate Bond of Concrete Surface Materials; 175 pounds per square inch minimum, failure away from bond line; unless properly prepared substrate precludes achieving minimum strength.
- C. Vertical and overhead surface repairs: Proportion normal-weight concrete mix as follows:
1. 28-day Compressive Strength: 4,500 pounds per square inch.
 2. Maximum Water-Cementitious Materials Ratio, by weight: 0.40.
 3. Slump: 4 inches maximum.
 - a. With High-Range, Water-Reducing Admixture:
 - 1) 2- to 4-inch slump prior to adding admixture.
 - 2) 8 inches maximum slump after admixture is added.
 4. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having air content of 6 (+/- 1.5) percent, unless otherwise indicated.
 5. Admixtures: Use admixtures according to manufacturer's written instructions.
 - a. Use water-reducing admixture. Alternately use high-range, water-reducing admixture (superplasticizer), as required, for placement and workability.
 - b. Use retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 6. No chlorides shall be intentionally introduced into concrete mix.
 - a. In hardened concrete, limit acid-soluble chloride ion content to 0.10 percent by weight of cement when tested according to ASTM C1152/C1152M, or water-soluble chloride ion content to 0.08 percent by weight of cement when tested according to ASTM C1218/C1218M.
 - b. If hardened concrete exceeds chloride ion limits above, limit water-extractable chloride ion content to 0.08 percent by weight of cement when tested according to ASTM C1524.
 - c. Provide test results necessary to demonstrate concrete and aggregates do not exceed chloride ion limits, unless waived by Architect/Engineer.

7. Bond Strength: ASTM C1583/1583M, ICRI 210.3; 175 pounds per square inch minimum, failure away from bond line; unless properly prepared substrate precludes achieving minimum strength.

2.7 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI *Manual of Standard Practice*.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements and other conditions affecting installation or performance of concrete replacements.
 1. Ensure that work done by other trades is complete and ready for concrete replacement Work.
 2. Verify that areas and conditions under which concrete replacement Work is to be performed permit proper and timely completion of the Work.
 3. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of concrete replacements and recommend corrections.
 4. Do not proceed with concrete replacement Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
 5. Commencing concrete replacement Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Take precautions to ensure the safety of people, including building users, passers-by, and workmen, and protection of property, including adjacent building elements, landscaping, and motor vehicles.
- B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.
- D. Limit access to Work areas.
- E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.
- F. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 FORMWORK

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

- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
 - 1. Limit abrupt or gradual concrete surface irregularities to ACI 347R Class A, 1/8 inch.
 - 2. Form openings, chases, offsets, keyways, reglets, blocking, screeds, and bulkheads required in Work. Determine sizes and locations from trades providing such items.
 - 3. Chamfer exterior corners and edges of permanently exposed concrete to match existing.
 - 4. Construct forms tight enough to prevent loss of concrete mortar.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, and recesses, for easy removal.
- D. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- E. Provide temporary openings for cleanouts and inspection ports where the interior area of the formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- F. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris immediately before placing concrete.
- G. Retighten forms and bracing before placing concrete to prevent mortar leaks and maintain proper alignment.

3.4 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support the weight of concrete, may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete, provided concrete is hard enough not to be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Leave formwork for beam soffits, joists, slabs, and other structural elements that support the weight of concrete in place until concrete has achieved at least 75 percent of its 28-day design compressive strength.
- C. Clean and repair surfaces of forms to be reused in the Work. Do not use split, frayed, delaminated, or otherwise damaged form-facing material, or patched forms, for exposed surfaces.

3.5 STEEL REINFORCEMENT

- A. General: Comply with CRSI Manual of Standard Practice for placing reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

- D. Do not weld reinforcement unless specifically approved by Architect/Engineer.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963/D3963M.

3.6 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.
 - 1. Deliver concrete to Site and discharge within 90 minutes or before 300 revolutions of mixer drum, whichever comes first, after introduction of mix water. When air temperature is between 85 and 90 degrees F, reduce mixing and delivery time to 75 minutes; when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes. Due to the nature of the Work, trucks with short loads may be required. Concrete that exceeds the specified time limits shall be rejected.
 - 2. Do not add water-reducing or high-range, water-reducing admixture indiscriminately to increase slump.
 - 3. Introduce high-range, water-reducing admixture at the Site with additional mixing per the manufacturer's recommendations.
 - 4. Reject concrete that arrives at the Site with a slump exceeding the maximum specified slump.
- B. Site Mixing for proprietary patching materials:
 - 1. Batch and mix all concrete materials in conformance with manufacturer's written recommendations and instructions and as recommended in ACI 546.4R-20 Guide for Job Site Quality Control and Quality Assurance of Cementitious Packaged Materials.
 - 2. Site mix pre-bagged, proprietary materials only.
 - 3. Develop batching and mixing operations so that quality control is assured.
 - 4. Designate one or two individuals to batch and mix concrete. Fully instruct these individuals on batching and mixing procedures. No other persons shall batch or mix concrete without prior notification to Architect/Engineer.
 - 5. Maintain accurate mix proportions. Batch materials by weight on basis of whole bags of material. Maintain calibrated scale at site during concrete placement operations. Batching by volume is permitted if weight-volume relationship for each material is verified on daily basis, and aggregate moisture content is measured at least once daily and aggregate volume is adjusted for bulking.
 - 6. If the weight of the packaged material is out of tolerance (more than 2 percent), contact the manufacturer for recommendations.
 - 7. Combine and mix ingredients to uniform consistency in accordance with the manufacturer's recommendations. Mix concrete materials in appropriate drum or paddle type batch machine mixer. Provide sufficient number of mixers so that concrete placement operations will proceed uninterrupted and each patch is completely cast before patch concrete achieves initial set.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify the following:
 - 1. Installation of formwork, reinforcement, and embedded items is complete.

2. Concrete surfaces and forms are clean of frost, ice, mud, debris, and water.
 3. Forms are thoroughly wetted or oiled.
 4. Reinforcement is securely tied in place and thoroughly cleaned of ice and other coatings that may reduce or destroy bond with concrete.
 5. Required inspections have been performed.
 6. Equipment for mixing and transporting concrete is clean.
 7. Vibrators are operational.
- B. Before sampling for testing and placing concrete, water may be added at Site, up to the amount allowed in the design mix.
1. Do not add water after adding high-range, water-reducing admixture.
- C. For top surface and full depth repair areas where new concrete will be cast against existing concrete surfaces, immediately prior to placing concrete work, paste portion of repair concrete mix into clean, dry concrete surface with broom, brush, or other tool. Do not allow paste to puddle. Remove and dispose of coarse aggregate. If paste dries before concrete is placed, remove and apply new paste.
- D. For proprietary repair materials, cast new concrete against existing concrete surfaces prepared according to recommendations of repair material manufacturer and requirements of these Construction Documents.
- E. Convey concrete from the mixer to the place of deposit in a manner such that no segregation or loss of materials occurs.
- F. Deposit concrete:
1. Place concrete as near as possible to its final position to avoid segregation due to re-handling or flowing.
 2. Do not allow concrete to fall a vertical distance from the point of discharge to the point of deposit that will cause segregation of materials.
 3. Do not allow concrete to disturb or displace reinforcing bars, floor drains, or other embedments.
 4. Place concrete at a rate so that the concrete is plastic and flows readily into corners of forms and into spaces around reinforcing bars.
 5. Place concrete continuously until the replacement volume or section is completed, with no cold joints.
 6. Dispose of concrete that has partially set prior to placement or that has been contaminated by foreign material.
- G. Consolidate concrete with mechanical vibrating equipment, so that the concrete is thoroughly worked around reinforcement and other embedded items and into corners.
1. Use internal vibrators with minimum speed of 7,000 vibrations per minute and that are sufficiently narrow to fit into spaces between reinforcing bars, formwork, and existing concrete. Have extra vibrators at the Site in case a vibrator does not work.
 2. Do not use vibrators to transport concrete.
 3. Insert and withdraw vibrators vertically at uniformly spaced locations no farther apart than the visible effectiveness of the vibrator.
 4. At each insertion, limit the duration of the vibration to the time necessary to consolidate the concrete without causing mix constituents to segregate.
- H. Cold-Weather Placement: Protect concrete Work from physical damage or reduced strength due to frost, freezing, or low temperatures. Comply with ACI 306R and as follows.

1. When the air temperature has fallen or is expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 degrees F at the point of placement. Mix water and aggregates together before adding cement. Do not add cement if the temperature of the water/aggregate mixture exceeds 70 degrees F.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix design.
- I. Hot-Weather Placement: Protect concrete Work from physical damage or reduced strength due to rapid evaporation or overheating of concrete. Refer to Fig. 2.1.5 in ACI 305R for hot-weather conditions that may adversely affect concrete placement, finishing, and curing.

Do not allow the temperature of the concrete at the time of placement to exceed 90 degrees F. When hot-weather conditions exist, use one or more of the following procedures:

1. Place concrete at night or early in morning.
2. Cool ingredients before mixing to maintain the concrete temperature below 90 degrees F at the time of placement. Chilled mixing water or chopped ice may be used to control the temperature; include the water equivalent of the ice in the mixing water quantity. Use liquid nitrogen to cool the concrete at Contractor's option.
3. Cover steel reinforcement with water-soaked burlap so the steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
4. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep the subgrade moisture uniform without standing water, soft spots, or dry areas.
5. Provide windbreaks or sunshades, or both.

3.8 FINISHING TOP SURFACES

- A. Float and broom finish top surfaces.
1. Float finish: Consolidate the surface with a power-driven float or by hand floating if the area is small or inaccessible to a power driven float. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until the surface is left with uniform, smooth, granular texture.
 2. Medium-Broom Finish: Apply medium-broom finish, perpendicular to traffic flow, on top surfaces subjected to vehicular or pedestrian traffic.
 3. Do not wet concrete surfaces or add cement.
- B. For large top partial depth and full-depth slab repair areas, finish and measure the surface so that the gap at any point between the concrete surface and an unleveled, freestanding, 10-foot-long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed 1/4 inch. Slope concrete to prevent puddles and to align with adjacent surfaces.
- C. At the tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.
- D. Hot-Weather Conditions: Fog the surface with water if hot, dry, or windy conditions cause moisture loss approaching 0.2 pounds per square foot per hour before or during finishing operations.

3.9 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and fill tie holes and defective areas with mortar or concrete. Remove fins and other projections exceeding 1/8 inch in height. Do not apply rubbed finish to smooth-formed finish.

3.10 CONCRETE CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Maintain concrete above 55 degrees F and in a moist condition for at least seven days after placing.
- B. Unformed Top Surfaces: Begin curing immediately after finishing concrete. Use moisture-retaining cover.
 - 1. Place cover in widest practicable width, with sides and ends lapped at least 12 inches.
 - 2. Seal sides and ends of cover by holding down with soil, concrete pieces, or some other weight, or by using waterproof tape or adhesive.
 - 3. Immediately repair holes or tears in cover during curing period, using cover material and waterproof tape.
 - 4. Re-wet concrete surface at least twice daily or as necessary to keep the concrete surface moist.
- C. Formed Surfaces: Begin curing immediately after form removal.
 - 1. Apply a curing compound uniformly in a continuous operation by power spray or roller according to the manufacturer's written instructions and at twice the recommended coverage rate.
 - 2. Recoat areas subjected to heavy rainfall within three hours after initial application.
 - 3. Maintain the continuity of the coating and repair damage during curing period.
- D. In cold weather, protect concrete from falling below 55 degrees F with insulating blankets or heated enclosures vented to the outside. If used, vent heaters to outside of the enclosure around the concrete replacement.

3.11 PROPRIETARY REPLACEMENT MATERIALS

- A. Measure, batch, mix, place, finish, and cure per manufacturer's recommendations.

3.12 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair defective areas designated by Architect/Engineer. Remove and replace concrete that cannot be repaired to Architect/Engineer's satisfaction.
- B. Surface defects on exposed surfaces include:
 - 1. Voids, such as spalls, air bubbles, honeycomb, rock pockets, and form-tie voids, more than 1/4 inch in any dimension in solid concrete but not less than 1/2 inch deep.
 - 2. Cracks at least 1/16 inch wide. Notify Architect/Engineer of cracks that penetrate through section.
 - 3. Fins and other projections exceeding 1/8 inch.
- C. Verify that concrete curbs, expansion joints, and transitions from one surface plane to another (inside and outside corners) are cleanly formed and free of broken edges and excess concrete.

- D. Repair defects on concealed surfaces that affect concrete's durability and structural performance as determined by Architect/Engineer.
- E. As soon as possible, cut out spalls, air bubbles, honeycombs, rock pockets, and voids. Make edges of cuts perpendicular to concrete surface. Clean voids and fill with repair mortar according to the manufacturer's recommendations. Use polymer- or silica fume-modified, cementitious, non-sag mortar that is specifically intended for this application. Use one of the following or approved equal:
 - 1. MasterEmaco N 425 manufactured by BASF Construction Chemicals, LLC.
 - 2. SikaTop 123 Plus manufactured by Sika Corporation.
- F. Fill cracks with high-molecular-weight methacrylate, or low-viscosity methyl methacrylate or epoxy. Use one of the following or approved equal:
 - 1. Concrete Protector & Restorer CP&R 5741 Hi Mod Low Odor or 5742LO Low Mod manufactured by 3M.
 - 2. MasterSeal 630 manufactured by BASF Construction Chemicals, LLC.
 - 3. SikaPronto 19 TF manufactured by Sika Corporation.
- G. After concrete has gained sufficient strength to be unaffected by grinding, grind off fins, other projections, and high areas.
- H. Repair materials and installation not specified above may be used if approved by Architect/Engineer.

3.13 FIELD QUALITY CONTROL

- A. Submit batch tickets for ready-mix concrete.
- B. Testing Agency: Contractor shall engage a qualified independent testing and inspecting agency to sample materials and perform tests during concrete placement.
- C. Provide:
 - 1. Access to Work.
 - 2. Materials for sampling.
 - 3. Site facilities for sampling, testing, and storage of materials.
 - 4. Incidental labor.
- D. Testing Services: Sampling and testing of composite samples of fresh concrete shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample of each concrete mix for each day's pour.
 - 2. Take samples from transport vehicle or mixer during discharge according to ASTM C172. Take samples at other locations if directed by Architect/Engineer.
 - 3. Slump: ASTM C143/C143M; one test for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change. If high-range, water-reducing admixture is used, perform one test prior to adding admixture.
 - 4. Air Content: ASTM C231/C231M; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 - 5. Concrete Temperature: ASTM C1064/C1064M; one test for each composite sample; and one test hourly when air temperature is 40 degrees F and below or 80 degrees F and above.

6. Compression Test Specimens: ASTM C31/C31M.
 - a. Cast four standard cylinder specimens for each composite sample, immediately after sample is taken. Store specimens at the Site for at least 16 hours at a temperature of 60 to 80 degrees F. Provide a temperature-controlled box or other enclosure if necessary.
 - b. If requested by Architect/Engineer, take three additional cylinder specimens and field cure in the vicinity of the area that they represent and in the same manner as that portion of the structure.
7. Compressive-Strength Tests: ASTM C39/C39M.
 - a. Test one laboratory-cured specimen at seven days and two at 28 days. Hold the fourth specimen in reserve in case additional testing is required.
 - b. Test one field-cured specimen at three days and two at 28 days.
8. Test results shall be reported in writing to Owner's Representative, Architect/Engineer, concrete supplier, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain:
 - a. Name of concrete testing and inspecting agency.
 - b. Project identification name.
 - c. Date of concrete placement.
 - d. Specific location of concrete batch in Work.
 - e. Concrete mix number, design compressive strength at 28 days, design slump range, and design air content range.
 - f. Specimen number, cylinder size, dates of compression tests, compressive breaking strengths and types of break for seven- and 28-day tests, and measured slump, air content, and air and concrete temperatures.
 - g. Statement that indicates whether test results are in conformance with Specifications.
9. Concrete strength is satisfactory if the average of two 28-day compressive-strength tests in each set of specimens equals or exceeds the specified 28-day compressive strength and neither test value is more than 500 pounds per square inch less than the specified 28-day strength.
10. If any seven-day compressive-strength test result is less than 75 percent of the specified 28-day compressive strength, submit revised mix design data for concrete that will conform to Specifications.
11. When the compressive strength of field-cured specimens is less than 85 percent of the companion laboratory-cured cylinders, evaluate operations and provide corrective procedures for protecting and curing the in-place concrete. Pay the cost of sampling and testing non-conforming field-cured specimens. Owner will pay the cost of sampling and testing conforming field-cured specimens.
12. Non-Conforming Concrete:
 - a. If tests indicate that concrete is not in conformance with the Specification, remove and replace non-conforming concrete or perform additional testing, acceptable to Architect/Engineer, to verify conformance with the Specification, at no cost to Owner.
 - b. Procure core samples in accordance with ASTM C42/C42M.
 - c. If tests indicate that the slump, air entrainment, or other requirements have not been met, examine core samples petrographically, according to ASTM C856, to evaluate hardened concrete characteristics.
 - d. If compressive-strength tests do not meet the acceptance requirements, procure three core samples from each portion of the structure represented by the unsatisfactory tests, and test in compression. The strength of concrete in the area represented by core tests is satisfactory if the average of three compressive strength tests equals or exceeds 85 percent of the specified 28-day compressive strength and no

compressive-strength test value is less than 75 percent of the specified 28-day compressive strength. If strength acceptance criteria are not met, remove and replace non-conforming concrete areas at no cost to Owner.

- e. Perform additional inspection and testing, at no cost to the Owner, to determine the compliance of replaced or additional work with the specified requirements.
- E. Chain drag or hammer tap concrete replacements to locate delaminations. Remove and recast delaminated replacements at no cost to Owner.

3.14 CLEANING

- A. At the end of each workday, clean the Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.
- B. After completing the concrete replacement Work:
 - 1. Clean soiling from adjacent surfaces. Exercise care to avoid scratching or damage to surfaces.
 - 2. Repair surfaces stained, marred, or otherwise damaged during concrete replacement Work.
 - 3. Clean up debris and surplus materials and remove from Site.

END OF SECTION 03 01 34

SECTION 03 15 11
EXPANSION JOINT SEALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Surface preparation, supply, and installation of expansion joint seals in concrete structures.
- B. Related Sections:
 - 1. Section 01 11 00 - Summary of Work
 - 2. Section 03 01 34 - Concrete Replacements
 - 3. Section 07 92 00 - Joint Sealants

1.2 COORDINATION

- A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for joint seal installation.
 - b. To avoid or minimize work on, or in immediate vicinity of, joint seal Work in progress.
 - c. To ensure that subsequent work will not adversely affect completed joint seal installation.

1.3 SUBMITTALS

- A. Product Data: Joint-seal manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including material descriptions and dimensions of individual components; and installation instructions and construction details.
- B. Template Drawings: Showing typical expansion joint cross-sections indicating dimensions and relationship to adjacent construction.
- C. Certification: Signed by joint-seal manufacturer, certifying that Installer has been trained and approved by manufacturer to install joint seal.
- D. Sample: Minimum 1-foot length of seal
- E. Field Quality Control: Written report with joint locations, joint width measurements, date and time of measurements, high and low daily temperatures for week preceding measurements, and recommended joint-seal size.
- F. Following completion of the Work, submit completed joint-seal warranty.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Qualified firm that is approved, authorized, or licensed by joint-seal manufacturer to install joint seal. Must have successful installations of specified materials in local area in use for minimum of five years.
 - 1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foremen during the course of the Project except for reasons beyond the control of Installer; inform Architect/Engineer in advance of any changes.
- B. Mockups: Install first section of joint seal to demonstrate installation procedures and quality of installation.
 - 1. Architect/Engineer will observe installation and completed joint seal. Notify Architect/Engineer and Owner's Representative seven days in advance of mockup installation.
 - 2. If Architect/Engineer determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
 - 3. Approved mockup will be standard for judging completed Work.
 - 4. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.
- B. Deliver materials to Site in original packages with seals unbroken, labeled with joint-seal manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.
- C. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by joint-seal manufacturer.
- D. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.
- E. Conspicuously mark damaged or opened containers, containers with contaminated materials, or damaged materials, and remove from Site as soon as possible.
- F. Remove materials that cannot be applied within stated shelf life from Site and replace with new materials.

1.6 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to start of joint seal Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer of changes.
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.

- C. Environmental Limitations: Install joint seals when existing and forecast weather conditions permit joint seal system to be installed according to joint-seal manufacturer's written instructions and warranty requirements.
 - 1. Verify joint gap at installation will permit proper functioning of joint seal.

1.7 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
 - 1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work, prior to proceeding with Work.

1.8 WARRANTY

- A. Contractor's Warranty:
 - 1. Written warranty, signed by Contractor, including:
 - a. Repair or replace joint-seal components that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted joint-seal manufacturer's data as an inherent quality of the material for the application indicated.
 - b. Labor and materials to perform warranty work.
 - c. Replace entire joint seal lengths unless high-quality, durable field splices can be installed.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 JOINT SEALS

- A. Compression Seal: Neoprene or Santoprene; seal sizes to be determined by Contractor based on joint locations and actual joint widths, and approved by Architect/Engineer. Use one of the following or approved equal.
 - 1. Delastic Preformed Compression Seal manufactured by D. S. Brown.
 - 2. Iso-Flex Compression Seal manufactured by LymTal International, Inc.
 - 3. Wabo CompressionSeal manufactured by Watson Bowman Acme Corporation.
- B. Joint Seal Size:
 - 1. Measure average, maximum, and minimum joint widths at every joint.
 - 2. Submit in writing joint locations, joint width measurements, date and time of measurements, high and low daily temperatures for week preceding measurements, and recommended joint seal size to Architect/Engineer for approval. Assume 160-degree thermal change, from -20 to 140 degrees, in sizing seal.
- C. Accessories: Primers, bedding materials, bonding agents, lubricants, adhesives, sealants, and other accessories supplied or approved by joint-seal manufacturer.

2.2 FABRICATION

- A. Prior to fabrication, field measure existing conditions to ensure proper fit.

- B. Provide continuous joint seals in longest practical lengths, with minimum number of end joints.
 - 1. For straight sections, provide continuous lengths.
 - 2. Fabricate directional changes in shop whenever possible; use mitered and adhered or heat-welded corners.
 - 3. Fabricate with end closures, transitions, and intersections to provide continuous assembly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions with Installer and joint-seal manufacturer's representative for compliance with requirements and for other conditions affecting installation or performance of joint seals.
 - 1. Ensure that work done by other trades is complete and ready for joint seal Work, including concrete construction and replacement.
 - 2. Verify that areas and conditions under which joint seal Work is to be performed permit proper and timely completion of Work.
 - 3. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of joint seals and recommend corrections.
 - 4. Do not proceed with joint seal Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
 - 5. Commencing joint seal Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Take precautions to ensure the safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.
- B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Limit access to Work areas.
- D. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.
- E. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 SURFACE PREPARATION

- A. Prepare substrates according to joint-seal manufacturer's written instructions.
- B. Provide clean, sound, dry concrete surfaces.
 - 1. Remove existing joint seals.
 - 2. Sawcut or form sides of joints straight and parallel. Adjust joint widths for temperature. Create shoulders for joint seals.
 - 3. Repair unsound concrete along joints to provide solid surface of clean, sound concrete, free of voids and honeycombing.
 - 4. Accurately position joint seal.

5. Clean concrete surfaces by sandblast or other means recommended by joint-seal manufacturer, to remove contaminants including form release agents, laitance, surface dirt and rust, and old sealant. Remove dust and other contaminants with compressed air.
6. Allow concrete and concrete replacement materials to fully cure prior to joint seal installation.

3.4 INSTALLATION

- A. Install joint seal according to joint-seal manufacturer's written instructions. Field splices to be coordinated with and approved by joint-seal manufacturer.
- B. Verify that joint widths are suitable for seal size and movement capability.
- C. Compression Seals:
 1. Apply adhesive to sides of seal and sides of joint as required by Manufacturer.
 2. Compress joint seal, and slide into joint.
 3. Seal top edge on both sides of joint.

3.5 FIELD QUALITY CONTROL

- A. Water Test:
 1. Construct water-retention barriers along sides of joints.
 2. Pond water on top of joint seal for 24 hours, and observe underside of deck for leakage.
 3. Repair leaking portions of joint seal and re-test.

3.6 CLEANING

- A. Clean excess primer, adhesive, sealant, other products, and soiling from components and adjacent surfaces.
- B. Repair surfaces stained, marred, or otherwise damaged during concrete replacement work.
- C. Clean up debris and surplus materials and remove from Site.

3.7 PROTECTION

- A. Protect joint seals from:
 1. Traffic until materials have cured.
 2. Damage by construction activities.

END OF SECTION

SECTION 04 01 20.52
BRICK MASONRY CLEANING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Cleaning brick, including removal of coating.
 - 1. Purpose of cleaning is to remove as much coating as possible without damaging brick.
- B. Related Sections:
 - 1. General Notes Section, Masonry Repairs

1.2 UNIT PRICES

- A. Perform the following Work on unit price basis:
 - 1. General cleaning of brick masonry. Payment based on area cleaned.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for cleaning Work.
 - b. To avoid or minimize work in immediate vicinity of cleaning Work in progress.
 - c. To ensure that subsequent work will not adversely affect cleaned surfaces.
- B. Notify Architect/Engineer of conflicts between Specifications and cleaning material manufacturer's recommendations. Perform Work according to Specifications unless Architect/Engineer authorizes changes in writing.
- C. Sequencing: Perform cleaning and repair Work in the following sequence:
 - 1. Prior to cleaning, inspect for open mortar or sealant joints and other potential sources of water infiltration, and perform repairs and repointing as necessary to prevent intrusion of water and other cleaning materials into wall.
 - 2. Remove coatings, clean walls, and apply biocide as specified.
 - 3. Perform remaining repairs and repointing as specified.

1.4 SUBMITTALS

- A. Product Data: List of products proposed for use, with Manufacturer's product literature and application instructions.
- B. Certificates: Signed by supplier of micro-abrasive system, certifying that Subcontractor's personnel who will be working on Project, have been trained by supplier and are proficient in use of micro-abrasive system.
- C. Chemical Test Report on Water: List of chemicals and other additives in water, identifying items which may render water unsuitable for use on cleaning Project.

- D. Cleaning System Descriptions: Modify specified requirements based on approved mockups and submit complete written descriptions of cleaning systems, including materials and procedures.
- E. Protection Plan: Written plan describing protection measures proposed for use on Project.
- F. Containment, Collection, and Disposal Plan: Written plan describing methods for containing, collecting, and disposing of runoff during cleaning operations.
- G. Cleaning Subcontractor Qualifications: Evidence that Subcontractor's *existing company* has minimum five years of continuous experience in use of specified cleaning system; list of at least five representative, successfully-completed projects of similar scope and size, including:
 - 1. Project name.
 - 2. Owner's name.
 - 3. Owner's Representative name, address, and telephone number.
 - 4. Description of work.
 - 5. Cleaning system, including materials and procedures, used.
 - 6. Project supervisor.
 - 7. Total cost of cleaning work and total cost of project.
 - 8. Completion date.

1.5 QUALITY ASSURANCE

- A. Cleaning Subcontractor Qualifications: Experienced firm that has successfully completed cleaning work similar in material, design, and extent to that indicated for the Project. Must have successful use of specified cleaning system in local area for minimum of five years.
 - 1. Employ trained foreman with a minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foreman during the course of the Project except for reasons beyond the control of Subcontractor; inform Architect/Engineer in advance of any changes.
 - 2. Employ laborers with training and at least three years of experience with the specified cleaning system.
- B. Cleaning-System Manufacturer Qualifications: Firm regularly engaged in supplying cleaning system that has been used for similar applications with successful results; with technical representatives who are available for consultation and Site inspection and assistance at no additional cost to Owner.
- C. Mockups: Apply cleaning system at one mockup location selected by Architect/Engineer to demonstrate procedures and effectiveness.
 - 1. Mockups to be 25 square feet unless noted otherwise.
 - 2. Prepare mockups on existing walls, at locations designated by Architect/Engineer and in presence of Architect/Engineer, under same weather conditions expected during Work. Provide access to mockup locations.
 - 3. Test adjacent materials and other materials that may be affected by cleaning system, to determine if materials need to be protected. Test areas shall be small and in unobtrusive locations.
 - 4. Include protection systems and devices proposed for use to counteract adverse effects of cleaning system, in mockup.
 - 5. Allow period of at least 14 days after mockup preparation for evaluation of effectiveness of cleaning system and for negative reactions.
 - 6. If Owner's Representative and Architect/Engineer determine mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.

Modifications may include minor adjustments to application methods, dilutions, and dwell times of products within limits recommended by manufacturers.

7. Approved mockups shall be maintained in an undisturbed condition throughout the Project as a basis for acceptance of completed work and may become part of completed Work if undisturbed at time of Substantial Completion.
8. Record locations and materials and methods used for mockups on drawings and in field reports for reference as Work proceeds.
9. Do not order materials or proceed with Work until mockups have been approved by Architect/Engineer and Owner's Representative.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.
- B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.
- C. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer's written instructions.
- D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer's standard packaging and covering alone is **not** considered adequate weather protection.
- E. Locate materials in a secure location approved by Owner's Representative
- F. Conspicuously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.
- G. Limit stored materials on structures so as to preclude damage to materials and structures.
- H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

1.7 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to start of Work. Promptly notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer how to proceed.
- A. Comply with limitations and restrictions for Site use, accessibility, and work hours imposed by codes, ordinances, rules, regulations, orders, laws, and other legal requirements of public authorities having jurisdiction, and by Owner.
 1. Comply with city, state, water department, and Federal regulations covering protection and waste water disposal.

- B. Environmental Limitations:
 - 1. Perform cleaning Work when air temperature is 40 degrees Fahrenheit or above and is predicted to remain so for at least seven days after completion of cleaning.
 - 2. Do not perform chemical cleaning when air temperature is greater than 90 degrees Fahrenheit.
 - 3. Do not perform cleaning Work when winds are sufficiently strong to spread cleaning materials to unprotected areas.
- C. Maintain adequate ventilation during preparation and application of cleaning materials.

1.8 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the performance of the Work.
 - 1. Notify Architect/Engineer of conditions that may interfere with or preclude proper execution of the Work or jeopardize the performance of the Work, prior to proceeding with the Work.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS

- A. Water for Prewetting, Cleaning, and Rinsing:
 - 1. Clean, potable water, with iron content of less than two parts per million by weight.
 - 2. Provide chemical test results to confirm local water is suitable for use on cleaning Work.
 - 3. Notify Architect/Engineer and Owner's Representative of local water conditions that may make it unsuitable for cleaning, including presence of additives, water softeners, or other agents.
- B. Coating Removal System:
 - 1. Peel Away 7 by Dumond Chemicals, Inc.
 - 2. Peel Away 1, followed by afterwash with Peel-Away Neutralizer, both by Dumond Chemicals, Inc.
 - 3. RemovALL 310 Architectural paint remover, by Napier Environmental Technologies, Inc.
 - 4. Approved equal.
- C. Auxiliary Materials:
 - 1. pH Indicator: Litmus paper or other indicator capable of identifying neutral solutions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions with Cleaning Subcontractor and representatives of cleaning materials manufacturers and cleaning equipment suppliers, as applicable, for compliance with requirements and other conditions affecting performance of cleaning Work.
 - 1. Ensure that Work done by other trades is complete and ready for cleaning Work.

2. Verify that areas and conditions under which cleaning Work is to be performed permit proper and timely completion of Work.
3. Notify Architect/Engineer in writing of conditions which may adversely affect cleaning Work and recommend corrections.
4. Do not proceed with cleaning Work until adverse conditions have been reviewed by Architect/Engineer and, if necessary, corrections have been made.
5. Commencing cleaning Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Protect the following elements:
 1. Surfaces being cleaned from cleaning materials not designated for use on those surfaces.
 2. Decorative features, such as entrances and signs.
 3. Paving and sidewalks from staining or damage from cleaning operations.
 4. Windows, doors, joints, and other openings from infiltration of water or cleaning materials.
 5. Waterproofing system components.
- B. Comply with cleaning-material manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.
- C. Cover adjacent surfaces with materials that are proven to resist cleaners being used unless cleaners will not damage adjacent surfaces.
- D. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).
- E. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.
- F. Take precautions to protect against air-borne materials and run-off.
- G. Protect paving, sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.
- H. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- I. Limit access to Work areas.
- J. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.
- K. Protect from damage, all elements of completed work and original construction to remain.

3.3 EQUIPMENT

- A. Spray Equipment: With pressure gages at compressor and spray nozzle, and volume meter at spray nozzle; ability to adjust pressure and volume at nozzle.

3.4 CLEANING, GENERAL

- A. Perform cleaning Work in compliance with applicable codes and regulations that govern Work, including city, state, water department, OSHA, and Federal regulations, and with requirements of material manufacturers.
- B. Use only cleaning products and methods indicated for wall material and location, and approved by mockups.
 - 1. Do not use wire brushes or scrapers.
- C. Perform cleaning Work to achieve uniform coverage of surfaces and to produce uniform effect without streaking or damaging wall surface.
- D. Keep wall wet below area being cleaned to prevent streaking from runoff.
- E. Perform cleaning Work in strict accordance with approved mockup materials and procedures. Propose modifications to materials or methods as necessary to meet or exceed level of cleaning in mockups. Perform mockups of proposed modifications; do not proceed with modifications until approved in writing by Owner's Representative and Architect/Engineer.
- F. Prewetting and Rinsing Procedures:
 - 1. For prewetting and rinsing:
 - a. Prewet and rinse surfaces with warm water at minimum flow rate of 4 gallons per minute. Use hot water, if approved, to improve effectiveness of cleaning and rinsing. Do not use higher pressures or lower flow rates unless approved by mock-ups.
 - b. Use stainless steel nozzle with 45-degree fan spray, held at least 12 inches from surface.
 - c. Apply water in a horizontal sweeping motion, overlapping previous strokes vertically to produce uniform coverage.
 - 2. On hot days, in direct sunlight, or as necessary, prewet multiple times so cleaning solution is applied to wet surface.
 - 3. Rinse off cleaning solution, moving upward from bottom to top of surface at each access location.
- G. Chemical Cleaner Application Methods: Apply chemical cleaner to surfaces in conformance with chemical cleaner manufacturer's written instructions and approved mockups.
 - 1. Use brush or spray application methods, at Contractor's option. Use brushes that are resistant to chemical cleaners being used.
 - 2. Do not spray apply at pressures exceeding 50 pounds per square inch, or less as determined by mockups.
 - 3. Adjust pressure and volume of spray to ensure that cleaning methods do not damage wall material.
 - 4. Do not allow chemical cleaners to remain on surface for periods longer than those recommended by chemical-cleaner manufacturer or specified.
 - 5. Control wind drift of chemical cleaners.
- H. Collect and legally dispose of cleaning materials and debris.
 - 1. Neutralize alkaline and acid wastes for disposal off Owner's property.
 - 2. Dispose of runoff from cleaning operations by legal means, in manner that prevents soil erosion, undermining of pavement and foundations, damage to landscaping, and water penetration into building interior.

3.5 CLEANING BRICK MASONRY

- A. Coating Removal with Peel Away 7:
 - 1. Apply Peel Away 7 on coating and cover with Peel Away Paper. Gently rub Paper to create adhesion with Peel Away 7.
 - 2. Allow to dwell for two hours.
 - 3. Remove by sliding Peel Away tool or putty knife into dried paste around edges of paper, and easing paint, paste, and paper away from surface in one piece. Remove as much of remaining residue as possible with Peel Away tool.
 - 4. To remove remaining residue:
 - a. Mist surface lightly with water spray at maximum pressure of 50 pounds per square inch.
 - b. Scrub with nylon-bristle brush to loosen residue.
 - c. Rinse at maximum water pressure of 100 pounds per square inch.
 - 5. Collect debris and paper with paint and residue, place in plastic bags, and properly dispose of in compliance with local regulations.
- B. Coating Removal with Peel Away 1 followed by afterwash with Peel Away Neutralizer:
 - 1. Apply Peel Away 1 on coating and cover with Peel Away Paper. Gently rub Paper to create adhesion with Peel Away 1.
 - 2. Allow to dwell for two hours.
 - 3. Remove by sliding Peel Away tool or putty knife into dried paste around edges of paper, and easing paint, paste, and paper away from surface in one piece. Remove as much of remaining residue as possible with Peel Away tool.
 - 4. To remove remaining residue:
 - a. Mist surface lightly with water spray at maximum pressure of 50 pounds per square inch.
 - b. Scrub with nylon-bristle brush to loosen residue.
 - c. Rinse at maximum water pressure of 100 pounds per square inch.
 - 5. Spray on Neutralizer.
 - 6. Allow to dwell for at least six hours, until dry to touch.
 - 7. Rinse thoroughly. Scrub surface with nylon-bristle brush during rinsing.
 - 8. If white film appears on surface, repeat Neutralizer application.
 - 9. Collect debris and paper with paint and residue, place in plastic bags, and properly dispose of in compliance with local regulations.
- C. Coating Removal with RemovALL 310:
 - 1. Spray RemovALL 310 on coating.
 - 2. Allow to dwell for 24 hours.
 - 3. Do not allow RemovALL 310 to dry. If it appears to be drying, reapply light coating and extend dwell time.
 - 4. Scrub with nylon-bristle brush to loosen residue.
 - 5. Rinse thoroughly with water at maximum temperature of 120 degrees F.
 - 6. Collect debris, place in plastic bags, and properly dispose of in compliance with local regulations.

3.6 FIELD QUALITY CONTROL

- A. Architect/Engineer will monitor progress and quality of cleaning Work, possibly including:
 - 1. Observe completed Work and compare to approved mockups.
 - 2. Observe wall material with field microscope for damage.

3. Test samples of cleaning products and mixed solutions for conformance with Specifications and approved mockups.
- B. Contactor Responsibilities:
 1. Provide access to Work for Architect/Engineer, Owner's Representative, and other consultants hired by Owner.
 2. Upon request, provide samples of cleaning products and mixed solutions to Architect/Engineer.
- C. Remedy areas that do not satisfy requirements at no additional cost to Owner. Modify cleaning procedures as required and approved by Architect/Engineer.

3.7 SITE CLEANING

- A. At the end of each workday:
 1. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.
 2. Thoroughly rinse sidewalks to remove chemicals, dirt, pollutants, and other materials washed off building.
- B. After completing cleaning Work:
 1. Carefully remove protection materials, including tape, adhesive marks, and residue.
 2. Clean spillage and soiling from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces.
 3. Return building surfaces, landscaping, and grounds to condition prior to cleaning Work, including painted and glass surfaces, to satisfaction of Architect/Engineer at no additional cost to Owner.
 4. Repair at no cost to Owner all items damaged during the Work.
 5. Remove debris and surplus materials from Site.
- C. Waste Management:
 1. Collect surplus cleaning materials that cannot be reused and deliver to recycling or disposal facility.
 2. Treat materials that cannot be reused as hazardous waste and dispose of per manufacturer's instructions

END OF SECTION

SECTION 05 04 00
MISCELLANEOUS STEEL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fabrication and installation of miscellaneous steel elements.
 - 2. Connection to, or alteration of, existing steel elements.
- B. Related Sections:
 - 1. Section 01 11 00 - Summary of Work
 - 2. Section 03 01 34 - Concrete Replacements

1.2 COORDINATION

- A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for joint seal installation.
 - b. To avoid or minimize work on, or in immediate vicinity of, joint seal Work in progress.
 - c. To ensure that subsequent work will not adversely affect completed joint seal installation.

1.3 SUBMITTALS

- A. Product Data and Test Reports:
 - 1. Structural steel elements
 - 2. Bolts, nuts, and washers.
- B. Fabricator Qualifications: Evidence that fabricator's *existing company* has minimum five years of continuous experience in similar steel fabrication work; list of at least five representative, successfully-completed projects of similar scope and size, including:
 - 1. Project name.
 - 2. Owner's name.
 - 3. Owner's Representative name, address, and telephone number.
 - 4. Description of work.
 - 5. Types of steel fabrication work.
 - 6. Project supervisor.
 - 7. Total cost of steel fabrication work and total cost of project.
 - 8. Completion date.
- C. Installer Qualifications: Evidence that installer's *existing company* has minimum five years of continuous experience in similar steel installation work; list of at least five representative, successfully-completed projects of similar scope and size, including:
 - 1. Project name.

2. Owner's name.
3. Owner's Representative name, address, and telephone number.
4. Description of work.
5. Types of miscellaneous steel installation work.
6. Project supervisor.
7. Total cost of miscellaneous steel installation work and total cost of project.
8. Completion date.

D. Sample: 1 post base plate and anchor prior to production of all post bases

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced firm that has successfully completed miscellaneous steel installation work similar in material, design, and extent to that indicated for Project. Must have successful construction with specified materials in local area in use for minimum of five years.
 1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foremen during the course of the Project except for reasons beyond control of Contractor; inform Architect/Engineer in advance of any changes.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver store, and handle materials to prevent damage to materials or structure.
- B. Store elements off ground and spaced with pallets, dunnage, or other supports and spacers. Store to permit easy access for inspection and identification.
- C. Store fasteners in protected place. Clean bolts and nuts that become rusty before use per manufacturer's written recommendations.
- D. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid damage or permanent structure deflection.

1.6 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to installation of steel elements. Notify Architect/Engineer of conditions found to be different than those indicated in Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer how to proceed
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.
- C. Handle and install materials in strict accordance with safety requirements required by local, state, and federal rules and regulations.

1.7 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
 1. Notify Architect/Engineer prior to proceeding with the Work of conditions that may interfere with, preclude proper execution of, or jeopardize the performance of the Work.

PART 2 - PRODUCTS

2.1 STEEL ELEMENTS

- A. Plates and Bars: ASTM A36/A36M.

2.2 AUXILIARY MATERIALS

- A. Welding Electrodes:
 - 1. Mild Steel: Comply with AWS D1.1 Table 5.3 requirements for Group II or higher steel specifications, and electrodes listed in approved WPSs.
- B. Anchor Rods: ASTM F1554, Grade 36, Class 2A; plain finish; fully threaded.
 - 1. Nuts: ASTM A563, Grade B, hex, plain finish.
 - 2. Washers: ASTM F844, plain finish.
- C. Paint, with color to match existing railing color:
 - 1. Carboline Company:
 - a. Primer: Carbocrylic 3358.
 - b. Finish Coat: Carbocrylic 3359.
 - 2. Pittsburgh Paints, PPG Architectural Finishes, Inc.:
 - a. Primer: Speedhide 6-212.
 - b. Finish Coat: Pitt-Tech 90-374.
 - 3. Sherwin Williams:
 - a. Primer: Kem Bond HS Universal Metal Primer.
 - b. Finish Coat: Sher-Cryl HPA High Performance Acrylic, [gloss] [semi-gloss].
 - 4. Tnemec Co., Inc.:
 - a. Primer: Chembuild Series 135.
 - b. Finish Coat: Endura-Shield Series 73.
 - 5. Approved equal.

2.3 FABRICATION

- A. Fabricate and assemble in shop to greatest extent possible. Comply with requirements of AISC 303, including tolerances.
 - 1. Cut, drill, and punch elements cleanly and accurately.
 - a. Remove burrs.
 - 2. Holes: Fabricate bolt holes, holes required for securing other work to steel elements, and holes for other work to pass through steel elements.
 - a. Cut, drill, or punch holes cleanly and accurately, perpendicular to steel surfaces.
 - 3. Grind edges of members to be coated to minimum radius of about 1/32 inch unless otherwise indicated.
 - 4. Exposed Elements: Fabricate with accurate angles, surfaces, and straight edges.
 - a. Fabricate seams and other connections that will be exposed to moisture in manner to exclude moisture. Provide weep holes where moisture may accumulate.
 - b. Remove sharp or rough areas on exposed surfaces.
- B. Welded Connections, Structural Steel: Comply with AWS D1.1/D1.1M for preheating, required profiles, tolerances, weld appearance, weld quality, and for methods used in correcting welding work.
 - 1. Perform welding in accordance with approved WPSs by properly certified welders.

2. Remove dirt, grease, oil, and foreign matter by pickling, power brushing, degreasing, machining, or grinding, prior to welding.
 3. Preheat base metal and maintain interpass temperatures in accordance with AWS D1.1/D1.1M
 4. Perform welding in a manner to:
 - a. Minimize distortion of welded pieces.
 - b. Obtain thorough fusion and required profile without cracking.
 5. Remove slag from completed welds, and clean adjacent weld metal by brushing or other suitable means.
- C. Cleaning: After assembly, including welding:
1. Clean steel surfaces that are to remain unpainted according to SSPC-SP 1, Solvent Cleaning; SSPC-SP 2, Hand Tool Cleaning; and SSPC-SP 3, Power Tool Cleaning.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions with Installer for compliance with requirements and other conditions affecting installation or performance of miscellaneous steel elements.
1. Verify elevations of bearing surfaces and locations of anchor rods, bearing plates, and other embedments.
 2. Ensure that Work done by other trades is complete and ready for steel installation.
 3. Verify that areas and conditions under which Work is to be performed permit proper and timely completion of Work.
 4. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of steel elements. Do not proceed with steel installation until adverse conditions have been corrected and reviewed by Architect/Engineer. Commencing miscellaneous steel Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).
1. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.
- B. Protect paving and sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.
- C. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- D. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.
- E. Limit access to Work areas.
- F. Protect from damage, all elements of completed work and original construction to remain.

3.3 INSTALLATION

A. General:

1. Install miscellaneous steel elements in accordance with requirements of AISC 303.
2. Position steel elements accurately in location, alignment, and elevation indicated; with edges and surfaces level, plumb, true, and free of rack.
 - a. Maintain erection tolerances specified by AISC 303.
 - b. Perform cutting, drilling, and fitting required to install steel elements.
3. Provide temporary support for elements during installation to keep elements secure, plumb, and in alignment. Do not remove temporary supports until the installation is complete.
4. Align and adjust various members forming part of the assembly before permanently fastening.
 - a. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with adjacent elements.
 - b. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - c. Make allowances for difference between temperature at time of installation and mean temperature when structure is completed and in service.
5. Splice members only where indicated on Drawings or shop drawings approved by Architect/Engineer.
6. Do not enlarge holes unless approved by Architect/Engineer. If approved, ream holes to enlarge.

B. Base Plates:

1. Clean bearing surfaces and bottom surface of plates of bond-reducing materials. Roughen concrete bearing surfaces prior to setting plates.
2. Accurately set plates with wedges, shims, setting nuts, or leveling plates as required.
3. Accurately position and plumb supported member.
4. Install anchor rod washers and nuts and snug-tighten anchor rods.
5. Paint base plates and the lower portion of the railing posts as required to cover all exposed steel surfaces after completion of welding.

C. Welded Connections, Structural Steel: Comply with AWS D1.1/D1.1M for preheating, required profiles, tolerances, weld appearance, weld quality, and for methods used in correcting welding work.

1. Perform welding in accordance with approved WPSs by properly certified welders. Take precautions for fire hazards at adjacent construction.
2. Remove dirt, grease, oil, and foreign matter by pickling, power brushing, degreasing, machining, or grinding, prior to welding.
3. Preheat base metal and maintain interpass temperatures.
4. Perform welding in manner to:
 - a. Minimize distortion of welded pieces.
 - b. Obtain thorough fusion and required profile without cracking.
5. Remove slag from completed welds, and clean adjacent weld metal by brushing or other suitable means.
6. Where existing members are to be welded, shore existing members in accordance with Drawings. Do not heat existing members more than necessary to achieve a satisfactory weld. Place welding work lead as close as possible to weldment being executed.

3.4 FIELD QUALITY CONTROL

- A. Welded Connections: Welds will be visually inspected according to AWS D1.1/D1.1M and the requirements of the applicable building code. Acceptance criteria will be in accordance with AWS D1.1/D1.1M.
- B. Correct deficiencies in Work that inspection and testing indicate do not comply with Contract Documents.

3.5 CLEANING

- A. At the end of each workday, clean the Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.
- B. After completing the miscellaneous steel Work:
 - 1. Clean all materials resulting from Work that are not intended to be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.
 - 2. Repair at no cost to Owner all items damaged during the Work.
 - 3. Remove and legally dispose of debris and surplus materials from Site.

END OF SECTION

SECTION 07 18 00

TRAFFIC COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Surface preparation, supply, and application of traffic coating.
- B. Related Sections:
 - 1. Section 01 11 00 - Summary of Work
 - 2. Section 03 01 34 - Concrete Replacements
 - 3. Section 07 92 00 - Joint Sealants

1.2 REFERENCES

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for traffic-coating Work.
 - b. To avoid or minimize work on, or in immediate vicinity of, traffic-coating Work in progress.
 - c. To ensure that subsequent work will not adversely affect quality of completed traffic coating.
- B. Pre-application Meeting:
 - 1. Conduct meeting at Site.
 - 2. Time, date, location, and attendee notification to be facilitated by Contractor.
 - 3. Review requirements for traffic coating, including:
 - a. Construction schedule.
 - b. Availability of materials, Applicator's personnel, equipment, and facilities needed to make progress and avoid delays.
 - c. Site use, access, staging, and set-up location limitations.
 - d. Approved mockup procedures.
 - e. Impact of forecast weather conditions.
 - f. Ventilation requirements.
 - g. Surface preparation and substrate condition.
 - h. Application procedures.
 - i. Special details and sheet flashings.
 - j. Minimum curing period.
 - k. Testing and inspection requirements.
 - l. Governing regulations.
 - 4. Contractor's Site superintendent, traffic-coating manufacturer's technical representative, Applicator's foreman, Owner's Representative, and Architect/Engineer shall attend.

1.4 SUBMITTALS

- A. Product Data: Traffic-coating manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions.
 - 1. Include traffic-coating manufacturer's color chart.
- B. Samples: For each type of traffic coating required, stepped samples on rigid backing large enough to illustrate build-up of traffic coatings, of same thickness and material indicated for Work.
- C. Sample Warranties: Copies of traffic-coating manufacturer's warranty and Applicator's warranty, both stating obligations, remedies, limitations, and exclusions. Submitted with bid.
- D. Following completion of the Work:
 - 1. Traffic-coating manufacturer's warranty inspection reports.
 - 2. Completed warranty from traffic-coating manufacturer.
 - 3. Completed warranty from Applicator.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Experienced firm that has successfully completed traffic-coating work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by traffic-coating manufacturer to apply traffic coating; and that is eligible to receive traffic-coating manufacturer's warranty. Must have successful installations of specified materials in local area in use for minimum of five years.
 - 1. Employ foreman trained by traffic-coating manufacturer and with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site during Work. Do not change foremen during course of Project except for reasons beyond control of Installer; inform Architect/Engineer in advance of any changes.
- B. Mockups: Prior to start of Work or purchase of material, apply traffic coating to at least 50 square feet of each substrate, at locations determined by Architect/Engineer, to demonstrate surface preparation, joint and crack treatment, thickness, texture, color, and standard of workmanship. The mockup shall include the proposed aggregate broadcast into the coating to demonstrate the slip resistance.
 - 1. If Architect/Engineer determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
 - 2. Approved mockup will be standard for judging completed Work.
 - 3. Determine tensile bond strength of membrane to substrate shall be conducted by the manufacturer's representative or testing agency in accordance with ASTM D7234, Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers during mockups as required to assure specified adhesion. Tensile bond strength of membrane to substrate shall be greater than or equal to 200 psi for vehicular traffic. Contractor to patch test areas with traffic coating system at no cost to Owner.
 - 4. Maintain approved mockups in undisturbed condition during Work as standard for judging completed Work. Mockups, if undamaged at time of Substantial Completion, may be incorporated into Work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.
- B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.
- C. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer's written instructions.
- D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer's standard packaging and covering alone is **not** considered adequate weather protection.
- E. Locate materials in a secure location approved by Owner's Representative
- F. Conspicuously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.
- G. Limit stored materials on structures so as to preclude damage to materials and structures.
- H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

1.7 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to start of traffic-coating Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Applicator how to proceed.
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.
- C. Ensure that drains are operational at the end of each workday or if precipitation is forecast.
- D. Environmental Limitations: Apply traffic coating when existing and forecast weather conditions permit traffic coating to be installed according to traffic-coating manufacturer's written instructions and warranty requirements. Do not apply traffic coating under the following conditions, unless otherwise recommended by traffic-coating manufacturer and approved by Architect/Engineer.
 - 1. Apply only when substrate temperature is above 50 degrees F or more than 5 degrees F above dew point, or within range recommended by traffic-coating manufacturer.
 - 2. Apply only when ambient temperature is above 40 degrees F or within range recommended by traffic-coating manufacturer.

3. Do not apply to damp or wet substrate; when relative humidity exceeds 85 percent; in snow, rain, fog, or mist; or when snow, rain, fog, or mist is forecast during application or curing period. Apply only to frost-free substrate.
- E. Maintain adequate ventilation during preparation and application of traffic-coating materials. Notify Owner's Representative at least one week in advance of Work with materials with noxious vapors. Review application schedule and venting precautions with Owner's Representative prior to beginning application.

1.8 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
 1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.9 WARRANTIES

- A. Manufacturer's Warranty:
 1. Written warranty, signed by traffic-coating manufacturer, including:
 - a. Repair or replace traffic coating that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; that experiences abrasion or tearing failure not due to misuse; that experiences surface crazing, fading or chalking; or that deteriorates in a manner not clearly specified by submitted traffic-coating manufacturer's data as an inherent quality of the material for the application indicated. Warranty does not include deterioration or failure of traffic coating due to failure of substrate prepared according to requirements, formation of new substrate cracks exceeding 1/16 inch in width, fire, vandalism, or snowplow abuse.
 - b. Provide access to warranty repair and replacement areas.
 2. Warranty Period: Five years after Substantial Completion date.
- B. Applicator's Warranty:
 1. Written warranty on warranty form at the end of the Section signed by Applicator, including:
 - a. Repair or replace traffic coating that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; that experiences abrasion or tearing failure not due to misuse; that experiences surface crazing, fading, or chalking; or that deteriorates in a manner not clearly specified by submitted traffic-coating manufacturer's data as an inherent quality of the material for the application indicated. Warranty does not include deterioration or failure of traffic coating due to failure of substrate prepared according to requirements, formation of new substrate cracks exceeding 1/16 inch in width, fire, vandalism, or snowplow damage.
 - b. Provide access to warranty repair and replacement areas.
 - c. Repair or replacement, to satisfaction of Owner, of other work or items which may have been displaced or damaged as consequence of defective Work.
 - d. Make immediate emergency repairs within 48 hours of notice of leakage.
 2. Warranty Period: Five years after Substantial Completion date.

PART 2 - PRODUCTS

2.1 TRAFFIC COATING

- A. Source Limitations: Obtain materials through one source from single traffic-coating manufacturer. Provide materials not available from traffic-coating manufacturer from sources approved by traffic-coating manufacturer. Provide new materials.
- B. Use one of the following traffic coatings, or approved equal:
 - 1. Heavy-duty vehicular/pedestrian system:
 - a. Iso-Flex 750U-HL HVT Deck Coating System by LymTal International, Inc., consisting 25 dry mils of base coat, 15 dry mils of wear course, 3/4 pound of sand per square feet, and 12 dry mils of lock coat.
 - b. Auto-Gard Vehicular Traffic-Bearing Waterproofing with double-texturing, by Neogard, consisting of 20 dry mils of base coat, 32 dry mils of wearing surface coat, and 20 to 30 pounds of aggregate per 100 square feet.
 - c. MasterSeal Traffic 1500 Extra-Heavy-Duty System by BASF Construction Chemicals, LLC, consisting of 20 dry mils of base coat, 20 dry mils of mid-coat, 15 dry mils of finish coat, and 50 to 70 pounds of aggregate per 100 square feet.
 - 2. Heavy-duty vehicular/pedestrian system (two-component):
 - a. Iso-Flex 750U-HL HVT Deck Coating System by LymTal International, Inc., consisting 25 dry mils of base coat, 15 dry mils of wear course, 3/4 pound of sand per square feet, and 12 dry mils of lock coat.
 - b. Auto-Gard FC T Vehicular Traffic-Bearing Waterproofing with double-texturing, by Neogard, consisting of 20 dry mils of base coat, 32 dry mils of wearing surface coat, and 20 to 30 pounds of aggregate per 100 square feet.
 - c. MasterSeal Traffic 2500 Extra-Heavy-Duty System by BASF Construction Chemicals, LLC, consisting of 20 dry mils of base coat, 20 dry mils of mid-coat, 15 dry mils of finish coat, and 50 to 70 pounds of aggregate per 100 square feet.
- C. Primer: Traffic-coating manufacturer's standard, factory-formulated primer recommended for substrate under conditions of service and application.
- D. Joint Reinforcement: Traffic-coating manufacturer's standard reinforcement.
- E. Aggregate: Clean silica sand, uniform in gradation, and approved by traffic-coating manufacturer.
- F. Top Coat Color: Approved in advance in writing by Owner's Representative.
- G. Provide a highly slip-resistant final texture, with a wet coefficient of friction exceeding 0.9 when tested according to ASTM C1028.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions with Applicator and traffic-coating manufacturer's representative for compliance with requirements and other conditions affecting performance of traffic coating.
 - 1. Ensure that work done by other trades is complete and ready for traffic-coating Work.

2. Verify compatibility with and suitability of substrates.
3. Verify that areas and conditions under which traffic-coating Work is to be performed permit proper and timely completion of Work.
4. Notify Architect/Engineer in writing of conditions which may adversely affect application or performance of traffic coating and recommend corrections.
5. Do not proceed with traffic-coating Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
6. Commencing traffic-coating Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Comply with traffic coating manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.
- B. Cover adjacent surfaces with materials that are proven to resist traffic coating.
- C. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).
- D. Take precautions to protect against air-borne materials and run-off.
- E. Protect paving, sidewalk, and adjacent building areas from mechanical damage due to equipment.
- F. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- G. Limit access to Work areas.
- H. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.
- I. Protect from damage, all elements of completed work and original construction to remain.

3.3 SURFACE PREPARATION

- A. Equipment:
 1. Shot blast, scarification, and sandblasting equipment capable of abrading the top surface of the existing concrete slab. The equipment shall also remove all laitance, dirt and debris or other contaminants that may detrimentally affect the bond between the membrane and the structural slab.
 2. Concrete cleaning equipment such as Blastrac Concrete Cleaning System manufactured by Wheelabrator-Frye, Inc., or equal.
 3. Abrasive blasting equipment capable of removing contaminants and laitance from concrete surface.
 4. Compressed air equipment capable of removing dust and dirt from concrete surface.
- B. Remove existing traffic coating and other materials to expose substrate.
 1. Existing traffic coating system is unknown and only present on select steps, where the coating is worn to the base coat and concrete substrate.

2. Do not begin removal of existing traffic coating when weather conditions are not conducive to maintaining watertightness or for application of new traffic coating.
- C. At transition to CMU walls, provide a groove in the CMU, 4 inches above the nosing and parallel to the stair underside.
- D. Clean and prepare concrete substrate according to traffic-coating manufacturer's written instructions. Provide clean, dust-free, and dry substrate.
1. Verify that concrete has cured and aged for minimum time period recommended by traffic-coating manufacturer.
 2. Verify that substrate is sound and is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.
 3. Verify that transitions from one surface plane to another (inside and outside corners) are cleanly formed and free of broken edges and excess concrete.
 4. Remove concrete fins and projections, concrete splatter, and other irregularities which would prevent monolithic, continuous application of traffic coating.
 5. Properly repair substrate defects such as delaminations, spalls, voids, form tie holes, honeycombing, and cracks, with latex-modified concrete or another material acceptable to traffic-coating manufacturer and Architect/Engineer.
 6. Remove grease, oil, asphalt solids, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
 7. Shotblast or scarify concrete to provide clean surface, free of laitance, dirt, and other loose or foreign material. Use care to avoid pockmarking concrete surface.
 8. Uniformly clean concrete surfaces by abrasive blast, according to ASTM D4259, to expose top surface of fine aggregate and provide sound surface, free of laitance, dirt, and other loose or foreign material. Use self-contained, recirculating, blast-cleaning apparatus. Remove remaining loose material and clean surfaces according to ASTM D4258. Produce surface texture equal to CSP 3 or 4 from ICRI Guide for Selecting and Specifying Concrete Surface Preparation.
 9. Level areas of surface scaling or rough, uneven areas where surface roughness is unacceptable for traffic-coating application, as determined by Architect/Engineer, with skim coat of epoxy or other material compatible with traffic coating and recommended by traffic-coating manufacturer.
 10. Rout cracks and joints designated by traffic-coating manufacturer's representative and verified by Architect/Engineer, remove existing sealant, and install new sealant.
 11. Abrasive blast clean curb, column, and wall surfaces that will receive traffic coating.
 12. Thoroughly sweep substrate and clean with oil-free compressed air.
- E. Mask adjoining surfaces not receiving traffic coating to prevent spillage and overspray affecting other construction.
- F. Close off deck drains and other deck penetrations to prevent spillage and migration of traffic-coating fluids.
- G. Applicator and traffic-coating manufacturer's representative shall examine substrate to ensure that it is properly prepared and ready to receive traffic coating. Traffic-coating manufacturer's representative shall report in writing to Applicator and Architect/Engineer conditions which will adversely affect traffic-coating system application or performance. Do not proceed with traffic-coating application until these conditions have been corrected and reviewed by Architect/Engineer.

- H. Proceed with application only after unsatisfactory conditions have been corrected. Commencing application constitutes acceptance of Work surface preparation and conditions.

3.4 APPLICATION

- A. Provide and maintain barricades for vehicular and pedestrian traffic at traffic-coating areas during application and curing period.
- B. Allow sealant, concrete replacement materials, and skim coats to fully cure prior to installing traffic coating.
- C. Apply traffic coating material according to traffic-coating manufacturer's written recommendations.
 - 1. If pin-holing, blistering, or bubbling occurs, delay Work until later test areas are free of pinholes, blisters, or bubbling.
 - 2. Start traffic-coating application in presence of traffic-coating manufacturer's representative.
 - 3. Install joint reinforcement, centered on joints and horizontal edges of sheet-metal flashing and pans, in detail coat.
 - 4. Install sealant cant at intersections of horizontal and vertical surfaces.
 - 5. Batch and thoroughly mix components as recommended by the traffic-coating manufacturer.
 - 6. Apply detail coat at intersections of horizontal and vertical surfaces, at drains and other deck penetrations, and at cracks and joints.
 - 7. Apply traffic-coating system.
 - a. Wipe detail coat to remove dust and contamination.
 - b. Apply each coat in one uniform application, broadcast aggregate if required, and backroll for even coverage. Allow each coat to cure before apply next coat. Sweep or vacuum off excess aggregate.
 - c. Apply at least 4 inches up sides of columns, walls, and other vertical surfaces, and up curb faces and across top curb surfaces.
 - d. Omit aggregate on vertical surfaces.
 - e. If pinholes occur in base coat, apply additional base coat material using flat squeegee or other tool approved by traffic-coating manufacturer, to fill holes before proceeding with subsequent coats.
 - f. Prevent contamination or damage during application and curing.
 - g. Verify that wet film thickness of each component coat complies with requirements every 100 square feet.

3.5 FIELD QUALITY CONTROL

- A. Architect/Engineer will take a minimum of one sample (one-square inch) of new traffic-coating system for every 1,000 square feet of traffic-coating installed. Dry film thickness will be measured.
 - 1. Dry film thickness is satisfactory if not less than minimum thickness specified by traffic-coating manufacture or this Section, whichever is greater.
 - 2. If dry film thickness is too thin, apply additional material at no cost to Owner, or perform other remedial action recommended by traffic-coating manufacturer or Architect/Engineer.
 - 3. Patch sample areas with traffic-coating system.

- B. Architect/Engineer may perform bond strength testing to verify adequate bond strength in accordance with ASTM D7234 Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
 - 1. Contractor to patch test areas with traffic coating system at no cost to Owner.
- C. Chain drag traffic-coating areas at conclusion of Work to locate debonded areas. Remove and replace debonded areas.

3.6 CLEANING

- A. At the end of each workday, clean Site and Work areas and place and place all items to be discarded in appropriate containers.
- B. After completing traffic coating Work:
 - 1. Clean all materials resulting from Work that are not intended to be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.
 - 2. Repair at no cost to Owner all items damaged during the Work.
 - 3. Remove and legally dispose of debris and surplus materials from Site.

3.7 PROTECTION

- A. Protect traffic-coating from damage and wear during remainder of construction period.
- B. Replace Work or materials damaged beyond repair, in opinion of Architect/Engineer, at no cost to Owner.

END OF SECTION

APPLICATOR'S WARRANTY FOR

[_____]
We (Applicator) hereby warrant materials and workmanship of Work which we have installed at above-referenced Project for a period of five (5) years from date of substantial completion. We agree to repair or replace traffic coating which fails to remain watertight; or fails in adhesion, cohesion, or general durability; or experiences surface crazing, fading or chalking; or deteriorates in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the application indicated. Warranty does not include deterioration or failure of traffic coating due to failure of substrate prepared according to requirements, formation of new substrate cracks exceeding 1/16 inch in width, fire, vandalism, or snowplow damage.

We also agree to repair or replace to satisfaction of Owner, other work or items which may be displaced or damaged as a consequence of defective Work.

In event of our failure to comply with foregoing conditions, within seven days after being notified in writing by Owner, we collectively or separately do hereby authorize Owner or his successor in interest to proceed to have said defects repaired and made good at our expense and we will honor and pay costs and charges therefore upon demand.

Date of Substantial Completion: _____

Applicator's signature: _____

Typed name and title of company official signing above and issuing this warranty:

Name: _____ Title: _____

Date of Signature: _____

Contractor's signature: _____

Typed name and title of company official signing above for Contractor:

Name: _____ Title: _____

Date of Signature: _____

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Surface preparation and installation of sealant in joints as indicated in Drawings and Specifications.
- B. Related Sections:
 - 1. Section 01 11 00 - Summary of Work
 - 2. Section 01 22 00 - Unit Prices
 - 3. Section 09 96 53 - Concrete Replacements
 - 4. Section 07 18 00 - Traffic Coatings

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate Work to ensure that adjacent areas are not adversely affected; that new materials and building interior are kept continuously dry; and that continuous, watertight, new sealant installation is provided. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for sealant Work.
 - b. To avoid or minimize work on, or in immediate vicinity of, sealant Work in progress.
 - c. To ensure that subsequent work will not adversely affect completed sealant Work.

1.3 SUBMITTALS

- A. Product Data: Sealant manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and installation instructions.
 - 1. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
 - 2. SpecData sheet for substrate cleaner and substrate primer recommended by sealant manufacturer for specific substrate surface and conditions.
- B. Samples: Sealant manufacturer's color sample card, either printed or with thin sealant beads, showing range of colors available for each product exposed to view.
- C. Manufacturer's Reports and Certifications:
 - 1. Prior to sealant installation, report from sealant manufacturer with results of sealant compatibility, sealant and substrate staining, and mockup adhesion tests. Report shall:
 - a. State that materials which come into contact with or in close proximity to sealant have been tested.
 - b. Include sealant manufacturer's interpretation of test results relative to material performance, potential staining of sealant and substrates, dirt accumulation of sealant, and dirt runoff from sealant.

- c. Include sealant manufacturer's recommendations for substrate preparation and primer needed to obtain durable adhesion and installation procedures successfully used in mockups and field tests.
 2. Product Certificates: For each sealant product, accessory, related products, joint type, and substrate, sealant manufacturers' written approval of their products' use for specified conditions; based on mockups and field tests.
- D. Following completion of the Work:
1. Sealant manufacturer's inspection report of completed sealant installation.
 2. Completed warranty from sealant manufacturer.
 3. Completed warranty from Installer.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced firm that has successfully completed sealant work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by sealant manufacturer to install sealant; and that is eligible to receive sealant manufacturer's warranty. Must have successful installations of specified materials in local area in use for minimum of five years.
1. Employ foreman with minimum five years of experience as foreman on similar projects, to be on Site at all times during Work. Do not change foremen during the course of the Project except for reasons beyond the control of the Installer; inform Engineer in advance of any changes.
- B. Compatibility Tests: Include sealant and sealers or coatings that may come into contact with sealant following sealant installation.
- C. Mockups: Install ten feet of sealant in each type of joint to verify and set quality standards for materials and installation procedures, and to demonstrate aesthetic effects.
1. Include each type of backing material, sealant, primer and other related products.
 2. Mockups shall be accessible or located as indicated by Owner's Representative.
 3. Notify Owner's Representative and Architect/Engineer seven days in advance of date when mockups will be constructed.
 4. If Architect/Engineer determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
 5. Mockups, when approved by Owner's Representative and Architect/Engineer, will become standard for Work.
 6. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.
 7. Do not begin joint sealant Work until mockup is accepted by Owner's Representative and Architect/Engineer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.
- B. Deliver materials to Site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

- C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application or which have been exposed to moisture.
- D. Store materials in original, undamaged containers and packaging in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Protect stored materials from direct sunlight. Manufacturer's standard packaging and covering is **not** considered adequate weather protection.
- E. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.
- F. Conspicuously mark wet or damaged materials and remove from Site as soon as possible.
- G. Remove and replace materials that cannot be applied within stated shelf life.

1.6 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to start of sealant Work. Notify Engineer of conditions found to be different than those indicated in the Contract Documents. Engineer will review situation and inform Contractor and Installer of changes.
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.
- C. Environmental Limitations: Install sealant when existing and forecast weather conditions permit sealant to be installed according to sealant manufacturer's written instructions and warranty requirements.
 - 1. Do not install sealant when ambient or substrate temperatures are below 40 degrees F or are expected to fall below 40 degrees F in next 12 hours.
 - 2. Do not proceed with installation during inclement weather except for temporary work necessary to protect building interior and installed materials. Remove temporary work and Work that becomes moisture damaged.

1.7 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
 - 1. Notify Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.8 WARRANTY

- A. Installer's Warranty: The Contractor shall warrant the sealing of joints to be free of faults and defects in accordance with the General Conditions, except that the warranty shall be for a minimum of two (2) years from the date of Substantial Completion. Installed work discovered to contain faults or defects within the two year warranty period shall be repaired or replaced with materials in accordance with the specification at no cost to the Owner. The warranty shall be signed by the Contractor and Installer performing the work.

- B. Manufacturer's Warranty: Manufacturer's standard form in which sealant manufacturer agrees to furnish the specified joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Periods: 5 years from date of Substantial Completion.
- C. Warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 PRODUCTS

2.1 ELASTOMERIC JOINT SEALANTS

- A. General:
 - 1. Comply with ASTM C920 and other requirements indicated.
 - 2. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing on similar projects, mockups and preconstruction testing for Project, and field experience.
 - 3. Select products based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.
 - 4. Source Limitations: Obtain each type of joint sealant through one source from single manufacturer.
 - 5. Colors of Exposed Joint Sealants: Selected and approved in writing by Owner's Representative, from sealant manufacturer's full range.
 - 6. Ensure sealant selected is compatible with Elastomeric Coating product used.
- B. Single-Component, Non-sag, Polyurethane Sealants:
 - 1. DynaTred manufactured by Pecora Corporation.
 - 2. MasterSeal NP 1 manufactured by BASF Building Systems.
 - 3. SikaFlex-1a manufactured by Sika Corporation.
 - 4. Or approved equal
- C. Multi-Component, Non-sag, Polyurethane Sealants:
 - 1. DynaTrol II-SG manufactured by Pecora Corporation.
 - 2. MasterSeal NP 2 manufactured by BASF Building Systems.
 - 3. SikaFlex-2c NS manufactured by Sika Corporation.
 - 4. Or approved equal.
- D. Single-component, Non-sag, Silicone Sealants (to be used at roof level over new expansion joints):
 - 1. DOWSIL 790 Silicone Building Sealant manufactured by Dow Chemical Company.
 - 2. 890 NST manufactured by Pecora Corporation.
 - 3. SCS2700 SilPruf LM manufactured by Momentive Performance Materials Inc.
 - 4. Spectrem 1 manufactured by Tremco Commercial Sealants & Waterproofing.

5. Or approved equal.

2.2 AUXILIARY MATERIALS

- A. General: Sealant-backer materials, primers, surface cleaners, masking tape, and other materials recommended by sealant manufacturer, that are non-staining and compatible with substrates; based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions with Installer and sealant manufacturer's representative for compliance with requirements and for other conditions affecting installation or performance of sealant.
 1. Verify dimensions of sealant joints at Site by field measurement so that proper sealant profiles will be accurately maintained.
 2. Ensure that work done by other trades is complete and ready for sealant Work.
 3. Verify that areas and conditions under which sealant Work is to be performed permit proper and timely completion of Work.
 4. Notify Engineer in writing of conditions which may adversely affect installation or performance of sealant, including joints with widths less than those allowed by sealant manufacturer for applications indicated, and recommend corrections.
 5. Do not proceed with sealant Work until adverse conditions have been corrected and reviewed by Engineer.
 6. Commencing sealant Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.
- B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.
- D. Limit access to Work areas.
- E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.
- F. Comply with sealant manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.
- G. Cover adjacent surfaces with materials that are proven to resist sealant.

- H. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 SURFACE PREPARATION

- A. Remove existing sealant and other foreign material from joints.
- B. Repair damaged or deteriorated substrate surfaces according to sealant manufacturer's written instructions and as approved by Engineer.
- C. Clean joint substrates immediately before installing sealant, to comply with sealant manufacturer's written instructions based on mockups and preconstruction testing.
 - 1. Remove from substrate foreign material that could interfere with adhesion of sealant, including dirt, dust, existing sealant, oil, grease, and surface coatings.
 - 2. Provide dry substrate; prevent wetting of substrate prior to sealant installation.
 - 3. Clean porous substrates, such as concrete, masonry, stone, wood, by brushing, grinding, blast-cleaning, mechanical-abrading, or combination of methods to produce clean, sound substrate capable of developing optimum bond with sealant. Remove laitance and form-release agents from concrete. Remove loose particles remaining after cleaning operations by vacuuming or blowing out joints with oil-free, compressed air.
 - 4. Clean nonporous surfaces, such as metal, with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of sealant.
 - 5. Joints with silicone sealant and preformed sealant seals should generally be masked as subsequent cleanup of spillage and smears may be very difficult.
- D. Install masking tape on adjacent surfaces to prevent permanent staining or damage due to contact with sealant or cleaning methods to remove sealant smears. Remove tape immediately after tooling sealant, without disturbing sealant.

3.4 INSTALLATION OF SEALANT

- A. General: Comply with sealant manufacturer's written installation instructions for products and applications indicated, based on mockups and preconstruction testing.
- B. Joint Priming: Prime joint substrates where recommended in writing by sealant manufacturer, based on mockups and preconstruction testing. Apply primer to comply with sealant manufacturer's written instructions.
 - 1. Confine primer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.
 - 2. Limit priming to areas that will be covered with sealant in same day. Unless recommended otherwise by sealant manufacturer, reprime areas exposed for more than 24 hours.
- C. Install sealant backer and position to produce cross-sectional shape and proper depth of installed sealant.
 - 1. Use properly-sized backer. Do not use multiple-backer units or braided-backer units to accommodate wide joints.
 - 2. Install backer with device that will provide consistent depth between substrate surface and outer surface of backer.
 - 3. Do not leave gaps between ends of sealant backers.
 - 4. Do not stretch, twist, puncture, or tear sealant backers.

5. Remove wet backers and replace with dry materials.
- D. Install bond-breaker tape at back of designated joints.
- E. Install sealant immediately after installing backer material; to produce uniform, cross-sectional shape and depth; to directly contact and fully wet joint sides and backer material; and to completely fill recesses in joint configuration.
 1. For Non-Sag Sealant:
 - a. Install sealant flush with surface.
 - b. Immediately after sealant application and before skinning or curing begins, tool joint with slightly concave surface, compressing sealant into joint to form smooth, uniform sealant bead; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Do not use tooling agent.
 2. For pourable sealants:
 - a. Install sealant slightly below surface.
 - b. Immediately after sealant application and before skinning or curing begins, lightly tool joint, compressing sealant into joint to form smooth, uniform sealant bead; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Do not use tooling agent.
 - c. Remove excess sealant from surfaces adjacent to joints.

3.5 FIELD QUALITY CONTROL

- A. At completion of Project, observe installed sealant for damage, deterioration, or air pockets within the sealant bead. If damage or deterioration occurs, neatly cut out and remove damaged or deteriorated sealant, prepare and prime surfaces, and install new sealant. Replace sealant immediately so new sealant is indistinguishable from original Work.

3.6 CLEANING

- A. As sealant Work progresses, clean off excess sealant or sealant smears by methods and with cleaning materials approved in writing by sealant manufacturer and manufacturers of products in which joints occur. Exercise care to avoid scratching or damage to surfaces.
- B. At the end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.
- C. After completing sealant Work:
 1. Repair surfaces stained, marred, or otherwise damaged during sealant Work.
 2. Clean up debris and surplus materials and remove from Site.

3.7 PROTECTION

- A. Protect sealant during and after curing period from contact with contaminating substances and from damage, so sealants are without deterioration or damage at time of Substantial Completion.

END OF SECTION

SECTION 09 97 24
ARCHITECTURAL COATINGS (NON-ELASTOMERIC)

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Surface preparation and application of architectural coating on the following substrates:
 - 1. Cast in place concrete columns, walls, and ceilings (underside of slabs)
 - 2. Concrete masonry units (CMU) at stair tower walls, mechanical rooms, and offices
 - 3. Steel railings within stairwells
- B. Related Sections:
 - 1. Section 03 01 34 - Concrete Replacements
 - 2. Section 05 04 00 - Miscellaneous Steel
 - 3. Section 07 18 00 – Traffic Coating
 - 4. Section 07 92 00 – Joint Sealants

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
 - 1. With Owner's Representative.
 - 2. With other trades:
 - a. To ensure that work done by other trades is complete and ready for coating Work.
 - b. To avoid or minimize work on, or in immediate vicinity of, coating Work in progress.
 - c. To ensure that subsequent work will not adversely affect completed coating.
- B. Review previous repair and existing surface treatment materials to ensure compatibility with architectural coating to be used. Notify Architect/Engineer in writing of concerns with materials or primers installed by others and recommended remedies.
- C. Schedule surface preparation, sealant, and coating application Work so that dust and other contaminants from surface preparation Work will not adversely affect wet, newly-coated surfaces.

1.3 SUBMITTALS

- A. Product Data: Coating manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; mixing and application instructions; safety precautions for handling, storing, applying, and disposing of materials; and instructions for protecting surrounding areas from overspray. Include:
 - 1. Surfaces to which materials will be applied.
 - 2. Crack fillers, block fillers, and primers.
 - 3. Coating manufacturer's color chart showing full range of colors available.
- B. Samples for Initial Selection: Provide manufacturer's color sample card showing full range of colors and sheens available.

1. Use contrasting colors for each coating layer within a coating system. Consult with coating manufacturer for appropriate selections based on initial color section.
- C. Manufacturer's Certificate: Written certification from paint or stain manufacturer stating that specified surface preparation methods, paint or stain materials, and application procedures are appropriate for applications intended.
- D. Applicator Qualifications: Evidence that Applicator's existing company has minimum 5 years of continuous experience in similar coating work; list of at least 5 representative, successfully-completed projects of similar scope and size, including:
 1. Project name.
 2. Owner's name.
 3. Owner's Representative name, address, and telephone number.
 4. Description of work.
 5. Architectural coating used.
 6. Project supervisor.
 7. Total cost of coating work and total cost of project.
 8. Completion date.
- E. Inspection Plan: Submit an inspection plan including a sample of a daily Quality Control log. Plan shall include list of testing and inspection equipment to be used, and shall indicate the number and frequency of site visits by manufacturer's technical representative. It shall also include but not be limited to:
 1. Pre-surface preparation for obvious defects and contamination to be removed in accordance with the specified preparation.
 2. Measurement of ambient conditions of temperature, humidity, and dew points.
 3. Evaluation of surface preparation, application, and compressor equipment to verify cleanliness and avoid contamination.
 4. Evaluation of surface preparation and profile for conformance with standards.
 5. Observation of coating mixing and application for conformance to manufacturer's instructions and mock-up(s).
 6. Determination of dry film thickness of each coat applied for conformance to manufacturer's instructions and mock-up(s).
 7. Monitor cleanliness and time between coats. Each coat shall be inspected for cleanliness before application of subsequent coats.
- F. Sample Warranties: Copies of coating manufacturer's warranty and Contractor's warranty, both stating obligations, remedies, limitations, and exclusions. Submitted with bid.
- G. Following completion of the Work:
 1. Coating manufacturer's inspection report of completed coating application.
 2. Completed warranty from coating manufacturer.
 3. Completed warranty from Applicator.

1.4 EXTRA MATERIALS

- A. Furnish and deliver to Owner four (4) gallons of each color and finish of architectural coating materials applied. Provide materials in unopened, factory-sealed containers for storage and identify with labels describing contents.

1.5 QUALITY ASSURANCE

- A. The Owner's Representative will periodically observe progress, evaluate quality, and may perform tests of the coating.
- B. Manufacturer
 - 1. Letter confirming use of coating system on project and compatibility with sealants.
- C. Applicator Qualifications: Experienced firm that has successfully completed coating work on all substrates included in this project with similar materials, design, and extent to that indicated for Project. Must have successful applications of specified materials in local area in use for minimum of 5 years.
 - 1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during Work. Do not change foremen during course of Project except for reasons beyond control of Applicator; inform Architect/Engineer in advance of any changes.
- D. Mockups: Prepare surface and apply architectural coating on 4-foot-by-4 foot area of cast-in-place column, ceiling, and wall, concrete masonry wall, as well as a 4 foot long segment of railing at locations identified by Architect/Engineer and using the full-scale work to demonstrate surface preparation, crack and joint treatment, aesthetic affects, and quality of materials and execution. Leave portion of prepared surface and each coating layer exposed to view. Provide required color, sheen, and texture on each surface.
 - 1. Coating manufacturer's representative shall observe mockup and approve in writing surface preparation and coating application.
 - 2. Notify Owner's Representative and Architect/Engineer seven days in advance of date when mockup will be constructed.
 - 3. Owner may, at its expense, verify coating thickness and perform adhesion and pull-off tests. Contractor shall, at no cost to Owner, repair coating and substrate damaged by testing.
 - 4. If Architect/Engineer determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved. Pay for additional testing requested by Owner. Do not proceed with Work until mockup is approved by the Owner's Representative.
 - 5. Approved mockup will be acceptance standard for coating Work.
 - 6. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.
- E. Pre-Installation Meeting: Contractor, applicator, manufacturer's representative, and Owner's representative shall meet at the site to review procedures, acceptance of substrate surfaces, and coordination of Work with other trades.

1.6 SAFETY

- A. At this time, it is assumed that the existing paint system does not contain any hazardous materials.
- B. Owner to provide total metals RCRA-8 metals testing to confirm presence of hazardous materials in the existing system prior to Work commencement.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials according to manufacturer's recommendations and in such manner as to prevent damage to materials and structure.
- B. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with:
 - 1. Manufacturer's name.
 - 2. Product brand name and type.
 - 3. Color name and number.
 - 4. Date of manufacture and batch number.
 - 5. Directions for storing, handling, mixing with other components, and application, including precautions.
 - 6. Thinning instructions (if permitted).
- C. Store materials in original, undamaged containers and, if permitted, partially-used materials in tightly-covered containers in clean, dry, well-ventilated, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Protect stored materials from direct sunlight, heat, sparks, and flames. Manufacturer's plastic wrapping is not considered to be an adequate weather-protective covering.
- D. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.
- E. Conspicuously mark damaged or opened containers or containers with contaminated materials, and remove from Site as soon as possible.
- F. Remove and replace materials that cannot be applied within stated shelf life.

1.8 PROJECT CONDITIONS

- A. Verify existing dimensions and details prior to start of coating Work. Notify Architect/Engineer of conditions found to be different than those indicated in Contract Documents. Architect/Engineer will review situation and inform Contractor and Applicator of changes.
- B. Comply with Owner's limitations and restrictions for Site use and accessibility.
- C. Environmental Limitations: Apply coating when existing and forecast weather conditions permit coating to be installed according to coating manufacturer's written instructions.
 - 1. Apply only when substrate and ambient temperatures are between 50 and 90 degrees F, or within range recommended by coating manufacturer.
 - 2. Do not apply in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above dew point; or when such conditions are imminent during the drying period.
 - 3. Do not apply to damp or wet substrate.
 - 4. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.
- D. Maintain adequate ventilation during preparation and application of coating materials.
- E. Coordinate protection for adjacent buildings or occupied spaces with Owner as required. Coordinate protection or shutoff of HVAC intake areas for adjacent buildings with Owner.

1.9 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with Contract Documents. Such conditions may interfere with Work and may consist of damage or deterioration of substrate or surrounding materials that could jeopardize integrity or performance of Work.
 - 1. Notify Architect/Engineer of conditions that may interfere with proper execution of Work or jeopardize performance of Work prior to proceeding with Work.

1.10 WARRANTY

- A. Manufacturer's Warranty:
 - 1. Written warranty, signed by coating manufacturer, including:
 - a. Materials to replace coating that does not comply with requirements; that fails in adhesion, cohesion, or general durability; that cracks, checks, fades, or chalks; or that deteriorates in manner not clearly specified by submitted coating manufacturer's data as inherent quality of material for application indicated.
 - b. Failure of existing coatings underneath new coating is included in warranty.
 - c. New coating shall closely match color of existing coating. Extend new coating to reveals, surface edges, or other natural termination points to minimize differences in appearance between new and existing coating.
 - 2. Warranty Period: 5 years after Substantial Completion date.
- B. Contractor's Warranty:
 - 1. Written warranty, signed by Contractor, including:
 - a. Repair or remove and replace coating that does not comply with requirements; that fails in adhesion, cohesion, or general durability; that does cracks, checks, fades, or chalks; or that deteriorates in manner not clearly specified by submitted coating manufacturer's data as inherent quality of material for application indicated.
 - b. Failure of existing coatings underneath new coating is included in warranty.
 - 2. New coating shall closely match color of existing coating unless elected otherwise by Owner. Extend new coating to reveals, surface edges, or other natural termination points to minimize differences in appearance between new and existing coating.
 - 3. Warranty includes:
 - a. Providing access to work area.
 - b. Necessary surface preparation work.
 - 4. Warranty Period: 5 years after Substantial Completion date.

PART 2 PRODUCTS

2.1 ARCHITECTURAL COATING

- A. Source Limitations: Obtain materials through one source from single coating manufacturer, or from sources approved by coating manufacturer.
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

- C. Use the following or an approved equal.
 - 1. Primers: As required by manufacturer.
 - 1. Concrete and CMU Surfaces:
 - a. Perma-Crete Vertical Concrete Stain, by PPG
 - b. Loxon Vertical Concrete Stain, by The Sherwin Williams Company.
 - c. Series 180 W.B. Tneme-Crete, by Tnemec.
 - 2. Stairwell Railings:
 - a. Macropoxy 400 paint, by The Sherwin Williams Company.
- D. Colors to be selected by the Owner from the manufacturers full range.

2.2 AUXILIARY MATERIALS

- A. Use block fillers, crack fillers and sealants, detail materials, and primers recommended by architectural coating manufacturer.
 - 1. Auxiliary materials are anticipated within the stairwell CMU walls.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions with Applicator and coating manufacturer's representative for compliance with requirements and other conditions affecting application or performance of coating.
 - 1. Ensure that work done by other trades is complete and ready for coating Work.
 - 2. Verify that areas and conditions under which coating Work is to be performed permit proper and timely completion of Work.
 - 3. Verify compatibility with and suitability of substrates, including existing coatings.
 - 4. Verify adhesion of existing coatings.
 - 5. Notify Architect/Engineer in writing of conditions which may adversely affect application or performance of coating and recommend corrections.
 - 6. Do not proceed with coating Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
 - 7. Commencing coating Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Coordinate with Owner to temporarily remove, non-destructively label, store and protect existing wayfinding signage on surfaces to be coated or re-coated. Coordinate removals with Owner.
- B. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.
- C. Prevent construction debris, coatings, and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- D. Protect paving and sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

- E. Limit access to Work areas. Provide “Wet Paint” signs to protect newly coated surfaces.
- F. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.
- G. Take precautions to protect against air-borne materials and runoff.
- H. Masking and Preparation:
 - 1. Remove hardware, light fixtures, and other items that will not be coated. If removal is impractical because of size or weight of item, protect item during surface preparation and coating application. After completing coating Work, reinstall items removed, using workers skilled in trades involved.”
 - 2. Comply with coating manufacturer’s written instructions for protecting building and other surfaces against damage from exposure to its products.
 - 3. Cover adjacent surfaces with materials that are proven to resist coating system.
 - 4. Mask off or protect from spillage and overspray surfaces not scheduled to receive coating, including garage slab surfaces.
 - 5. Mask off and protect conduit support hangers to prevent new paint from bonding to the hanger and restricting future movement.
 - 6. Remove masking and other protective measures at completion coating Work.
- I. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 PREPARATION OF CONCRETE AND CMU SURFACES

- A. Clean and prepare substrate according to coating manufacturer’s written instructions. Provide clean, dust-free, dry, and sound substrate for coating application.
 - 1. Existing Coatings:
 - a. Remove unbounded, peeling, flaking, or deteriorated coating by pressure washing or other means. Firmly adhered paint does not need to be removed.
 - b. Do not etch existing coatings.
 - c. Feather edges of existing coatings by sanding or other means, as recommended by coating manufacturer.
 - d. Existing coatings are generally present at the following locations: stairwell walls, mechanical rooms, office rooms.
 - 2. Remove fins and projections, splatter, and other irregularities which would prevent monolithic, continuous application of coating.
 - 3. Properly patch substrate defects (such as voids, form tie holes, honeycombing, and cracks) with latex-modified mortar or another material acceptable to coating manufacturer and Architect/Engineer.
 - 4. Remove grease, oil, asphalt solids, form-release agents, curing compounds, and other contaminants or film-forming coatings that might impair bond of architectural coating. If chemical removal is necessary, rinse with clean water.
 - 5. Treat cracks, joints, changes in surface direction, and through-member penetrations with patching compound or sealant as recommended by coating manufacturer. Remove deteriorated existing sealant and other materials and replace with materials recommended by coating manufacturer.
 - 6. Fill pores, crevices, and voids in concrete masonry with block filler and allow filler to dry.
 - 7. Pressure wash surface to provide clean surface, free of laitance, dirt, and other loose or foreign material, and to slightly roughen surface.

- B. Examine substrate with coating manufacturer to ensure that it is properly prepared and ready to receive coating.
 - 1. Coating manufacturer's representative shall report in writing to Contractor and Architect/Engineer conditions which will adversely affect coating system installation or performance.
 - 2. Do not proceed with coating application until these conditions have been corrected and reviewed by Architect/Engineer.
 - 3. Commencing application constitutes acceptance of Work surfaces and conditions.

3.4 PREPARATION OF STEEL RAILING SURFACES

- A. Clean and prepare substrate according to coating manufacturer's written instructions. Provide clean, dust-free, dry, and sound substrate for coating application.
 - 1. Remove loose rust, loose or deteriorated paint, and other surface contaminants in accordance with SSPC-SP 2 or SSPC-SP 3.
 - 2. Lightly sand existing coating to remove sheen and slightly roughen.
 - 3. Feather edges of existing coating by sanding, grinding, or other means. At pedestrian handrails, minimize variations in the surface profile at transitions between existing coating and non-coated regions.
 - 4. Remove grease, oil, dirt, and other contaminants that might impair bond of coating. Use cleaner/degreaser or chemical removal as necessary; rinse thoroughly with copious amounts of clean water.
- B. Examine substrate with coating manufacturer to ensure that it is properly prepared and ready to receive coating.
 - 1. Coating manufacturer's representative shall report in writing to Contractor and Architect/Engineer conditions which may adversely affect coating system application or performance and recommend corrections.
 - 2. Do not proceed with coating application until unsatisfactory conditions have been corrected and reviewed by Architect/Engineer.
 - 3. Commencing coating application constitutes acceptance of Work surfaces and conditions.

3.5 APPLICATION

- A. General: Prepare and apply materials according to coating manufacturer's written instructions, at recommended rates and coverages.
 - 1. Test prepared surfaces for alkalinity, moisture, and other conditions as recommended by coating manufacturer.
 - 2. Verify that substrate has dried for minimum time period recommended by coating manufacturer.
 - 3. Application of primer coat layer of coating system to occur within same work day of completion of preparation/wash activities such that forms of contaminants will not develop or deposit on the surface and the surface remains in a clean, satisfactory condition.
 - 4. Verify that ambient air and substrate surface temperatures, relative humidity, and dew point are within ranges recommended by coating manufacturer and are forecast to remain within these ranges during coating curing period.
 - 5. Application of coating to occur within 7 days of completion of wash/preparation activities or following rain weather events where debris would be expected to wash down the parking structure. If application is initiated beyond 7 days after preparation, additional re-cleaning activities may be required at no additional cost to the owner.

- B. Mix materials thoroughly to uniform, smooth consistency. Do not thin or dilute unless permitted by coating manufacturer; use recommended thinners within recommended limits.
 - 1. Stir as required during application.
 - 2. If surface film forms, do not stir film into material. Remove film and strain coating material before using.
 - 3. Maintain containers used for mixing and applying coating in clean condition, free of foreign materials and residue.
- C. Apply coating by roller, spray, or brush. Use applicator and technique best suited for substrate and type of material being applied.
 - 1. Apply materials as soon as practicable after completion of surface preparation or full curing of previous material application.
 - 2. Do not coat over conditions detrimental to formation of durable coating film, such as dirt, dust, rust, scale, grease, or moist or scuffed surfaces.
 - 3. Apply barrier coat over incompatible primers or remove and reprime.
 - 4. Prime surfaces as necessary.
 - 5. Apply architectural coating in two coats to minimum thickness of 8 mils dry-film-thickness or as recommended by coating manufacturer, whichever is greater. Do not apply subsequent coats until the initial coat has fully cured.
 - a. If undercoats or other conditions show through final coat, apply additional coats until coating film is of uniform finish, color, and appearance.
 - b. Ensure that edges, corners, and crevices receive minimum dry film thickness.
 - c. Brush Application: Work material into surface in even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw lines at edges and color breaks.
 - d. Roller Application: Keep cover wet; do not dry roll. Apply material in sections. Lay on required amount of material, working material into grooves and rough areas. Then level material, working it into surface.
 - e. Spray Application: Use spray application only when permitted by manufacturer's written instructions and authorities having jurisdiction. Apply material to provide equivalent hiding of brush-applied coat. Do not double back, building up film thickness of 2 coats in 1 application.
 - 6. Do not coat over UL, FMG, or other labels.

3.6 FIELD QUALITY CONTROL

- A. Allow Owner, Owner's Representative, and Manufacturer's Representative access to observe progress and quality of portion of completed Work.
- B. Material Coverage Rates.
 - 1. At beginning of application, calibrate material coverage rate with wet-mil thickness equivalent to minimum specified dry-mil thickness. Measure wet-mil thickness with thickness gauge.
 - 2. Measure wet-mil thickness at least once for every 200 square feet of surface coated. Adjust coverage rate to maintain minimum thickness.
- C. Owner may, at its expense, perform following tests. Contractor shall provide access to test locations determined by Architect/Engineer.
 - 1. Measure dry-film thickness of coating. Coating thickness is acceptable if within specified range.

2. Perform adhesion tests per ASTM D3359, Test Method A, after coating has cured. Coating adhesion is acceptable if no peeling or coating removal occurs (Rating 5A).
 3. Perform pull-off tests per ASTM D4541, after coating has cured. Coating application is acceptable if test results are at least 100 pounds per square inch for concrete and CMU substrates or 300 pounds per square inch for metal substrates, or as approved by the Architect/Engineer.
 4. If coating application is acceptable, Owner will pay Contractor to repair substrate and coating as necessary at test locations.
 5. If coating application is unacceptable, Architect/Engineer will determine remedy. Contractor shall remove and replace unacceptable coating or perform other remedial actions at no cost to Owner. Contractor shall also repair substrate and coating at test locations with unacceptable results at no cost to Owner. Contractor may, at own expense, perform additional measurements and testing to determine limits of areas with unacceptable coating.
- D. Completed Work shall match approved mockup for color, texture, and coverage, in opinion of Architect/Engineer, and shall be free from flow-lines, streaks, blisters, and other surface imperfections. Remove, refinish, or recoat work not complying with specified requirements.

3.7 CLEANING

- A. At end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.
- B. After completing coating Work:
1. Clean accidental spillage, overspray, spatter, and misplaced paint from surfaces and restore the affected areas to its original undamaged condition. Exercise care to avoid scratching or damage to surfaces.
 2. Repair surfaces stained, marred, or otherwise damaged during coating Work.
 3. Clean up debris and surplus materials and remove from Site.
- C. Waste Management:
1. Collect surplus coating materials that cannot be reused and deliver to recycling or disposal facility.
 2. Treat materials that cannot be reused as hazardous waste and dispose of in appropriate manner.

END OF SECTION 09 97 24

SECTION 32 17 23.13
PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Section Includes: Supply and application of pavement-marking paint.
- B. Related Sections:
 - 1. Section 03 01 34 - Concrete Replacements
 - 2. Section 07 18 00 - Traffic Coating

1.2 SUBMITTALS

- A. Product Data: Pavement-marking-paint manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions.

1.3 QUALITY ASSURANCE

- A. Mockup: Apply pavement-marking paint on 1 square foot of each substrate to demonstrate surface preparation and application method.
 - 1. After pavement-marking paint has cured, Architect/Engineer may scrape paint with knife or similar to verify adhesion.
 - 2. If Architect/Engineer determines mockup does not comply with requirements, construct new mockup until mockup is approved.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.
- B. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.
- C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, and installation. Reject and remove from Site new materials which exhibit evidence of moisture during application, or have been exposed to moisture.
- D. Store materials in original, undamaged containers, and coatings, thinners, and cleaners in tightly-closed containers, in clean, dry, protected, well-ventilated location on raised platforms with weather-protective coverings, within temperature range required by pavement-marking-paint manufacturer. Protect stored materials from direct sunlight, sparks, and flame. Manufacturer's standard packaging and covering is not considered adequate weather protection.
- E. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.

- F. Conspicuously mark damaged or opened containers or containers with contaminated materials, and remove from Site as soon as possible.
- G. Remove and replace materials that cannot be applied within stated shelf life.

1.5 PROJECT CONDITIONS

- A. Prior to commencing Work, document with drawings and sketches existing pavement markings, including parking stall striping and numerals, traffic lines and arrows, handicap stall markings, and crosshatching.
- B. Verify existing dimensions and details prior to start of pavement-marking Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor of changes.
- C. Comply with Owner's limitations and restrictions for Site use and accessibility.
- D. Environmental Limitations: Apply pavement-marking paint when existing and forecast weather conditions permit pavement-marking paint to be applied according to pavement-marking-paint manufacturer's written instructions and warranty requirements.
 - 1. Do not apply when substrate or ambient temperature is outside of range recommended by pavement-marking-paint manufacturer.
 - 2. Do not apply to damp or wet substrate.
- E. Handle and apply materials in strict accordance with safety requirements required by pavement-marking-paint manufacturer; Safety Data Sheets; and local, state, and federal rules and regulations. Maintain Safety Data Sheets with materials in storage area and available for ready reference on Site.
- F. Maintain adequate ventilation during preparation and application of paint materials.

1.6 CHANGES IN WORK

- A. During rehabilitation work, existing conditions may be encountered which are not known or are at a variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
 - 1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.7 WARRANTY

- A. Applicator's Warranty:
 - 1. Prepare surface and replace pavement markings that fail in adhesion or cohesion or have unsatisfactory appearance, such as fading.
 - 2. Warranty does not include deterioration or failure of pavement-marking paint due to failure of substrate prepared according to requirements, fire, vandalism, or snow plow damage.
 - 3. Warranty Period: One year after Substantial Completion date.

PART 2 PRODUCTS

2.1 PAVEMENT-MARKING PAINT

- A. Paint:
 - 1. Chlorinated-rubber pavement-marking paint conforming to requirements of TT-P-115;
 - 2. Oil/alkyd pavement-marking paint conforming to requirements of A-A-2886 and TT-P-115; or
 - 3. Acrylic-latex pavement-marking paint conforming to requirements of TT-P-1952
 - 4. 20-minute-maximum no-pick-up time.
 - 5. Colors: To match existing, approved in advance in writing by Owner's Representative.

PART 3 EXECUTION

- A. Examine substrates and conditions with applicator for compliance with requirements and other conditions affecting application or performance of pavement-marking Work.
 - 1. Ensure that work done by other trades is complete and ready for pavement-marking Work.
 - 2. Verify that areas and conditions under which pavement-marking Work is to be performed permit proper and timely completion of Work.
 - 3. Notify Architect/Engineer in writing of conditions which may adversely affect application or performance of pavement-marking Work and recommend corrections.
 - 4. Do not proceed with pavement-marking Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
 - 5. Commencing pavement-marking Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

- A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.
- B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Limit access to Work areas.
- D. Mask adjoining surfaces not receiving pavement-marking paint to prevent spillage and overspray affecting other construction.
- E. Provide and maintain barricades for vehicular and pedestrian traffic at pavement-marking-paint areas during application and curing period.
- F. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 EQUIPMENT

- A. Application equipment recommended by pavement-marking-paint manufacturer.

3.4 SURFACE PREPARATION

- A. Clean and prepare substrate according to pavement-marking-paint manufacturer's written instructions. Provide clean, dust-free, and dry substrate.
 - 1. Verify that concrete and traffic coating has cured and aged for minimum time period recommended by pavement-marking-paint manufacturer.
 - 2. Verify that substrate is sound and is visibly dry and free of moisture.
 - 3. Remove grease, oil, asphalt solids, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from substrate.
 - 4. Thoroughly sweep substrate and clean with oil-free compressed air.
- B. Examine substrate with applicator to ensure that it is properly prepared and ready to receive pavement-marking paint.
 - 1. Notify Architect/Engineer in writing of conditions which may adversely affect application or performance of pavement-marking paint and recommend corrections.
 - 2. Do not proceed with pavement-marking-paint application until adverse conditions have been corrected and reviewed by Architect/Engineer.
 - 3. Commencing application constitutes acceptance of Work surfaces and conditions.

3.5 APPLICATION

- A. Allow sealant, replacement materials, and skim coats to fully cure prior to applying pavement-marking paint.
- B. Apply pavement-marking paint according to pavement-marking-paint manufacturer's written recommendations.
 - 1. Apply one coat with minimum wet film thickness of 15 mils, or two coats, each with minimum wet film thickness of 15 mils, per manufacturer recommendations, to provide solid lines and markings with uniform, sharp, clean edges.
 - 2. Use masking and stencils.
 - 3. Touch-up lines and markings to provide clean, straight edges.
 - 4. Provide and maintain hand-held, all-purpose fire extinguisher near paint storage and mixing area.
 - 5. Provide solid parking stall stripes, center numerals, and other markings to match existing sizes, font, and other characteristics, as approved by Architect/Engineer.

3.6 CLEANING

- A. At the end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.
- B. After completing pavement-marking Work:
 - 1. Clean or block out overspray, splatter, spillage, soiling, and paint on unintended locations.
 - a. Use cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces.
 - b. Block out with opaque pavement-marking paint matching substrate color.
 - 2. Repair surfaces stained, marred, or otherwise damaged during pavement-marking Work.
 - 3. Clean up debris and surplus materials and remove from Site.
- C. Waste Management:

1. Collect surplus materials that cannot be reused and deliver to recycling or disposal facility.
2. Treat materials that cannot be reused as hazardous waste and dispose of in an appropriate manner.

END OF SECTION



Wiss, Janney, Elstner Associates, Inc.
30700 Telegraph Road, Suite 3580
Bingham Farms, Michigan 48025
248.593.0900 tel
www.wje.com

May 10, 2023 - DRAFT

Aaron Ford
Parking Systems Manager
City of Birmingham
151 Martin Street
Birmingham, MI 48009

North Old Woodward Parking Structure 2023 Repair Project - Bid Tabulation

WJE No. 2022.0566.1

Dear Mr. Ford:

As requested, Wiss, Janney, Elstner Associates, Inc. (WJE) has tabulated the competitive bid responses for the North Old Woodward Parking Structure 2023 Repair Project in Birmingham, Michigan. This letter summarizes the received bids, which are outlined in Table 1.

OVERVIEW OF BIDS

Six bids were submitted; the bids were submitted by Pullman SST, Inc., RAM Construction, DRV Contractors, Mark 1 Restoration, Smith's Waterproofing, and Fasdecks, Inc. Bids were due on Friday, April 28, 2023. Base bid totals ranged from \$397,700 to \$848,215. RAM Construction was the low bidder, and Fasdecks, Inc. was the highest bidder. The spread between the two low bidders is \$450,515. Mark 1 Restoration was the second lowest bidder at \$427,550, and Smith's Waterproofing, who was the contractor during the previous repair project at this structure, was the third lowest bidder at \$427,750. The alternate bid, which includes architectural coating throughout the structure, ranged from \$319,520 to \$552,000. RAM construction was the low bidder, and DRV was the highest bidder. Mark 1 was the second lowest bidder, and Smith's waterproofing was the third lowest bidder. RAM was the lowest bidder overall, with the base bid and alternate bid totaling \$717,220.

The received bids display some variety in pricing, bonding, and schedule. The variation may be a result of several factors including, but not limited to, current work backlogs, the timing of this bid event, and labor and material shortages. WJE outlines additional items below that should be considered.

The provided construction duration for RAM, Mark 1, and Smith's Waterproofing were 100 days, 150 days, and 150 days, respectively. Please note that weather conditions and cold temperatures will have a significant impact on the actual project schedule for this work. Further, the actual project completion date will vary based on the permit approval process, issuance of a written notice to proceed, material availability and lead times, and other factors.

BID ANALYSIS

RAM's base bid includes unit prices for some work items that are lower than WJE anticipated based on our experience with similar work, and that are lower than the other submitted bids. These work items

include the general conditions and stair railing post base replacement. Additionally, RAM's bid included a timeline that is shorter than the other bidders and shorter than WJE anticipated.

RAM's alternate bid total is significantly lower than four out of the other five bids (Mark 1 Restoration was similar to Ram), and it is only \$78,000 lower than their base bid. It should be noted that the architectural coating alternate is an aesthetic decision made by the City, and the coating will require maintenance.

[PLACEHOLDER – DISCUSSION ABOUT INTERVIEW RESPONSES]

CONTRACTOR QUALIFICATIONS

We understand that the City is verifying contractor references that were submitted with the bids. WJE has successful prior project experience with all bidders. The Contract Documents require minimum experience levels for the construction superintendent and various installers, which will be verified by WJE prior to work commencement.

RECOMMENDATIONS

In our opinion, based on our review of the submitted bids, all bidders should be able to deliver a successful project for this scope. We find no cause at this time to not proceed with the low bidder. Regardless of who is selected, we recommend engineering oversight and periodic inspection be performed during the work to help ensure the work is being performed in accordance with intent of the Contract Documents.

Please let us know if you have further questions.

Sincerely,

Matthew Lewis, PE
Senior Associate and Project Manager

Enclosure:

- *Table 1 – Bidder Comparison*



Items				RAM Construction		Smiths Waterproofing LLC		M one United Inc. dba: Mark 1 Restoration Services		DRV Contractors		Pullman SST, Inc		Fastdecks, Inc	
Base Bid															
Lump Sum Bid Items				Total Price		Total Price		Total Price		Total Price		Total Price		Total Price	
L1	General Conditions			\$14,000.00		\$97,000.00		\$46,600.00		\$23,800.00		\$50,750.00		\$50,500.00	
L2	Performance Bond and labor and Material Payment Bond			\$5,000.00		\$15,000.00		\$7,000.00		\$3,500.00		\$14,250.00		\$16,500.00	
L3	Installation of traffic-bearing membrane (traffic coating) in the three stair towers			\$20,000.00		\$46,000.00		\$22,000.00		\$18,000.00		\$32,750.00		\$90,000.00	
L4	Installation of new expansion joint compression seal at the three roof level stair towers and one show shoot			\$19,000.00		\$27,000.00		\$11,750.00		\$54,400.00		\$10,600.00		\$8,500.00	
L5	Replace damaged and missing drain covers,and clean drain bowls			\$4,000.00		\$8,000.00		\$4,000.00		\$15,500.00		\$14,300.00		\$6,500.00	
Subtotal of Lump Sum Bid Items L1 through L8				\$62,000.00		\$193,000.00		\$91,350.00		\$115,200.00		\$122,650.00		\$172,000.00	
Allowances															
L6	Replace cracked and damaged drain lines at new drains with new cast iron pipes			\$10,000.00		\$10,000.00		\$10,000.00		\$10,000.00		\$10,000.00		\$10,000.00	
Sum of Allowance Bid Items				\$10,000.00		\$10,000.00		\$10,000.00		\$10,000.00		\$10,000.00		\$10,000.00	
Unit Price Bid Items				Unit Price				Unit Price				Unit Price			
U1	Concrete overlay repair (Keynote 7)	2,000	SF	\$26.00	\$52,000.00	\$20.00	\$40,000.00	\$38.00	\$76,000.00	\$32.00	\$64,000.00	\$35.70	\$71,400.00	\$50.00	\$100,000.00
U2	Partial-depth topside concrete slab repair (Keynote 8)	900	SF	\$36.00	\$32,400.00	\$25.00	\$22,500.00	\$38.00	\$34,200.00	\$35.00	\$31,500.00	\$49.50	\$44,550.00	\$80.00	\$72,000.00
U3	Partial-depth underside concrete slab repair (Keynote 9)	100	SF	\$75.00	\$7,500.00	\$55.00	\$5,500.00	\$80.00	\$8,000.00	\$98.00	\$9,800.00	\$120.00	\$12,000.00	\$200.00	\$20,000.00
U4	Concrete curb repair (Keynote 10)	100	SF	\$50.00	\$5,000.00	\$40.00	\$4,000.00	\$40.00	\$4,000.00	\$40.00	\$4,000.00	\$97.00	\$9,700.00	\$125.00	\$12,500.00
U5	Slab edge concrete repair (Keynote 11)	100	SF	\$75.00	\$7,500.00	\$45.00	\$4,500.00	\$75.00	\$7,500.00	\$275.00	\$27,500.00	\$110.00	\$11,000.00	\$200.00	\$20,000.00
U6	Slab on ground repair (Keynote 12)	50	SF	\$48.00	\$2,400.00	\$50.00	\$2,500.00	\$40.00	\$2,000.00	\$50.00	\$2,500.00	\$92.00	\$4,600.00	\$100.00	\$5,000.00
U7	Formed vertical concrete repair (Keynote 13)	150	SF	\$105.00	\$15,750.00	\$45.00	\$6,750.00	\$75.00	\$11,250.00	\$95.00	\$14,250.00	\$115.00	\$17,250.00	\$200.00	\$30,000.00
U8	Stair tower - partial-depth topside concrete slab repair (Keynote 14)	500	SF	\$40.00	\$20,000.00	\$20.00	\$10,000.00	\$45.00	\$22,500.00	\$45.00	\$22,500.00	\$65.00	\$32,500.00	\$150.00	\$75,000.00
U9	Stair tower - full-depth concrete slab repair (Keynote 15)	150	SF	\$70.00	\$10,500.00	\$55.00	\$8,250.00	\$100.00	\$15,000.00	\$100.00	\$15,000.00	\$165.00	\$24,750.00	\$200.00	\$30,000.00
U10	Stair tower stairs - partial-depth concrete topside repair (Keynote 16)	400	SF	\$42.00	\$16,800.00	\$20.00	\$8,000.00	\$45.00	\$18,000.00	\$55.00	\$22,000.00	\$96.00	\$38,400.00	\$175.00	\$70,000.00
U11	Stair tower stairs - partial-depth concrete underside repair (Keynote 17)	50	SF	\$105.00	\$5,250.00	\$55.00	\$2,750.00	\$100.00	\$5,000.00	\$200.00	\$10,000.00	\$160.00	\$8,000.00	\$300.00	\$15,000.00
U12	Stair tower railing post base replacement (Keynote 18)	35	EA	\$260.00	\$9,100.00	\$200.00	\$7,000.00	\$200.00	\$7,000.00	\$460.00	\$16,100.00	\$870.00	\$30,450.00	\$1,200.00	\$42,000.00
U13	Supplemental epoxy-grouted steel dowels	750	EA	\$45.00	\$33,750.00	\$10.00	\$7,500.00	\$25.00	\$18,750.00	\$30.00	\$22,500.00	\$22.00	\$16,500.00	\$35.00	\$26,250.00
U14	Supplemental steel reinforcement	2	ton	\$5,500.00	\$11,000.00	\$1,000.00	\$2,000.00	\$2,500.00	\$5,000.00	\$14,930.00	\$29,860.00	\$10,250.00	\$20,500.00	\$6,732.50	\$13,465.00
U15	Localized replacement of concrete masonry units (Keynote 21)	20	EA	\$45.00	\$900.00	\$65.00	\$1,300.00	\$100.00	\$2,000.00	\$100.00	\$2,000.00	\$80.00	\$1,600.00	\$200.00	\$4,000.00
U16	Localized repointing of masonry (Keynote 22)	300	LF	\$8.00	\$2,400.00	\$12.00	\$3,600.00	\$10.00	\$3,000.00	\$20.00	\$6,000.00	\$8.00	\$2,400.00	\$15.00	\$4,500.00
U17	Localized replacement of clay masonry bricks (Keynote 23)	60	EA	\$40.00	\$2,400.00	\$65.00	\$3,900.00	\$40.00	\$2,400.00	\$100.00	\$6,000.00	\$40.00	\$2,400.00	\$100.00	\$6,000.00
U18	Replace sealant at concrete overlay control joints (Keynote 24)	10,000	LF	\$4.50	\$45,000.00	\$5.00	\$50,000.00	\$5.00	\$50,000.00	\$5.00	\$50,000.00	\$4.75	\$47,500.00	\$6.00	\$60,000.00
U19	Replace sealant at cove (Keynote 25)	1,000	LF	\$4.50	\$4,500.00	\$5.00	\$5,000.00	\$5.00	\$5,000.00	\$6.00	\$6,000.00	\$7.20	\$7,200.00	\$7.50	\$7,500.00
U20	Rout and seal cracks in slab (Keynote 26)	3,500	LF	\$4.50	\$15,750.00	\$5.00	\$17,500.00	\$4.00	\$14,000.00	\$3.50	\$12,250.00	\$5.20	\$18,200.00	\$4.00	\$14,000.00
U21	Drain replacement (Keynote 27)	10	EA	\$2,500.00	\$25,000.00	\$1,000.00	\$10,000.00	\$1,500.00	\$15,000.00	\$1,230.00	\$12,300.00	\$1,000.00	\$10,000.00	\$3,500.00	\$35,000.00
U22	Brick masonry cleaning (Keynote 28)	400	SF	\$2.00	\$800.00	\$5.00	\$2,000.00	\$2.00	\$800.00	\$10.00	\$4,000.00	\$2.50	\$1,000.00	\$10.00	\$4,000.00
Subtotal of Base Bid Items U1 through U22				\$325,700.00		\$224,550.00		\$326,400.00		\$390,060.00		\$431,900.00		\$666,215.00	
TOTAL				\$397,700.00		\$427,550.00		\$427,750.00		\$515,260.00		\$564,550.00		\$848,215.00	
Alternates															
A1	Architectural coating (non-elastomeric) at the specified locations			\$319,520.00		\$457,000.00		\$320,000.00		\$552,000.00		\$518,000.00		\$523,600.00	
Sum of Alternates				\$319,520.00		\$457,000.00		\$320,000.00		\$552,000.00		\$518,000.00		\$523,600.00	

SECTION 00 41 44
BID FORM

PROJECT: 2023 North Old Woodward Parking Structure Repair Project
333 North Old Woodward Ave.
Birmingham, Michigan

BID DUE: Refer to City of Birmingham bidding instructions.

SUBMITTED TO: Aaron Ford
City of Birmingham
Email: aford@bhamgov.org

COPY TO: Wiss, Janney, Elstner Associates, Inc.
Attn: Mr. Justin Barden, PE
Email: jbarden@wje.com
Phone: 248-593-0900

Wiss, Janney, Elstner Associates, Inc.
Attn: Mr. Matthew Lewis, PE
Email: mlewis@wje.com
Phone: 248-593-0900

SUBMITTED BY: RAM Construction Services of Michigan, Inc.

Bidder name
13800 Eckles Road

Bidder address
Livonia, MI 48150

April 28, 2023
Date

Bidder certifies that:

- A. Bidder has carefully read and understands Bidding Documents;
- B. Bidder has visited site and become familiar with local conditions under which Work is to be performed, including verifying visible conditions, such as dimensions, materials, and attachments to remain, on existing facility; and
- C. Bidder has correlated Bidder's personal observations with requirements of Bidding Documents. Bidding Documents include Project Manual and Drawings prepared by WJE and dated March 17, 2023 and addenda, as well as bidding documents prepared by the City of Birmingham.

Bidder shall notify Architect/Engineer of discrepancies, omissions, conflicts, or unclear meaning within Contract Documents; Architect/Engineer will interpret Contract Documents and, if necessary, issue written addendum. Contracted Work will be based on Architect/Engineer's interpretation of Contract Documents.

Bidder acknowledges receipt of following addenda.

No. 1 Dated April 4, 2023
No. _____ Dated _____

Bidder may not withdraw Bid within 60 calendar days after Bid Due date.

Bidder agrees that Owner has right to waive informalities and irregularities in Bid received and to accept Bid which, in Owner's judgment, is in Owner's own best interests.

NOTE: Bidder shall state Unit Price Bid and Total Bid amount for each unit price item. Total Bid amount for each item shall be product of Estimated Quantity multiplied by Unit Price. Unit Price Bid and Total Bid amounts shall be written numerically in spaces provided.

GRAND TOTAL shall be sum of Total Bid amounts for various items and will be Contract Sum written in Owner-Contractor Agreement.

All words and numbers shall be written in non-erasable medium.

LUMP SUM PORTION OF BASE BID
Per Section 01 11 00 - Summary of Work

Type of Work	Total Bid
1. General Conditions	\$ <u>14,000.00</u>
2. Performance Bond and Labor and Material Payment Bond	\$ <u>5,000.00</u>
3. Installation of traffic-bearing membrane (traffic coating) in the three stair towers	\$ <u>20,000.00</u>
4. Installation of new expansion joint compression seal at the three roof level stair towers and one snow shoot	\$ <u>19,000.00</u>
5. Replace damaged and missing drain covers, and clean drain bowls	\$ <u>4,000.00</u>
Sum of Lump Sum Bid Items 1 through 5:	Subtotal L1: \$ <u>62,000.00</u>

ALLOWANCE PORTION OF BASE BID
Per Section 01 21 00 - Allowances

Type of Work	Total Bid
6. Replace cracked and damaged drain lines at new drains with new cast iron pipes (allowance)	\$ 10,000
Sum of Allowance Bid Items:	Subtotal A1: \$ 10,000

UNIT PRICE PORTION OF BASE BID
Per Section 01 22 00 - Unit Prices

Item	Description	Est. Qty.	Units	Unit Price	Total Bid
7.	Concrete overlay repair (Keynote 7)	2000	SF	\$ 26.00	\$ 52,000.00
8.	Partial-depth topside concrete slab repair (Keynote 8)	900	SF	\$ 36.00	\$ 32,400.00
9.	Partial-depth underside concrete slab repair (Keynote 9)	100	SF	\$ 75.00	\$ 7,500.00
10.	Concrete curb repair (Keynote 10)	100	SF	\$ 50.00	\$ 5,000.00
11.	Slab edge concrete repair (Keynote 11)	100	SF	\$ 75.00	\$ 7,500.00
12.	Slab on ground repair (Keynote 12)	50	SF	\$ 48.00	\$ 2,400.00
13.	Formed vertical concrete repair (Keynote 13)	150	SF	\$ 105.00	\$ 15,750.00
14.	Stair tower - partial-depth topside concrete slab repair (Keynote 14)	500	SF	\$ 40.00	\$ 20,000.00
15.	Stair tower - full-depth concrete slab repair (Keynote 15)	150	SF	\$ 70.00	\$ 10,500.00
16.	Stair tower stairs - partial-depth concrete topside repair (Keynote 16)	400	SF	\$ 42.00	\$ 16,800.00
17.	Stair tower stairs - partial-depth concrete underside repair (Keynote 17)	50	SF	\$ 105.00	\$ 5,250.00
18.	Stair tower railing post base replacement (Keynote 18)	35	EA	\$ 260.00	\$ 9,100.00
19.	Supplemental epoxy-grouted steel dowels	750	EA	\$ 45.00	\$ 33,750.00
20.	Supplemental steel reinforcement	2	ton	\$ 5,500.00	\$ 11,000.00
21.	Localized replacement of concrete masonry units (Keynote 21)	20	EA	\$ 45.00	\$ 900.00
22.	Localized repointing of masonry (Keynote 22)	300	LF	\$ 8.00	\$ 2,400.00
23.	Localized replacement of clay masonry bricks (Keynote 23)	60	EA	\$ 40.00	\$ 2,400.00
24.	Replace sealant at concrete overlay control joints (Keynote 24)	10,000	LF	\$ 4.50	\$ 45,000.00
25.	Replace sealant at cove (Keynote 25)	1,000	LF	\$ 4.50	\$ 4,500.00
26.	Rout and seal cracks in slab (Keynote 26)	3,500	LF	\$ 4.50	\$ 15,750.00
27.	Drain replacement (Keynote 27)	10	EA	\$ 2,500.00	\$ 25,500.00
28.	Brick Masonry Cleaning (Keynote 28)	400	SF	\$ 2.00	\$ 800.00
Sum of Unit Price Bid Items 7 through 28:				Subtotal U1:	\$ 325,700.00

SUMMARY PORTION OF BASE BID

Subtotal L1: \$ 62,000.00

Subtotal A1: \$ 10,000

Subtotal U1: \$ 325,700.00

Grand Total (Sum of Subtotals): \$ 397,700.00

Grand Total (in words): _____

Three hundred ninety seven thousand seven hundred Dollars

CONSTRUCTION SCHEDULE

The Contractor agrees to commence work under the Contract on or before a date to be specified in a written "Notice to Proceed." The Contractor proposes to complete all Base Bid work within 100 calendar days from the date specified in the Notice to Proceed.

The selected Contractor shall submit a detailed construction/work sequence schedule describing the work to be performed in each phase on an event by event basis, together with an estimate of time necessary to complete each phase of the Project.

ALTERNATE PORTION OF BASE BID

Per Section 01 11 00 - Summary of Work

Alternate bid amount is net adjustment to Contract Sum to incorporate Alternate into Work.

Type of Work	Total Bid
29. Alternate 1 – Architectural coating (non-elastomeric) at the following locations:	
▪ Cast in place concrete columns.	
▪ Cast in place concrete walls, including all faces of the internal walls at the roof level adjacent to the ramp, at the inside/interior face of the perimeter walls at the roof level, and at the inside/interior face of the perimeter and internal ramp walls at the first level.	
▪ Cast in place concrete ceilings (underside of elevated slabs).	
▪ Cast in place concrete stairs and landings (underside of landings, underside of risers, and exposed vertical surfaces (sides) of risers and landings).	
▪ Concrete masonry units (CMU) at the interior-facing walls of the stair towers	
▪ Concrete masonry units (CMU) at the exterior- (garage) facing walls of the mechanical rooms, restroom, and offices.	
▪ Steel railings within the stair towers, including the new railing post base plates.	\$ <u>319,520.00</u>
Sum of Alternates:	Subtotal A1: \$ <u>319,520.00</u>

SUBCONTRACTORS

Indicate portion(s) of work to be completed by a subcontractor and name of subcontractor:

Portion of Work	Subcontractor (if used)
Waterproofing	N/A
Concrete Repairs	N/A
Caulking	N/A
Plumbing	N/A
Painting	Perkins Painting
Other	N/A

BIDDER'S ENDORSEMENT

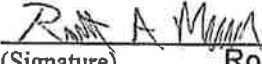
I hereby certify that all statements herein are made on behalf of _____

RAM Construction Services of Michigan, Inc.

(Name and Address of Corporation, Partnership, or Person submitting bid)

of the City of Livonia State of Michigan

that I have examined and carefully prepared this Bid from the plans and specifications, and have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.


(Signature) Robert A Mazur
Assistant Director
(Title)

END OF SECTION 00 41 44

ATTACHMENT B - BIDDER'S AGREEMENT
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

In submitting this proposal, as herein described, the Contractor agrees that:

1. They have carefully examined the specifications, terms and Agreement of the Invitation to Bid and all other provisions of this document and understand the meaning, intent, and requirement of it.
2. They will enter into a written contract and furnish the item or items in the time specified in conformance with the specifications and conditions contained therein for the price quoted by the proponent on this proposal.

Robert A. Mazur	April 28, 2023
PREPARED BY (Print Name)	DATE
Assistant Director	April 28, 2023
TITLE	DATE
	shamill@ramservices.com
AUTHORIZED SIGNATURE	E-MAIL ADDRESS
RAM Construction Services of Michigan, Inc.	
COMPANY	
13800 Eckles Road, Livonia MI 48150	313-268-7484
ADDRESS	PHONE
RAM Construction Services of Michigan, Inc.	734-464-3800
NAME OF PARENT COMPANY	PHONE
13800 Eckles Road, Livonia, MI 48150	
ADDRESS	

ATTACHMENT C - COST PROPOSAL

For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

In order for the bid to be considered valid, this form must be completed in its entirety. The cost for the Scope of Work as stated in the Invitation to Bid documents shall be a lump sum, as follows:

Attach technical specifications for all proposed materials as outlined in the Contractor's Responsibilities section of the ITB (p. 6)

COST PROPOSAL	
ITEM	BID AMOUNT
Materials & Equipment	\$ 131,241.00
Labor	\$ 266,459.00
Miscellaneous (Attach Detailed Description)	\$ N/A
TOTAL BID AMOUNT	\$ 397,700.00
ADDITIONAL BID ITEMS	
Alternate #1 Architectural Coatings	\$ 319,520.00
	\$
GRAND TOTAL AMOUNT	\$ 717,220.00

UNIT COST BID ITEMS	
See attached unit price breakdown	\$ per

Firm Name RAM Construction Services of Michigan, Inc.

Authorized signature


Robert A. Mazur, Assistant Director

Date April 28, 2023

ATTACHMENT D - IRAN SANCTIONS ACT VENDOR CERTIFICATION FORM
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

Pursuant to Michigan Law and the Iran Economic Sanction Act, 2012 PA 517 ("Act"), prior to the City accepting any bid or proposal, or entering into any contract for goods or services with any prospective Vendor, the Vendor must certify that it is not an "Iran Linked Business", as defined by the Act.

By completing this form, the Vendor certifies that it is not an "Iran Linked Business", as defined by the Act and is in full compliance with all provisions of the Act and is legally eligible to submit a bid for consideration by the City.

Robert A. Mazur

April 28, 2023

PREPARED BY
(Print Name)

DATE

Assistant Director

April 28, 2023

TITLE

DATE



shamill@ramservices.com

AUTHORIZED SIGNATURE

E-MAIL ADDRESS

RAM Construction Services of Michigan, Inc.

COMPANY

13800 Eckles Road, Livonia, MI 48150

313-268-7484

ADDRESS

PHONE

RAM Construction Services of Michigan, Inc.

734-464-3800

NAME OF PARENT COMPANY

PHONE

13800 Eckles Road, Livonia, MI 48150

ADDRESS

38-1164400

TAXPAYER I.D.#

PERKINS ♦ PAINTING



43422 West Oaks Dr. Suite 119 / Novi, MI. 48377 / (248)-238-0440
www.perkinspainting.com

RAM Construction Services of MI, Inc. April 26, 2023

13800 Eckles Road
Livonia, Michigan 48150
(734) 464-3800 Ext. 240 Fax (734) 437-6206

We at Perkins Painting would like to thank you for the opportunity to quote on the **painting – 333 N. old Woodward – Birmingham, MI.** Perkins Painting prides itself on providing the highest quality services, which in return leads to many satisfied repeat customers. We propose to furnish labor, materials, and tools to paint according to the job specifications. Necessary touch ups will be made in areas where required after an inspection. We propose to do the following according to specifications:

Scope of Work:

29. Alternate 1 – Architectural coating (non-elastomeric) at the following locations:

- Cast in place concrete columns.
- Cast in place concrete walls, including all faces of the internal walls at the roof level adjacent to the ramp, at the inside/interior face of the perimeter walls at the roof level, and at the inside/interior face of the perimeter and internal ramp walls at the first level.
- Cast in place concrete ceilings (underside of elevated slabs).
- Cast in place concrete stairs and landings (underside of landings, underside of risers, and exposed vertical surfaces (sides) of risers and landings).
- Concrete masonry units (CMU) at the interior-facing walls of the stair towers
- Concrete masonry units (CMU) at the exterior- (garage) facing walls of the mechanical rooms, restroom, and offices.
- Steel railings within the stair towers, including the new railing post base plates.

Price for Painting: \$277,843.00

Notes: All work to be performed during normal working hours.

Exclusions: All other areas not mentioned & sand blasting.



Major Jobs Closed 2016-2023

Project Name	Company Name	Scope of Work	Contract Amount	Closed	RAM Personnel
Wayne State University 2015 P.S. #1 Renovations	Wayne State University	Concrete Repairs, Expansion Joints, Joint Sealants, Traffic Coating	\$ 2,171,820.00	03/07/2017	100%
University of Wisconsin - Milwaukee Ramps	Department of Administration Division of Facilities	Concrete Repairs	\$ 1,851,130.00	12/08/2020	100%
U of M Wallstreet West Parking Structure	Spence Brothers	Dampproofing, Expansion Joints, Joint Sealants, Sandblasting, Traffic Coating, Waterproofing	\$ 1,539,761.94	10/04/2021	100%
Wayne State University Parking Structure #1 Reno	Wayne State University	Caulking, Concrete Repairs, Expansion Joints, Traffic Coating	\$ 1,375,000.00	01/05/2017	100%
Quad Parking Ramp Repair	Div of State Facilities Development	Concrete Repairs	\$ 1,129,796.81	04/06/2017	100%
Coleman A. Young-Expansion Joint/Waterproofing	Detroit - Wayne Joint Building Authority	Expansion Joints	\$ 990,705.00	12/26/2017	100%
Wayne State University Parking Structure #2 Reno	Wayne State University	Caulking, Concrete Repairs, Expansion Joints, Traffic Coating	\$ 828,950.00	01/05/2017	100%
777 / 789 E. Eisenhower Parking Garage Restoration	CBRE, Inc.	Concrete Repairs, Expansion Joints, Joint Sealants, Painting, Sealant, Traffic Coating	\$ 741,052.00	11/29/2016	100%
GRCC Bostwick Parking Structure Restoration 2016	Grand Rapids Community College	Concrete Repairs, Epoxy Injection, Expansion Joints, Joint Sealants	\$ 657,331.00	08/27/2016	100%
U of M Catherine Street Parking Structure	University of Michigan	Concrete Repairs	\$ 642,205.00	12/19/2016	100%
U of M Medical Center P2	University of Michigan	Concrete Repairs	\$ 619,602.40	11/11/2022	100%
Toledo Collins Park LSPS	Kokosing Industrial, Inc.	Air Barrier, Caulking, Fire Resistive, Stopping & Penetration Work, Masonry Restoration	\$ 565,392.17	04/02/2019	100%
Parking Ramps 1235&6 2015 Restoration	Michigan State University	Caulking, Concrete Repairs, Expansion Joints, Joint Sealants, Traffic Coating	\$ 561,361.06	03/07/2017	100%
University of Toledo East/West Garage Repairs 2016	University of Toledo	Concrete Repairs	\$547,480.00	12/08/2016	100%

COMPLETED PROJECT

JACK CASINO GARAGE 📍 CLEVELAND, OH

**SCOPES OF WORK:**

CONCRETE REPAIRS
EXPANSION JOINTS
POST TENSION REPAIR

LOCATION:

CLEVELAND, OH

VALUE:

\$168,388

OWNER:

JACK ENTERTAINMENT
100 PUBLIC SQUARE
ERIC TURNER
216-213-7040

ARCHITECT:

OSBORN ENGINEERING

PROJECT STAFF:

PROJECT MANAGER - JERRY PHENNEY





COMPLETED PROJECT

MSU SPARTAN STADIUM NORTH END EAST SIDE BOWL RESTORATION 📍 EAST LANSING, MI

**SCOPES OF WORK:**

CONCRETE REPAIRS
TRAFFIC COATING
CAULKING

LOCATION:

1123 E. WASHINGTON STREET
ANN ARBOR, MI 48104

VALUE:

\$1,281,275

OWNER:

MICHIGAN STATE UNIVERSITY
1147 CHESTNUT ROAD, ROOM 101
EAST LANSING, MI 48824
JASON VAN ZEE
517-353-6358
VANZEEJAMSU.EDU

ARCHITECT:

WALKER CONSULTANTS

PROJECT STAFF:

PROJECT MANAGER - DAN CANEDO



COMPARABLE PROJECTS

ANN ARBOR PARKING STRUCTURE RESTORATION 2020

📍 ANN ARBOR, MI



SCOPES OF WORK:

CONCRETE REPAIRS
EXPANSION JOINTS
TRAFFIC COATING

LOCATION:

1123 E. WASHINGTON STREET
ANN ARBOR, MI 48104

VALUE:

\$1,175,075.26

OWNER:

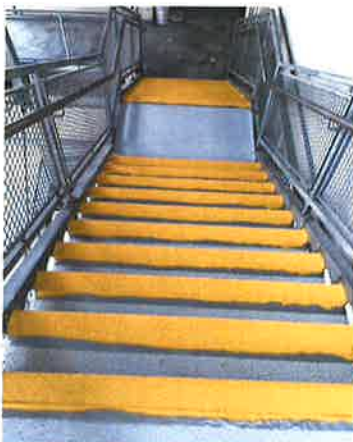
ANN ARBOR DOWNTOWN DEVELOP AUTHORITY
150 SOUTH FIFTH STREET, SUITE 301
ANN ARBOR, MI 48104
JADA HAHNBROCK
734-997-1309
JHAHLBROCK@A2DDA.ORG

ARCHITECT:

WGI, INC.

PROJECT STAFF:

PROJECT MANAGER - DAN CANEDO & DANIEL
LIEBAU



CURRENT PROJECT

DMC CENTER DECK PARKING STRUCTURE

📍 DETROIT, MI



SCOPES OF WORK:

CONCRETE RESTORATION
CAULKING
COATING

LOCATION:

13990 JOHN R
DETROIT, MI 48201

VALUE:

\$4,658,553

.....

OWNER:

TENET HEALTHCARE
2020 FIELDSTONE PARKWAY
DAVID LIEB
DLIEB2DMC.ORG

ARCHITECT:

WALKER CONSULTANTS

PROJECT STAFF:

PROJECT MANAGER - TOM SZABO



CURRENT PROJECT

SOUTHFIELD TOWN CTR PKG STR CRITICAL REPAIRS 2021

📍 SOUTHFIELD, MI

**SCOPES OF WORK:**

CONCRETE REPAIRS
EXPANSION JOINTS
STRUCTURE RENOVATION

LOCATION:

1000-4000 TOWN CENTER
SOUTHFIELD, MI 48075

VALUE:

\$1,530,150

.....

OWNER:

TRANSWESTERN
3000 TOWN CENTER, STE 2500
SOUTHFIELD, MI 48075
NICK AMATO
734-464-3800
NICK.AMATO@TRANSWESTERN.COM

ARCHITECT:

N/A

PROJECT STAFF:

PROJECT MANAGER - DAN CALLAHAN





CURRENT PROJECT

RIVERTOWN CROSSINGS PEDESTRIAN BRIDGE-REHABILITATION

📍 GRANDVILLE, MI



SCOPES OF WORK:

CONCRETE REPAIRS
CONCRETE SURFACE COATINGS
EXPANSION JOINTS
JOINT SEALANTS
TRAFFIC COATING

LOCATION:

RIVERTOWN CROSSINGS
3700 RIVERTOWN PARKWAY
GRANDVILLE, MI 49418

VALUE:

\$226,000

OWNER:

BROOKFIELD PROPERTIES
3700 RIVERTOWN PARKWAY SW
GRANDVILLE, MI 49418
HANK STUMP
313-257-7540
HANK.STUMP@BPRETAIL.COM

ARCHITECT:

N/A

PROJECT STAFF:

PROJECT MANAGER - DAN CANEDO





COMPLETED PROJECT

EDISON BUILDING PLAZA REPAIRS

📍 TOLEDO, OH



SCOPES OF WORK:

CONCRETE REPAIRS
POST TENSIONING REPAIRS
WATERPROOFING-CRYSTALLINE

VALUE:

\$813,564.08

OWNER:

PROMEDICA
100 MADISON AVE
TOLEDO, OH 43606
YURI OSTERHOUT
567-585-8156
YURI.OSTERHOUT@PROMEDICA.ORG

ARCHITECT:

WALKER PARKING CONSULTANTS

PROJECT STAFF:

PROJECT MANAGER - DAN CANEDO, MIKE HAF &
TOM SZABO



20 CHESTNUT PARKING DECK REHABILITATION 2020

Wyandotte, Michigan



Services Provided

- Joint sealant replacement
- Concrete repair (partial and full depth floor)
- Gutter system removal
- traffic coating installation
- Parking stall striping
- Leak repairs
- Overhead hazard knockdowns

Owner

General Contractor

20 Chestnut is a high rise condo association in the city of Wyandotte, MI that has a small two story parking structure on the property for the condo owners to utilize. At some point in the past few years some of the tenants had noticed large patches of concrete damage appearing on the upper level floor and had noticed leaks that had increased in frequency focused around the beam centered in the garage. After some observation and investigatory visits it was determined that the existing traffic coating was beyond its life and was failing, the underlying joint sealant was becoming debonded from the concrete allowing water to infiltrate, and recent concrete patches had not been recoated or protected in any manner leading to an exaggeration of existing issues. The Condo Owners Association was working on a budget but understood that work needed to be done to save the deck, and over the next couple of weeks a plan was formulated to address critical concrete repairs that were deemed hazardous and provide proper protection from the elements to the upper level. RAM worked diligently with the owners associated to not only devise a phasing plan that allowed the deck to remain in use amidst the on going work, but to also maintain constant and transparent communication to guarantee that work impact was minimal while continuing to push for project efficiency and client satisfaction.



LIVONIA
734.464.3800

GRAND RAPIDS
616.538.7520

CLEVELAND
440.740.0100

TOLEDO
419.593.0031

MINNEAPOLIS/ST. PAUL
651.765.1950

DETROIT
313.965.6750



PROJECT TIMELINE

2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT



MAY 9, 2023

WORK TO BEGIN



SCHEDULE REQUIREMENTS

400 MAN-DAYS

100 DAYS WITH FOUR CREW MEMBERS



OCTOBER 31, 2023

WORK TO BE COMPLETED



Founded in 1918, RAM Construction Services is the oldest and most experienced waterproofing and restoration contractor in the United States.

105 Years In Service

200,000+ Completed Projects

www.ramservices.com



OUR COMPANY

HISTORY

In 1973, Robert A. Mazur, a registered architect, husband, and father of four, purchased 50 percent of the Detroit division of Western Waterproofing, a company established in 1918.

Robert passed away suddenly in 1977, and his wife Evelyn stepped in to lead the family business. In 1980, their eldest son, Bob, joined the family business full-time at age 21. Soon after, the remaining 50 percent was purchased by the family. The company paid homage to the company's founder, Robert A. Mazur, in 2008 by officially rebranding Western Waterproofing as RAM Construction Services.

The company had 17 employees when Bob was named president of the firm in 1983. Under Bob's leadership, the company now employs more than 650 people and operates five offices in three states. RAM Construction Services is the largest Midwestern contractor specializing in the restoration of aging structures and skilled waterproofing. The company, headquartered in Livonia, completes more than 2,500 projects annually across the Midwest. RAM has played a large role in transforming the skyline of Detroit, helping to revitalize these iconic Detroit buildings – and literal “pillars” of the community – to their original stature.

CONSTANTLY EVOLVING

Built on integrity, RAM Construction provides quality work and maintains a safe work environment. The company's quest for continuous improvement, along with diversifying the product line, has helped RAM successfully navigate the many economic downturns over the years. With forward thinking, RAM Construction Services will continue to drive endless possibilities and evolve within the industry.





OUR VALUES



INTEGRITY

We are trusted partners who will work alongside your team every step of the way.



QUALITY

We are driven toward solutions and work diligently to develop and achieve long-lasting results.



SAFETY

The safety and well-being of our team is our top priority.





OUR SERVICES



BUILDING FACADE RESTORATION

Restoration on contemporary structures and historic buildings, with respect to current tenants, neighbors, general public, the environment and historical preservation grants, requires a company with years of experience on diverse projects. RAM Construction Services' renovation crews respect our clients, their timelines, and the building we restore.



CONCRETE RESTORATION

RAM is the leading specialty contractor in concrete restoration. We currently lead the Midwest in the restoration and waterproofing of aging parking decks, as well as performing all necessary structural and cosmetic concrete repairs to a wide variety of buildings, fountains, miscellaneous concrete structures, sidewalks, and even elevator pits.



DEPARTMENT OF TRANSPORTATION

The projects and repairs faced by various Departments of Transportation require a specialized level of skill and ability. The expertise of RAM Construction Services and its years of experience working these projects make them a perfect fit for these demands.



NEW CONSTRUCTION WEATHERPROOFING

We understand the individual needs and requirements of every project and work hand in hand with architects, engineers and general contractors to ensure proper materials and techniques are utilized in every case. Whatever your building needs, RAM Construction Services is a valuable member of your team.



REPAIRS & MAINTENANCE

Annual maintenance of aging buildings and parking structures are vital for the safety and longevity of commercial properties. We help develop and streamline solutions to keep all structures safe and water-tight.



SCOPE OF WORK

WE SELF PERFORM ALL WORK:

NEW CONSTRUCTION WEATHERPROOFING

- FLUID-APPLIED WATERPROOFING
- SHEET APPLIED WATERPROOFING
- CRYSTALLINE WATERPROOFING
- HOT RUBBERIZED ASPHALT WATERPROOFING
- BENTONINE WATERPROOFING
- UNDER-SLAB WATERPROOFING
- GREEN ROOFS
- PEDESTAL PAVERS
- OPEN/CLOSED CELL SPRAY POLYURETHANE FOAM
- POLYURETHAN COATING & FLOORING
- POLYUREA LINERS & WATERPROOFING SYSTEMS
- WATERPROOFING SEALERS
- CRACK INJECTIONS
- AIR & VAPOR BARRIER
- EPOXY FLOORING
- TRAFFIC COATING
- FIRE STOPPING
- JOINT SEALANTS
- NEEDLEGLAZING
- SEMI-RIGID JOINT FILLERS
- EXPANSION JOINTS

BUILDING FACADE RESTORATION

- MASONRY REPAIR & RESTORATION
- REPOINTING/TUCKPOINTING
- STONE REPLACEMENT & RESTORATION
- STONE PATCHING
- BRICK REPLACEMENT
- MASONRY SEALERS & COATINGS
- NEEDLEGLAZING
- CONCRETE PATCHING
- EPOXY INJECTION
- TERRACOTTA RESTORATION
- STRUCTURAL STEEL CLEANING & RESTORATION

CONCRETE RESTORATION

- CONCRETE REPAIRS
- JOINT SEALANT REPLACEMENT
- ABOVE & BELOW GRADE WATERPROOFING
- PENETRATING SEALERS
- STRUCTURAL STEEL REPAIRS
- CARBON FIBER WRAP
- SELECTIVE DEMOLITION
- SHOTCRETE
- EPOXY INJECTION
- CRACK SEALING
- EXPANSION JOINT INSTALLATION & REPAIR
- HIGH-PRESSURE WATERBLAST CLEANING
- POST-TENSION REPAIRS
- TRAFFIC COATINGS

DEPARTMENT OF TRANSPORTATION

- EPOXY OVERLAYS
- HIGH FRICTION SURFACE TREATMENTS
- CONCRETE REPAIRS
- EPOXY & CHEMICAL GROUT INJECTION
- SHOTCRETE
- FLOW FILL SLOPE WALL REPAIR
- CARBON & GLASS FIBER WRAP
- CORROSION RESISTANT COATINGS
- PENETRATING SEALER
- SHOTBLASTING
- HIGH PRESSURE WATER BLASTING CLEANING
- JOINT SEALANT REPLACEMENT
- CRACK SEALING
- EXPANSION JOINTS

MAINTENANCE AND REPAIRS

- FAÇADE & CONCRETE CLEANING
- ELEVATOR LEAK REPAIR
- BASEMENT LEAK REPAIR
- WINDOW LEAK REPAIR
- PARKING STRUCTURE INSPECTIONS & MAINTENANCE PLANS
- EMERGENCY FALL HAZARD REMEDIATION
- YEARLY MAINTENANCE BUDGETS



SAFETY

WHAT SETS US APART

Our Safety program starts with our people. The value we place on individuals, the way we interact on the jobsite, and how we communicate with each other helps drive our safety culture.

ACCOUNTABILITY

We hold each other accountable for the safety of our workforce. Job site safety inspections are required by not only our Safety Captains, but also by our management team. Everyone works together to make sure safety requirements are being adhered to on every site.

PROACTIVITY

The RAM Safety Department works with outside agencies to provide safety audits at our jobsites to ensure that we are always in compliance and are updated on any new policies.

COMMUNICATION

Our Safety Captains along with members of our management team, attend monthly safety meetings under the direction of our Safety Department. The group discusses field safety observations, new and existing procedures, updates, and expectations as it relates to the safety of our workforce.



Make It SAFE...

Safety comes first in everything we do. We can only work as fast as we can be safe. The best production is safe production



Make It PERSONAL...

We work to live for our families, for our friends, and for each other. Always looking out for our brothers and sisters.



Make It HOME...

Everyone makes It home to their loved ones every day!



QUALITY

COMMITTED TO QUALITY

OUR PROGRAM

Managing quality is the responsibility of the entire RAM Construction team including Project Managers, Superintendent, Foreman, Warehouse Manager and Regional Director.

OUR APPROACH

- Prior to stepping foot on-site, we will conduct a preconstruction meeting to review our approach and finalize our means and methods.
- Adhere to established quality control standards.
- Prepare mock-ups when necessary for customer approval.
- Correct non-conforming items that do not meet our quality standards.
- Document completed work and provide daily quality and progress reports to management.
- Review finished quality and cleanliness of the jobsite with an owners representative before demobilizing.
- Complete a formal quality control inspection.





LOCATIONS

MICHIGAN

▶ **LIVONIA (HEADQUARTERS)**

13800 ECKLES ROAD
LIVONIA, MICHIGAN 48150

▶ **DETROIT**

719 GRISWOLD STREET, SUITE 250
DETROIT, MICHIGAN 48226

▶ **GRAND RAPIDS**

4592 40TH STREET SE
KENTWOOD, MICHIGAN 49512

OHIO

▶ **CLEVELAND**

100 CORPORATION CENTER, BLDG. #4
BROADVIEW HEIGHTS, OHIO 44147

▶ **TOLEDO**

27 BROADWAY STREET, SUITE 100B
TOLEDO, OHIO 43604

MINNESOTA

▶ **BLAINE**

9937 GOODHUE STREET NE
BLAINE, MINNESOTA 55449



Robert T. Mazur
President

(810) 560-9966 | rmazur@ramservices.com

Background Experience:

Robert Mazur manages the corporate office in Livonia, Michigan as well as its two (2) subsidiaries and two (2) satellites. He is ultimately responsible for the overall operation of each office. Mr. Mazur negotiates all union contracts and interacts daily with the local and international unions on behalf of RAM Construction Services. He is accountable for maintaining RAM's overall relationship with our financial institutions, bonding and financial companies. Mr. Mazur is actively involved with our Safety Department; his support and guidance is paramount to the success of our company's safety culture. He has 43 years of extensive experience in the exterior facade restoration, waterproofing and sealant industries. He is a trusted partner to many of RAM's customers and spends time cultivating and maintaining relationships.

Areas of Expertise:

- ***Building Façade Restoration***
Repointing/Tuck-Pointing, Concrete Restoration, High-Pressure Hydro Cleaning, Masonry Sealers & Coatings, High-Rise Exterior Façade Repairs
- ***Concrete Restoration***
Waterproofing Sealers, Shotcrete, Post Tension Repairs, Epoxy Injection/Grout Injection
- ***New Construction Weatherproofing***
Waterproofing – Above & Below Grade, Joint Sealants (*Hot & Cold Applied*), Sealing & Caulking of Wall Systems & Flooring Systems, Needleglazing
- ***Department of Transportation (DOT)***
Epoxy Overlays/High Friction Surface Treatment (*HFST*), Carbon & Glass Fiber Wrap, Shotblasting, Shotcrete, Guniting, Pneumatically Placed Mortar

Professional Experience:

- President | RAM Construction Services of Michigan, Inc., Livonia, MI ▪ 1996 - Present
- Executive Vice President | Western Waterproofing Company, Livonia, MI ▪ 1988 - 1996
- Estimator/Project Manager | (Western Waterproofing Company), Livonia, MI ▪ 1978 - 1988

Education:

Marketing/Business Administration – Western Michigan University

Affiliations:

- Michigan Historic Preservation Network (MHPN)
- Association for Preservation Technology International (APTI)
- International Concrete Repair Institute (ICRI)
- Building Owners & Managers Association International (BOMA)
- International Facilities Management Association (IFMA)
- Sealants, Waterproofing, Restoration Institute (SWRI)
- Association of General Contractors (AGC)



Andrew Sandzik
Vice President of Restoration
(734) 368-6854 | asandzik@ramservices.com

Background Experience:

Andrew Sandzik is VP of the Restoration Divisions at RAM Construction Services. His responsibilities include supporting all directors, project managers, superintendents, and field staff in the façade and concrete departments; while also overseeing bidding, contract procurement, project scheduling, resource coordination, subcontractor sequencing, problem solving, project progress/schedule updates/meetings, as well as project close-out and warranties. He has vast experience with developing and maintaining customer relationships, marketing, and negotiations.

Areas of Expertise:

- Masonry Repair and Restoration
- Building Façade Inspection
- Repointing/Tuckpointing
- Stone Replacement and Restoration
- Needleglazing
- Pressure Grouting
- Exterior Joint Sealing
- Masonry Sealers and Coatings
- Concrete Repairs
- Stone Patching
- Silicone Gun & trowel Applied Sealant
- Brick Replacement and Restoration
- Epoxy Injection
- Terracotta Restoration
- Sandblasting Steel/Metal
- Exterior Cleaning

Project Experience:

- Michigan Central Station – Detroit, Michigan
- Detroit Foundation Hotel – Detroit, Michigan
- Michigan State University Spartan Stadium – Lansing, Michigan
- Louis Kamper / Stevens Building – Detroit, Michigan
- 1265 Griswold – Detroit, Michigan

Education:

Bachelor's – Construction Management – Michigan State University

Certifications:

- Neogard Applicator Certification
- Watson Bowman Expansion Joint Certified
- Dale Carnegie Graduate
- Confined Space Certification

Training:

- 363 Leadership Program
- Karrass Effective Negotiating
- Skill Path Training- Managing Difficult People

Affiliations:

- Building Owners and Managers Association International – (BOMA)



Bobby Mazur
Assistant Director/Project Manager
(248) 504-8860 | bobbym@ramservices.com

Background Experience:

Bobby Mazur is a Project Manager/Estimator for the Concrete Restoration division at RAM Construction Services. His responsibilities include bidding/contract procurement, project scheduling, resource/subcontractor coordination and sequencing, problem solving, project schedule updates, progress meetings, as well as project close-out and warranties. He also has experience with developing and maintaining customer relationships, marketing, and negotiations.

Areas of Expertise:

- Masonry Repair and Preservation
- Masonry Repointing
- Terracotta Preservation
- Exterior Cleaning
- Window Needle-glazing
- Concrete Restoration
- Masonry Sealers and Coatings
- Exterior Joint Sealing
- Stone Replacement and Preservation
- Building Façade Inspections
- Pressure Grouting
- Flexible and Metal Flashing Repairs

Project Experience:

Wayne State University – Detroit, Michigan

- Hydro Demolition
- Concrete Restoration
- Expansion Joints
- Traffic Coatings
- Joint Sealants

Renaissance Center – Detroit, Michigan

- Concrete Roadway / Overlay
- Waterproofing Membrane
- Expansion Joint Replacement
- Traffic Coatings
- Various Concrete Repairs
- Sidewalk Replacement
- Caulking
- Drain Replacement

Eastern Market Parking Garage – Detroit, Michigan

- Partial Depth Concrete Repairs
- Full Depth Concrete Repairs
- Joint Sealants
- Exterior Brick Removal
- Coordinating Subcontractors

Education:

- Master of Business Administration – Walsh College
- Bachelor's Degree in Construction Management - Michigan State University

Certifications and Training:

- OSHA – 40 Hours
- CPR/First Aid
- Karrass Effective Negotiating
- Dale Carnegie Training



Scott Hamill
Project Manager/Estimator
(313) 268- 7484 | shamill@ramservices.com

Background Experience:

Scott Hamill is a Project Manager/Estimator for the Concrete Restoration division at RAM Construction Services. His responsibilities include project management, resource/subcontractor coordination and sequencing, Scheduling, budgets, attending bids and other onsite meetings. He also has experience with developing and maintaining customer relationships, marketing, and negotiations.

Areas of Expertise:

- Expansion Joint Replacement
- Building Inspections
- Traffic Bearing Membranes
- Traffic Coatings
- Drain / Drain Piping Replacements
- Exterior Joint Sealing
- Concrete Sealers and Coatings
- Vertical Caulking & Sealing
- Crack Repairs
- Concrete & Structural Repairs
- Overhead & Post Tension Repairs
- Silicone Gun & Trowel Applied Sealant
- Urethane Injection
- Epoxy Injection
- Excavate
- Exterior Cleaning

Project Experience:

Mott Community College – Flint, Michigan

- Expansion Joints
- Structural Concrete Repairs
- Structural Crack Repairs
- Overhead Concrete Repairs
- Post Tension Repairs

Cargill Salt Plant – St. Clair, Michigan

- Excavate
- Concrete Pads
- Drain Covers
- Concrete Repairs

City of East Lansing Parking Decks – East Lansing, Michigan

- Structural Concrete Repairs
- Structural Crack Repairs
- Fully System Deck Coating
- Partial Depth Concrete Repairs
- Full Depth Concrete Repairs

Marriott of Troy – Troy, Michigan

- Vertical Column Concrete Repairs
- Vertical Caulking and Sealing
- Install Concrete Flush to Vertical Column, Matching Design

Education:

- EMT / Paramedic
- Firefighting Degree & Certifications

Certifications and Training:

- CPR / First Aid
- Automated External Defibrillator (AED)



Ron Clapper
Concrete Restoration Superintendent
810-523-2398 | rclapper@ramservices.com

Background Experience:

Ron Clapper has over 20 years in residential construction. Responsibilities include managing and overseeing the Foreman for the Concrete Restoration Division, coordinating manpower, schedule projects and attends project meetings as needed. Ron works in the Concrete Restoration Division where he supervises crews primarily in Michigan and throughout the Midwest. The majority of this work deals primarily with universities, hospitals, city/county projects and stadiums.

Areas of Expertise:

- Epoxy Overlays
- Concrete Repairs
- Epoxy and Chemical Grout Injection
- Shotcrete, Gunite, Pneumatically Placed Mortar
- Carbon and Glass Fiber Wrap
- Corrosion Resistant Coatings
- Concrete Surface Coatings
- Structural Concrete Repairs
- Shotblasting
- High-Pressure "Water Blasting" Cleaning
- Joint Sealing
- Crack Sealing
- Expansion Joints
- Waterproofing
- Penetrating Sealers

Project Experience:

- City of Lansing Parking Structure Repairs – Lansing, Michigan
- WCAA Routine & On-Call Maintenance of Parking Decks, Parking Lots and Associated Facilities at Detroit Metropolitan Wayne County Airport – Detroit, Michigan
- Blue Cross Blue Shield Deck Rehab – Lansing, Michigan
- University of Michigan Structural Tunnel Repairs – Ann Arbor, Michigan
- 101 North Main Apartments – Traverse City, Michigan
- Oxmoor Apartments Parking Deck – Louisville, Kentucky
- U of M Hospital Ann Arbor Parking Decks – Ann Arbor, Michigan
- Ann Arbor DDA Parking Decks – Ann Arbor, Michigan
- Ludington Hydro Plant – Ludington, Michigan

Certifications & Training:

- Neogard Applicator Certification
- Watson Bowman Expansion Joint Certified
- ACI Concrete Certification
- ASI Structural Welding Certification
- Dale Carnegie Graduate
- AWP/Forklift Certified Trainer
- Lead and Asbestos
- OSHA 30 hour
- First Aid/CPR/AED
- Safe to Work Mods & Training
- Confined Space Certification
- Member of the safety committee and is actively involved with setting up specific training courses for the RAM team



To Whom It May Concern,

The following are client references for the 2023 North Old Woodward Parking Structure Repair Project from RAM Construction Services of Michigan.

Adam Drain, University of Michigan
734-883-4490
adrain@umich.edu

Nick Amato, Transwestern
248-350-2222
Nick.amato@transwestern.com

Jon Frederick, Wayne State University
313-220-3519
Jon.frederick@wayne.edu

ATTACHMENT B - BIDDER'S AGREEMENT
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

In submitting this proposal, as herein described, the Contractor agrees that:

1. They have carefully examined the specifications, terms and Agreement of the Invitation to Bid and all other provisions of this document and understand the meaning, intent, and requirement of it.
2. They will enter into a written contract and furnish the item or items in the time specified in conformance with the specifications and conditions contained therein for the price quoted by the proponent on this proposal.

<u>Robert A. Mazur</u>	<u>April 28, 2023</u>
PREPARED BY (Print Name)	DATE
<u>Assistant Director</u>	<u>April 28, 2023</u>
TITLE	DATE
<u></u>	<u>shamill@ramservices.com</u>
AUTHORIZED SIGNATURE	E-MAIL ADDRESS
<u>RAM Construction Services of Michigan, Inc.</u>	
COMPANY	
<u>13800 Eckles Road, Livonia MI 48150</u>	<u>313-268-7484</u>
ADDRESS	PHONE
<u>RAM Construction Services of Michigan, Inc.</u>	<u>734-464-3800</u>
NAME OF PARENT COMPANY	PHONE
<u>13800 Eckles Road, Livonia, MI 48150</u>	
ADDRESS	

ATTACHMENT C - COST PROPOSAL

For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

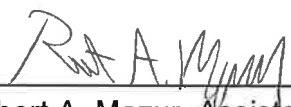
In order for the bid to be considered valid, this form must be completed in its entirety. The cost for the Scope of Work as stated in the Invitation to Bid documents shall be a lump sum, as follows:

Attach technical specifications for all proposed materials as outlined in the Contractor's Responsibilities section of the ITB (p. 6)

COST PROPOSAL	
ITEM	BID AMOUNT
Materials & Equipment	\$ 131,241.00
Labor	\$ 266,459.00
Miscellaneous (Attach Detailed Description)	\$ N/A
TOTAL BID AMOUNT	\$ 397,700.00
ADDITIONAL BID ITEMS	
Alternate #1 Architectural Coatings	\$ 319,520.00
	\$
GRAND TOTAL AMOUNT	\$ 717,220.00

UNIT COST BID ITEMS	
See attached unit price breakdown	\$ per

Firm Name RAM Construction Services of Michigan, Inc.

Authorized signature  Date April 28, 2023
 Robert A. Mazur, Assistant Director

ATTACHMENT D - IRAN SANCTIONS ACT VENDOR CERTIFICATION FORM
For 2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT

Pursuant to Michigan Law and the Iran Economic Sanction Act, 2012 PA 517 ("Act"), prior to the City accepting any bid or proposal, or entering into any contract for goods or services with any prospective Vendor, the Vendor must certify that it is not an "Iran Linked Business", as defined by the Act.

By completing this form, the Vendor certifies that it is not an "Iran Linked Business", as defined by the Act and is in full compliance with all provisions of the Act and is legally eligible to submit a bid for consideration by the City.

Robert A. Mazur

April 28, 2023

PREPARED BY
(Print Name)

DATE

Assistant Director

April 28, 2023

TITLE

DATE



shamill@ramservices.com

AUTHORIZED SIGNATURE

E-MAIL ADDRESS

RAM Construction Services of Michigan, Inc.

COMPANY

13800 Eckles Road, Livonia, MI 48150

313-268-7484

ADDRESS

PHONE

RAM Construction Services of Michigan, Inc. 734-464-3800

NAME OF PARENT COMPANY

PHONE

13800 Eckles Road, Livonia, MI 48150

ADDRESS

38-1164400

TAXPAYER I.D. #

**AGREEMENT BETWEEN THE CITY OF BIRMINGHAM AND RAM CONSTRUCTION
SERVICES OF MICHIGAN, INC. for 2023 NORTH OLD WOODWARD PARKING
STRUCTURE REPAIR PROJECT**

This AGREEMENT, made this 15th day of May, 2023, by and between, the **CITY OF BIRMINGHAM** having its principal municipal office at 151 Martin Street, Birmingham, MI (hereinafter sometimes called "City"), and RAM Construction Services of Michigan, Inc., having its principal office at 13800 Eckles Road, Livonia, MI 48150 (hereinafter called "Contractor"), provides as follows:

WITNESSETH:

WHEREAS, the City of Birmingham, Michigan, is desirous of hiring a qualified professional firm to furnish labor, equipment, material and supervision necessary to complete repairs as detailed in the City owned parking structure known generally as: N. Old Woodward Ave.

WHEREAS, the City has heretofore advertised for bids for the procurement and performance of services required to perform **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT** as detailed in the specifications for N. Old Woodward Ave, and in connection therewith has prepared a request for sealed Invitation to Bid proposals ("ITB"), which includes certain instructions to bidders, specifications, terms and conditions.

WHEREAS, the Contractor has professional qualifications that meet the project requirements and has made a bid in accordance with such request for cost proposals to perform **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT**.

NOW, THEREFORE, for and in consideration of the respective agreements and undertakings herein contained, the parties agree as follows:

1. **MUTUALLY AGREED:** It is mutually agreed by and between the parties that the documents consisting of the Invitation to Bid to perform **2023 NORTH OLD WOODWARD PARKING STRUCTURE REPAIR PROJECT** and the Contractor's cost proposal dated April 28, 2023 shall be fully incorporated herein by reference and shall become a part of this Agreement, and shall be binding upon both parties hereto. (Attached hereto.) If any of the documents are in conflict with one another, this Agreement shall take precedence, then the ITB.

2. **TERM:** This Agreement shall have a term of 6 months from the date stated above, and is renewable upon expiration for one month terms. The City shall have the right to unilaterally terminate this Agreement, with or without cause, on thirty (30) days written notice. In the event of termination, the Contractor shall receive compensation for services up to the date the termination takes effect and the City shall be entitled to retain and use the results of all services, goods and information prepared by the Vendor through such date.

3. **FEES.** The City shall pay the Contractor for the performance of this Agreement in an amount not to exceed \$717,220.00 as set forth in the Contractor's North Old Woodward Parking Structure Repair Project, 2023 cost proposal.

4. **TERMS OF PAYMENT:** The Contractor will invoice monthly for all labor supplied and work completed. In no event shall invoices be submitted more than 45 days after completion of services.

Submitted invoices shall include the following detailed information: the type of work performed, the time spent on the work, the individual who performed the work and the per hour billing rate charged. The City may, at its sole discretion demand review and the right to request at any time further detailed accounting information for any or all bills. The right to inspection of any bill and invoice shall never be at any cost or billings to the City, nor shall preparation of said invoices be billed to the City or against the general retainer. Payment terms will be net 30 days unless otherwise specified by the City.

5. **GOOD MORAL CHARACTER:** The Contractor shall employ personnel of good moral character and fitness in performing all services under this Agreement.

6. **INSURANCE SUBMISSION REQUIREMENTS:** The has submitted proof to the City that it meets all City insurance requirements. Insurance, with coverage amounts at no less than the City's minimum requirements, must be held by the Contractor throughout the term of this Agreement. Certificates of insurance as stated below will be required no later than five (5) business days from the date of Contractor's acceptance of the terms of this Agreement.

7. **CONFIDENTIAL AND / OR PROPRIETARY INFORMATION:** The Contractor acknowledges that in performing services pursuant to this Agreement, certain confidential and/or proprietary information (including, but not limited to, internal organization, methodology, personnel and financial information, etc.) may become involved. The Contractor recognizes that unauthorized exposure of such confidential or proprietary information could irreparably damage the City. Therefore, the Contractor agrees to use reasonable care to safeguard the confidential and proprietary information and to prevent the unauthorized use or disclosure thereof. The Contractor shall inform its employees of the confidential or proprietary nature of such information and shall limit access thereto to employees rendering services pursuant to this Agreement. The Contractor further agrees to use such confidential or proprietary information only for the purpose of performing services pursuant to this Agreement.

8. **INDEPENDENT CONTRACTOR:** The Contractor and the City agree that the Contractor is acting as an independent Contractor with respect to the Contractor's role in providing services to the City pursuant to this Agreement, and as such, shall be liable for its own actions and neither the Contractor nor its employees shall be construed as employees of the City. Nothing contained in this Agreement shall be construed to imply a joint venture or partnership and neither party, by virtue of this Agreement, shall have any right, power or authority to act or create any obligation, express or implied, on behalf of the other party, except as specifically outlined herein. Neither the City nor the Contractor shall be considered or construed to be the agent of the other, nor shall either have the right to bind the other in any manner whatsoever, except as specifically provided in this Agreement, and this Agreement shall not be construed as a contract of agency. The Contractor shall not be entitled or eligible to participate in any benefits or privileges given or extended by the City, or be deemed an employee of the City for purposes of federal or state withholding taxes, FICA taxes, unemployment, workers' compensation or any other employer contributions on behalf of the City.

9. **COMPLIANCE WITH LAWS:** The Contractor agrees to fully and faithfully carry out the duties of set forth herein using its best efforts in accomplishing all assignments from the City, and further, in addition to upholding all federal, and state laws and applicable codes of

professional conduct to which the Contractor is subject, Contractor hereby agrees to be bound by all Federal, State, or City of Birmingham ordinances, rules, regulations and policies as are amended from time to time, and including without limitation the Fair Labor Standards Act, the Equal Employment Opportunity rules and regulations, the Transportation Safety Act and the Occupational Safety and Health Acts.

10. NON-COMPLIANCE WITH INSURANCE REQUIREMENTS: Failure to deliver and maintain insurance in accordance with the terms of this Agreement will be cause for the City, by and through its City Manager, to terminate this Agreement, or at the City's option, the City may purchase on the open market such required insurance and shall be entitled to charge any additional cost to the Contractor, either by offset to any amounts due and owing Contractor for services provided to the City, or, by separate bill and demand for payment. Nothing in this paragraph shall be deemed to create or be interpreted as establishing a "for cause" termination; Contractor agrees and understands that its engagement is at will and may be terminated by the City Manager for any cause or no cause.

11. INDEMNIFICATION: To the fullest extent permitted by law, the Contractor and any entity or person for whom the Contractor is legally liable, agrees to be responsible for any liability, defend, pay on behalf of, indemnify, and hold harmless the City of Birmingham, its elected and appointed officials, employees and volunteers and others working on their behalf against any and all claims, demands, suits, or loss, including all costs and reasonable attorney fees connected therewith, and for any damages which may be asserted, claimed or recovered against or from the City, its elected and appointed officials, employees, volunteers or others working on their behalf, by reason of personal injury, including bodily injury and death and/or property damage, including loss of use thereof, which arise out of the acts, errors or omissions of the Contractor including its employees and agents, in the performance of this Agreement. Such responsibility shall not be construed as liability for damage caused by or resulting from the sole act or omission of its elected or appointed officials, employees, volunteers or others working on behalf of the City.

12. STANDARD INSURANCE REQUIREMENTS:

The Contractor shall maintain during the life of this Agreement the applicable types of insurance coverage and minimum limits as set forth below:

A. Workers' Compensation Insurance:

For Non-Sole Proprietorships: Contractor shall procure and maintain during the life of this Agreement, Workers' Compensation Insurance, including Employers Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

For Sole Proprietorships: Contractor shall complete and furnish to the City prior to the commencement of work under this Agreement a signed and notarized Sole Proprietor Form, for sole proprietors with no employees or with employees, as the case may be.

B. Commercial General Liability Insurance: Contractor shall procure and maintain during the life of this Agreement, Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than **\$1,000,000** per occurrence combined single limit, Personal Injury, Bodily Injury and Property Damage. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractor Coverage; (D) Broad Form General Liability Extensions or equivalent; (E) Deletion of all Explosion, Collapse and Underground (XCU) Exclusions, if applicable.

C. Motor Vehicle Liability: Contractor shall procure and maintain during the life of this Agreement Motor Vehicle Liability Insurance, including all applicable no-fault coverages, with limits of liability of not less than \$1,000,000 per occurrence combined single limit Bodily Injury and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

D. Pollution Liability Insurance: Contractor shall procure and maintain during the life of this Agreement Pollution Liability Insurance, with limits of liability of \$1,000,000, per occurrence preferred, but claims made accepted.

E. Additional Insured: Commercial General Liability and Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating the following **Additional Insureds: The City of Birmingham, including all elected and appointed officials, all employee and volunteers, all boards, commissions and/or authorities and board members, including employees and volunteers thereof.** This coverage shall be primary to any other coverage that may be available to the additional insured, whether any other available coverage by primary, contributing or excess.

F. Professional Liability: If applicable, professional liability insurance with limits of not less than \$2,000,000 per claim if Contractor will provide services that are customarily subject to this type of coverage.

G. Coverage Expiration: If any of the above coverages expire during the term of this Agreement, the Contractor shall deliver renewal certificates and/or policies to the City at least (10) days prior to the expiration date.

H. Proof of Insurance Coverage: The Contractor shall provide the City of Birmingham at the time the Agreement is returned for execution, Certificates of Insurance and/or policies, acceptable to the City of Birmingham, as listed below.

- 1) Two (2) copies of Certificate of Insurance for Workers' Compensation Insurance, or a signed and notarized copy of the Sole Proprietor Form;
- 2) Two (2) copies of Certificate of Insurance for Commercial General Liability Insurance;
- 3) Two (2) copies of Certificate of Insurance for Vehicle Liability Insurance;
- 4) Two (2) copies of Certificate of Insurance for Professional Liability Insurance, if applicable;

- 5) If so requested, Certified Copies of all policies mentioned above will be furnished.

I. **Maintaining Insurance:** Upon failure of the Contractor to obtain or maintain such insurance coverage for the term of the Agreement, the City of Birmingham may, at its option, purchase such coverage and subtract the cost of obtaining such coverage from the Agreement amount. In obtaining such coverage, the City of Birmingham shall have no obligation to procure the most cost-effective coverage but may contract with any insurer for such coverage.

13. **WRITTEN NOTICES:** All notices required to be sent pursuant to this Agreement shall be mailed to the following addresses:

City: City of Birmingham
151 Martin Street
Birmingham, MI 48009
Attn: Parking Systems Manager, Aaron Ford

Contractor: RAM Construction Services of Michigan, Inc.
13800 Eckles Road
Livonia, MI 48150
Attn: Scott Hamill, Project Manager

14. **COVID:** The Contractor shall follow all of the City's COVID-19 safety protocols while on City property. Additionally, Contractor's staff which will be in physical contact with city staff must have current vaccinations against COVID-19. The City, at its discretion, may ask for proof of vaccination of Contractor's staff. Failure to provide proof of vaccination when requested will cause the City to request un-vaccinated personnel to leave, request alternate staff, and if the Contractor is unable to comply, this violation of safety protocols will constitute a breach of contract by the Contractor.

15. **AMENDMENTS:** No amendment, modification or supplement to this Agreement shall be binding unless it is in writing and signed by authorized representatives of the parties.

16. **WAIVER OF BREACH:** No waiver by either party of any breach of any of the terms, covenants or conditions herein contained by the other party shall be construed as a waiver of any succeeding breach of this same or of any other term, covenant, or condition.

17. **COMPLETE AGREEMENT:** The parties agree that the conditions set forth in this Agreement sets forth all terms and conditions of the Contractor's agreement with the City of Birmingham. This Agreement supersedes all prior agreements or understandings between the parties. There are no promises, conditions, or understandings other than those stated herein, and, that any prior negotiations, terms or conditions discussed between the City and the Contractor shall not constitute a part of this Agreement. The term "agreement" as used in this clause shall

include any future written amendments, modifications, or supplements made in accordance herewith.

18. **DIRECT OR INDIRECT INTEREST:** If, after the effective date of this Agreement, any official of the City, or spouse, child, parent or in-law of such official or employee shall become directly or indirectly interested in this Agreement or the affairs of the Contractor, the City shall have the right to terminate this Agreement without further liability to the Contractor if the disqualification has not been removed within thirty (30) days after the City has given the Contractor notice of the disqualifying interest. Ownership of less than one percent (1%) of the stock or other equity interest in a corporation or partnership shall not be a disqualifying interest. Employment shall be a disqualifying interest.

19. **FAILURE TO PERFORM.** If Contractor fails to perform its obligations hereunder, the City may take any and all remedial actions provided by the general specifications or otherwise permitted by law.

20. **LEGAL PROCEEDINGS:** Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled either by commencement of a suit in Oakland County Circuit Court, the 48th District Court or by arbitration. If both parties elect to have the dispute resolved by arbitration, it shall be settled pursuant to Chapter 50 of the Revised Judicature Act for the State of Michigan and administered by the American Arbitration Association with one arbitrator being used, or three arbitrators in the event any party's claim exceeds \$1,000,000. Each party shall bear its own costs and expenses and an equal share of the arbitrator's and administrative fees of arbitration. Such arbitration shall qualify as statutory arbitration pursuant to MCL §600.5001 et seq., and the Oakland County Circuit Court or any court having jurisdiction shall render judgment upon the award of the arbitrator made pursuant to this Agreement. The laws of the State of Michigan shall govern this Agreement, and the arbitration shall take place in Oakland County, Michigan. In the event that the parties elect not to have the matter in dispute arbitrated, any dispute between the parties may be resolved by the filing of a suit in a federal or state court with jurisdiction over Oakland County, Michigan.

21. **RESPONSE TO REQUESTS FOR PROPOSALS:** The Contractor shall be held to and bound by all terms, conditions, warranties and representations which it made in its written response dated April 28, 2023, to the City's Request for Proposals dated March 24, 2023. In the event of a conflict in any of the terms of this Agreement and the Contractor's May 15, 2023 (date of response) response, the terms of this Agreement shall prevail.

22. **FAIR PROCUREMENT OPPORTUNITY:** Procurement for the City of Birmingham will be handled in a manner providing fair opportunity for all businesses. This will be accomplished without abrogation or sacrifice of quality and as determined to be in the best interest of the City of Birmingham.

IN WITNESS WHEREOF, the parties hereto agree to be bound by the above terms and conditions, and Contractor, by its authorized signature below, expressly accepts this Agreement upon the above provided terms and conditions contained in this Agreement as of the date and year above written.

CONTRACTOR


By:  Andrew Sandzik

CONTRACTOR

Its: VICE PRESIDENT

STATE OF MICHIGAN)
) ss:
COUNT OF WAYNE)

On this 15th day of May, 2023, Andrew Sandzik before me personally appeared, who acknowledged that with authority on behalf of RAM Construction Services of Michigan, Inc. to do so he signed this Agreement.


Notary Public
Wayne County, Michigan
Acting in Wayne County, Michigan
My commission expires: December 28, 2024


KRISTEN WICKENS
Notary Public, State of Michigan
County of Wayne
My Commission Expires 12-28-2024
Acting In the County of Wayne


CITY OF BIRMINGHAM


By: _____
Therese Longe, Mayor

By: _____
Alexandria D. Bingham, City Clerk

Approved:


Thomas M. Markus, City Manager
(Approved as to substance)


Mark Gerber, Director of Finance
(Approved as to financial obligation)


Aaron Ford, Parking Systems Manager
(Approved as to substance)


Mary M. Kucharek, City Attorney
(Approved as to form)



MEMORANDUM

Parking Department

DATE: 6/07/2023

TO: Advisory Parking Committee

FROM: Aaron Ford, Parking Systems Manager

SUBJECT: Miscellaneous Communication

APS Update

Meter Revenue

	Cash	% of Total Revenue	Credit Card	% of Total Revenue	ParkMobile	% of Total Revenue	Total
Jan-22	\$ 40,186.35	30%	\$ 31,755.50	24%	\$ 60,266.30	46%	\$ 132,208.15
Feb-22	\$ 38,017.40	29%	\$ 30,607.50	24%	\$ 61,029.00	47%	\$ 129,653.90
Mar-22	\$ 49,614.00	28%	\$ 47,104.25	27%	\$ 80,701.30	45%	\$ 177,419.55
Apr-22	\$ 51,673.15	29%	\$ 47,517.75	27%	\$ 79,079.65	44%	\$ 178,270.55
May-22	\$ 47,739.00	27%	\$ 50,583.00	29%	\$ 76,123.00	44%	\$ 174,445.00
Jun-22	\$ 54,107.00	29%	\$ 55,136.00	30%	\$ 75,262.00	41%	\$ 184,505.00
Jul-22	\$ 51,237.15	29%	\$ 53,466.25	30%	\$ 71,809.40	41%	\$ 176,512.80
Aug-22	\$ 54,566.85	29%	\$ 55,769.25	30%	\$ 77,324.00	41%	\$ 187,660.10
Sep-22	\$ 48,244.00	29%	\$ 50,221.25	30%	\$ 69,869.15	42%	\$ 168,334.40
Oct-22	\$ 46,806.60	28%	\$ 48,206.50	28%	\$ 75,009.75	44%	\$ 170,022.85
Nov-22	\$ 47,039.00	28%	\$ 48,690.00	29%	\$ 72,460.00	43%	\$ 168,189.00
Dec-22	\$ 50,125.00	27%	\$ 52,509.00	28%	\$ 84,603.00	45%	\$ 187,237.00
Jan-23	\$ 42,500.00	27%	\$ 44,027.00	28%	\$ 71,905.00	45%	\$ 158,432.00
Feb-23	\$ 41,032.00	27%	\$ 41,559.00	27%	\$ 71,375.00	46%	\$ 153,966.00
Mar-23	\$ 47,873.00	26%	\$ 49,480.00	27%	\$ 84,574.00	46%	\$ 181,927.00
Apr-23	\$ 47,521.00	26%	\$ 52,171.00	29%	\$ 83,039.00	45%	\$ 182,736.00

Structure Revenue

	Monthly	Daily	Total
Apr-22	\$ 249,180.00	\$ 156,828.00	\$ 406,008.00
May-22	\$ 299,175.00	\$ 188,511.00	\$ 487,686.00
Jun-22	\$ 291,492.00	\$ 219,681.00	\$ 511,173.00
Jul-22	\$ 283,933.00	\$ 182,025.00	\$ 465,958.00
Aug-22	\$ 298,570.00	\$ 212,035.00	\$ 510,605.00
Sep-22	\$ 260,818.00	\$ 206,705.00	\$ 467,523.00
Oct-22	\$ 311,298.00	\$ 160,173.00	\$ 471,471.00
Nov-22	\$ 248,466.00	\$ 165,724.00	\$ 414,190.00
Dec-22	\$ 289,439.00	\$ 189,512.00	\$ 478,951.00
Jan-23	\$ 343,744.00	\$ 182,862.00	\$ 526,606.00
Feb-23	\$ 215,175.00	\$ 139,243.00	\$ 354,418.00
Mar-23	\$ 310,862.00	\$ 183,134.00	\$ 493,996.00
Apr-23	\$ 295,459.00	\$ 181,400.00	\$ 476,859.00

New Reports

- April & May Occupancy – use these moving forward?
- Transient Parking Time Report
- Occupancy Rolling Yr.

Monthly Parking Report

Total Occupancy By Counters

56&57

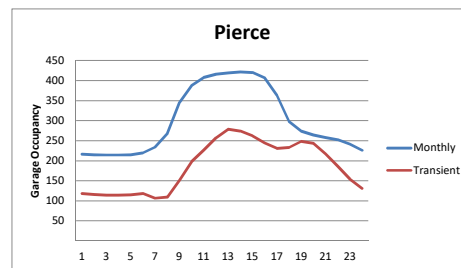
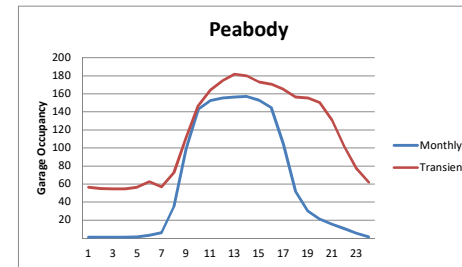
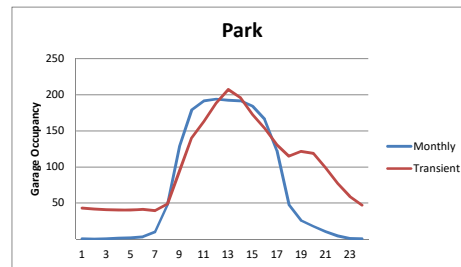
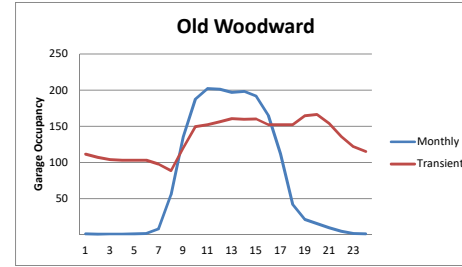
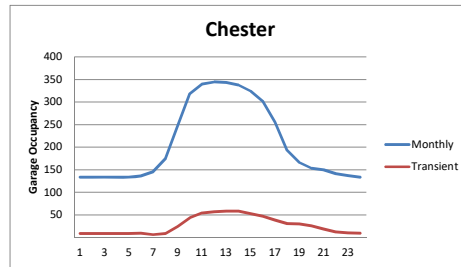
From: 4/1/23 To: 4/30/23

Chester		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	4/1/23 to 4/30/23																								
Monthly		134	133	133	133	134	136	145	175	247	319	340	345	343	338	325	302	255	193	166	154	150	142	137	134
Transient		9	9	9	9	9	9	6	9	24	44	54	57	58	58	53	47	39	31	30	26	19	12	10	9
Total		142	142	142	142	142	146	152	184	272	362	393	402	402	396	377	348	294	224	195	179	168	154	147	143
Percent Occupied By Hour		16.19%	16.13%	16.12%	16.12%	16.18%	16.54%	17.22%	20.86%	30.85%	41.19%	44.70%	45.63%	45.63%	44.96%	42.89%	39.59%	33.38%	25.42%	22.21%	20.37%	19.13%	17.46%	16.72%	16.24%
Average Daily Occupancy		26.74%																							
Old Woodward		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	4/1/23 to 4/30/23																								
Monthly		1	1	1	1	1	2	8	55	135	188	202	202	197	198	192	165	112	42	21	15	10	5	2	1
Transient		111	107	104	103	103	103	98	89	120	150	152	156	161	160	160	152	152	152	165	166	154	136	122	115
Total		113	108	105	104	104	105	106	144	256	337	355	358	357	358	352	318	264	195	186	182	164	141	123	116
Percent Occupied By Hour		15.11%	14.55%	14.11%	13.99%	14.00%	14.11%	14.19%	19.35%	34.30%	45.29%	47.59%	48.00%	47.96%	48.08%	47.21%	42.63%	35.44%	26.12%	24.96%	24.39%	22.01%	18.93%	16.55%	15.60%
Average Daily Occupancy		27.69%																							
Park		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	4/1/23 to 4/30/23																								
Monthly				1	2	3	10	48	129	179	192	194	193	191	184	166	123	48	26	18	10	4	1		
Transient		43	42	41	41	40	41	39	49	95	141	163	188	207	196	173	154	131	115	122	119	99	77	59	47
Total		43	42	41	42	42	45	49	96	224	320	355	382	400	387	357	319	254	162	147	137	109	82	60	47
Percent Occupied By Hour		5.36%	5.17%	5.12%	5.15%	5.23%	6.07%	6.07%	11.88%	27.65%	39.48%	43.82%	47.21%	49.39%	47.84%	44.06%	39.42%	31.31%	20.03%	18.17%	16.85%	13.44%	10.08%	7.41%	5.83%
Average Daily Occupancy		21.31%																							
Peabody		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	4/1/23 to 4/30/23																								
Monthly		1	1	1	1	2	3	6	35	99	143	152	155	156	157	153	145	104	52	30	21	15	11	5	2
Transient		56	55	55	55	56	63	57	73	111	147	164	175	182	180	173	171	165	157	155	150	131	102	77	62
Total		58	56	56	56	58	66	63	108	210	290	317	330	338	337	326	315	269	208	185	171	146	113	83	64
Percent Occupied By Hour		13.17%	12.88%	12.79%	12.76%	13.26%	15.02%	14.42%	24.69%	48.03%	66.36%	72.52%	75.51%	77.38%	77.13%	74.58%	72.15%	61.60%	47.67%	42.42%	39.12%	33.44%	25.78%	18.92%	14.55%
Average Daily Occupancy		40.26%																							
Pierce		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	4/1/23 to 4/30/23																								
Monthly		216	215	214	214	215	220	234	269	346	388	408	416	419	422	420	406	363	298	274	264	258	253	241	226
Transient		118	115	115	115	115	118	107	110	152	198	227	257	279	274	262	245	231	233	248	243	217	186	154	131
Total		334	330	329	329	330	338	341	378	498	586	635	673	698	695	682	651	594	531	522	508	475	438	395	357
Percent Occupied By Hour		47.33%	46.74%	46.59%	46.58%	46.75%	47.84%	48.23%	53.56%	70.51%	83.02%	89.94%	95.25%	98.86%	98.51%	96.54%	92.18%	84.07%	75.24%	73.95%	71.94%	67.27%	62.08%	55.93%	50.54%
Average Daily Occupancy		68.73%																							

Page :

1

T.I.B.A - Smart parking solutions



Total Occupancy By Counters

56&57

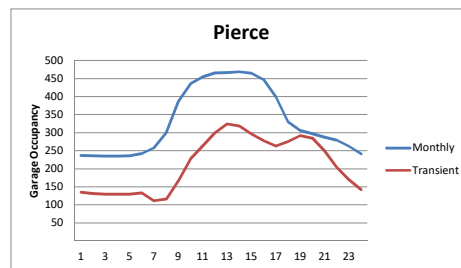
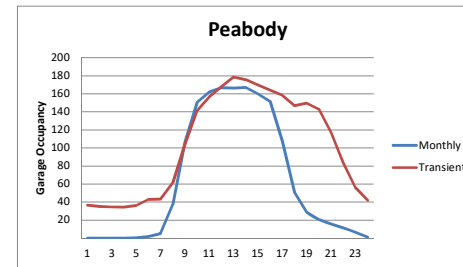
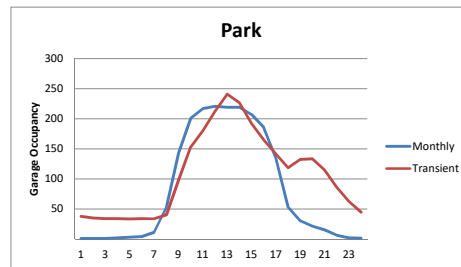
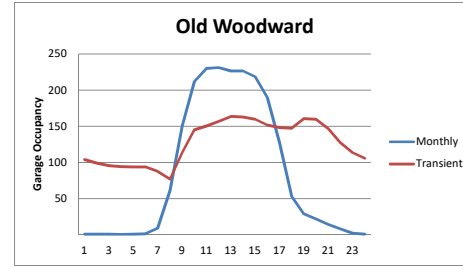
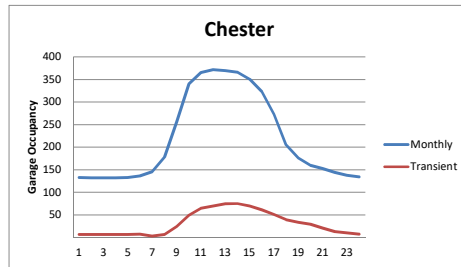
From: 5/1/23 To: 5/31/23

Chester		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	5/1/23 to 5/31/23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Monthly		132	132	132	132	133	136	146	178	256	340	366	372	370	366	350	323	273	205	176	160	153	144	138	134
Transient		7	7	6	6	7	7	3	6	24	49	64	70	75	75	69	61	50	39	34	29	20	13	10	7
Total		139	139	139	139	139	143	148	185	280	389	430	442	444	441	420	384	323	244	209	189	173	157	147	141
Percent Occupied By Hour		15.80%	15.77%	15.75%	15.75%	15.82%	16.29%	16.85%	20.99%	31.81%	44.16%	48.86%	50.17%	50.51%	50.08%	47.69%	43.67%	36.70%	27.77%	23.78%	21.49%	19.68%	17.79%	16.76%	16.07%
Average Daily Occupancy		28.33%																							
Old Woodward		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	5/1/23 to 5/31/23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Monthly		1	1	1	1	1	2	9	61	150	212	230	231	227	227	219	190	127	53	29	22	14	8	2	1
Transient		104	99	96	94	94	94	88	77	114	145	150	157	164	163	160	152	148	148	161	160	147	127	114	106
Total		105	100	96	95	95	95	97	138	264	357	381	388	390	389	378	342	276	201	190	181	161	135	116	107
Percent Occupied By Hour		14.09%	13.38%	12.93%	12.72%	12.75%	12.81%	12.96%	18.57%	35.44%	47.95%	51.10%	52.11%	52.40%	52.28%	50.79%	45.88%	37.00%	26.95%	25.44%	24.34%	21.65%	18.13%	15.56%	14.31%
Average Daily Occupancy		28.40%																							
Park		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	5/1/23 to 5/31/23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Monthly		1	1	1	2	3	4	11	53	143	201	217	221	219	219	207	186	135	53	30	21	16	6	2	2
Transient		38	35	34	34	34	34	40	88	153	180	213	241	227	192	165	141	119	132	134	115	86	63	45	46
Total		39	36	35	36	37	39	45	93	241	355	398	434	460	446	399	351	277	172	163	155	131	92	65	46
Percent Occupied By Hour		4.82%	4.45%	4.36%	4.45%	4.55%	4.77%	5.53%	11.53%	29.81%	43.78%	49.08%	53.58%	56.84%	55.06%	49.26%	43.36%	34.17%	21.27%	20.08%	19.16%	16.11%	11.41%	7.99%	5.71%
Average Daily Occupancy		23.38%																							
Peabody		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	5/1/23 to 5/31/23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Monthly		36	35	35	35	36	43	43	62	105	142	157	168	167	166	160	152	108	51	29	21	16	11	7	1
Transient		37	35	35	35	36	45	48	99	212	292	319	335	345	343	330	315	266	198	178	163	133	95	63	43
Total		73	70	70	70	72	88	91	161	317	434	476	503	513	511	490	467	376	249	207	184	149	106	74	44
Percent Occupied By Hour		8.38%	8.03%	7.94%	7.94%	8.34%	10.25%	11.09%	22.69%	48.43%	66.92%	73.00%	76.63%	78.98%	78.48%	75.46%	72.19%	60.87%	45.24%	40.84%	37.40%	30.33%	21.83%	14.34%	9.86%
Average Daily Occupancy		38.14%																							
Pierce		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Date	5/1/23 to 5/31/23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Monthly		237	236	235	236	236	242	259	301	388	436	455	466	467	469	465	447	400	330	306	297	288	280	262	241
Transient		135	131	130	129	130	133	111	116	167	228	263	300	324	319	296	278	263	275	292	285	249	204	170	142
Total		372	367	365	365	366	375	370	417	555	664	719	765	791	788	761	724	662	605	599	582	537	484	432	383
Percent Occupied By Hour		52.74%	51.97%	51.68%	51.59%	51.74%	53.18%	52.36%	59.06%	78.59%	94.08%	101.78%	108.41%	112.02%	111.55%	107.79%	102.59%	93.82%	85.65%	84.79%	82.43%	76.02%	68.55%	61.21%	54.27%
Average Daily Occupancy		76.99%																							

Page :

1

T.I.B.A - Smart parking solutions



Transients parking time report

51

From: 05/01/23 To: 05/31/23

Chester

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-04-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
2023-05-01	37	43	18	19	13	9	7	6	6	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	177
2023-05-02	41	44	19	15	13	18	10	19	9	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	211
2023-05-03	47	49	25	11	16	23	22	16	11	10	2	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	250
2023-05-04	55	79	26	20	21	19	15	15	11	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	277
2023-05-05	73	77	25	20	11	6	9	5	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	245
2023-05-06	75	63	29	11	10	3	2	2	0	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	204
2023-05-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	9
2023-05-08	33	50	19	11	13	10	4	10	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	168
2023-05-09	62	57	43	20	28	17	12	15	15	3	0	1	4	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	16	0	0	0	0	0	296
2023-05-10	45	76	37	14	45	20	16	25	20	11	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	317
2023-05-11	61	89	28	21	23	30	18	15	4	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	8	0	0	0	0	0	306
2023-05-12	77	63	45	19	26	15	11	5	3	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	277
2023-05-13	244	288	118	53	27	7	8	9	9	22	20	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	811
2023-05-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4
2023-05-15	45	31	20	9	16	8	11	4	8	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	166
2023-05-16	51	59	26	21	27	10	10	15	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	238
2023-05-17	47	54	26	12	22	18	25	22	17	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	262
2023-05-18	37	54	30	15	7	15	12	10	9	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	198
2023-05-19	36	30	21	21	12	9	14	6	10	4	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	53	0	0	0	0	0	220
2023-05-20	64	52	41	13	8	4	7	2	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	198
2023-05-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8
2023-05-22	37	49	17	11	10	4	7	5	8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	160

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Chester

Number of:	Hours																								Days											
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total	
2023-05-23	60	47	36	24	12	13	9	17	12	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	240		
2023-05-24	57	40	27	23	26	21	14	22	26	10	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	301		
2023-05-25	44	42	17	19	13	8	16	7	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	178		
2023-05-26	70	49	12	6	10	5	3	2	5	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	171		
2023-05-27	75	29	11	5	7	5	2	1	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	142		
2023-05-28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4		
2023-05-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2		
2023-05-30	59	57	21	13	17	14	11	6	9	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	228		
2023-05-31	58	53	31	23	29	22	14	21	17	9	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	287		
2023-06-01	9	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	27		
Total tickets	1599	1628	768	449	462	333	289	282	232	123	48	16	12	3	1	1	1	0	1	0	0	0	1	0	1	4	0	0	331	0	0	0	0	0	6585	
Percent	24.3	24.7	11.7	6.8	7.0	5.1	4.4	4.3	3.5	1.9	0.7	0.2	0.2	0.0	0.0	0.0	0.0		0.0				0.0		0.0	0.1			5.0						100	
Total tickets Hours	1599	3256	2304	1796	2310	1998	2023	2256	2088	1230	528	192	156	42	15	16	17		19				23		48	288			4766	4						69868

Average ticket stay (hours)

11

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Pierce

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-04-30	4	3	0	3	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0	0	44
2023-05-01	89	130	75	50	25	19	23	18	32	20	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0	0	0	0	0	535	
2023-05-02	129	266	194	75	40	34	35	26	36	23	15	10	1	2	0	2	0	0	0	1	0	0	0	0	0	0	0	51	0	0	0	0	0	940	
2023-05-03	138	200	162	64	30	27	33	29	36	27	18	11	1	4	1	1	0	0	2	0	0	0	0	0	1	0	0	0	73	0	0	0	0	0	858
2023-05-04	275	235	152	100	51	45	55	91	56	29	12	2	4	1	2	1	0	1	0	2	1	1	0	3	2	0	0	0	67	0	0	0	0	0	1188
2023-05-05	168	258	189	85	55	37	38	32	35	30	6	4	5	3	1	0	0	3	0	0	0	0	0	0	3	0	0	0	233	0	0	0	0	0	1185
2023-05-06	180	299	218	132	47	33	24	19	34	28	10	9	2	4	4	1	2	2	1	1	1	2	0	1	1	0	0	0	8	0	0	0	0	0	1063
2023-05-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	0	34	
2023-05-08	89	136	103	47	22	28	25	31	22	27	5	2	3	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	28	0	0	0	0	0	572
2023-05-09	150	240	143	86	35	26	29	25	44	33	17	9	8	5	1	1	0	0	0	0	1	0	0	0	1	0	1	0	37	0	0	0	0	0	892
2023-05-10	157	258	200	111	48	40	32	32	38	25	18	7	3	3	0	2	0	1	0	0	0	0	0	0	4	0	0	0	58	0	0	0	0	0	1037
2023-05-11	182	282	191	114	53	36	33	28	49	24	11	3	1	1	2	0	1	0	0	0	0	0	0	0	2	0	0	0	88	0	0	0	0	0	1101
2023-05-12	224	306	236	140	54	44	36	29	34	35	19	5	2	0	0	1	0	1	0	0	1	0	0	0	2	0	0	0	210	0	0	0	0	0	1379
2023-05-13	365	520	373	173	90	49	31	34	37	42	32	10	5	4	2	0	3	0	2	0	1	0	0	1	1	0	0	0	2	0	0	0	0	0	1777
2023-05-14	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	0	0	31	
2023-05-15	94	162	140	62	29	26	21	40	25	24	10	5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	665	
2023-05-16	115	204	187	74	34	37	31	38	35	22	21	4	1	1	1	0	0	0	0	0	0	1	0	0	2	0	0	0	41	0	0	0	0	0	849
2023-05-17	143	259	174	78	39	38	27	27	29	19	17	8	5	1	1	1	0	2	1	0	1	0	0	0	2	0	0	0	60	0	0	0	0	0	932
2023-05-18	148	256	204	79	46	38	37	42	43	33	25	7	7	2	2	2	0	1	1	0	0	0	1	0	1	0	0	0	57	0	0	0	0	0	1032
2023-05-19	179	272	185	67	33	24	37	35	35	18	11	10	0	1	1	2	0	0	0	1	0	2	0	0	1	0	0	0	328	0	0	0	0	0	1242
2023-05-20	166	292	222	137	58	41	47	27	49	29	6	4	4	4	2	0	2	1	3	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1099
2023-05-21	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0	0	27	
2023-05-22	96	143	127	48	36	20	33	29	31	18	9	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	627	

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Pierce

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-05-23	162	212	162	89	47	36	30	26	48	23	12	9	4	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	895
2023-05-24	175	228	192	74	32	34	32	31	42	18	17	9	9	1	0	1	0	0	1	0	0	1	0	0	1	1	1	0	49	0	0	0	0	0	949
2023-05-25	174	270	180	92	41	28	33	23	35	18	9	3	8	0	1	1	1	1	0	2	0	0	0	0	0	0	0	52	0	0	0	0	0	972	
2023-05-26	154	278	227	113	45	30	32	25	26	16	13	2	2	1	3	1	1	2	0	1	2	1	2	0	0	1	0	0	239	0	0	0	0	0	1217
2023-05-27	143	267	219	105	61	32	28	23	39	21	11	4	3	2	2	0	1	4	2	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	971
2023-05-28	18	15	17	17	7	8	4	8	9	18	12	6	3	1	3	2	0	2	0	1	0	0	0	0	1	0	0	0	26	0	0	0	0	0	178
2023-05-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	0	0	0	0	0	37	
2023-05-30	165	239	152	76	25	23	24	27	41	26	7	1	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0	0	0	857
2023-05-31	160	279	179	84	38	36	29	34	46	15	10	6	3	4	0	1	1	0	1	0	0	0	0	0	0	0	0	0	44	0	0	0	0	0	970
2023-06-01	26	38	5	0	0	0	0	0	0	3	1	0	0	2	3	4	0	0	0	0	0	0	0	0	1	0	0	0	54	0	0	0	0	0	137
Total tickets	4268	6547	4808	2376	1121	869	839	829	988	664	360	153	95	51	34	27	12	22	14	12	8	8	3	5	30	3	2	0	2144	0	0	0	0	0	26292
Percent	16.2	24.9	18.3	9.0	4.3	3.3	3.2	3.2	3.8	2.5	1.4	0.6	0.4	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0		8.2					100	
Total tickets Hours	4268	13094	14424	9504	5605	5214	5873	6632	8892	6640	3960	1836	1235	714	510	432	204	396	266	240	168	176	69	120	1440	216	192		308736						401056

Average ticket stay (hours)

15

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Old Woodward

Numer of:	Hours																								Days											
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total	
2023-04-30	5	2	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	22	
2023-05-01	60	50	37	21	19	12	9	13	30	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	281	
2023-05-02	63	48	36	16	7	12	10	25	54	10	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	311	
2023-05-03	74	77	75	20	13	14	12	21	46	12	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	0	0	0	399	
2023-05-04	125	117	84	41	17	15	14	20	25	15	8	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	529	
2023-05-05	145	159	89	48	25	17	14	22	12	4	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	99	0	0	0	0	0	641
2023-05-06	68	114	64	36	6	11	3	10	2	3	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	344	
2023-05-07	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	5	
2023-05-08	82	70	47	25	9	5	7	9	19	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	292	
2023-05-09	91	64	41	16	10	10	8	17	37	15	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	328	
2023-05-10	106	115	78	39	12	8	13	22	47	13	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	12	0	0	0	0	0	468
2023-05-11	124	167	86	37	19	11	17	19	37	9	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	98	0	0	0	0	0	632
2023-05-12	150	187	98	50	17	14	11	10	14	4	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	240	0	0	0	0	0	799	
2023-05-13	185	289	122	55	18	11	7	10	8	22	10	7	4	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	750	
2023-05-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	11	
2023-05-15	55	72	22	19	13	11	8	4	18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	234	
2023-05-16	82	109	38	32	12	8	19	22	51	17	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	406	
2023-05-17	94	120	82	35	11	6	10	17	53	10	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	0	0	474	
2023-05-18	122	135	62	54	23	7	8	18	29	9	3	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	0	0	0	0	509	
2023-05-19	106	143	89	35	19	24	10	10	16	10	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	115	0	0	0	0	0	582	
2023-05-20	185	269	92	33	19	13	13	11	8	7	2	2	3	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	661	
2023-05-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	13	
2023-05-22	76	68	47	21	18	7	4	10	24	9	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	302	

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Old Woodward

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-05-23	97	93	70	24	12	18	14	23	46	9	5	1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	22	0	0	0	0	0	441
2023-05-24	119	94	55	32	12	6	7	26	46	17	6	1	1	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	441
2023-05-25	137	136	106	76	20	14	14	15	29	16	5	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	597
2023-05-26	162	193	96	51	26	12	7	8	10	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	91	0	0	0	0	0	661
2023-05-27	143	198	74	35	14	10	9	7	4	6	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	504
2023-05-28	21	30	19	11	7	4	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	14	0	0	0	0	0	111
2023-05-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	19
2023-05-30	96	53	42	21	12	12	9	14	38	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	333
2023-05-31	106	91	64	29	14	18	14	32	50	23	4	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	465
2023-06-01	33	4	4	0	0	0	0	1	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	67
Total tickets	2912	3267	1822	913	405	310	271	416	754	273	82	32	22	5	12	3	1	4	1	0	1	1	1	0	3	1	1	0	1119	0	0	0	0	0	12632
Percent	23.1	25.9	14.4	7.2	3.2	2.5	2.1	3.3	6.0	2.2	0.6	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		8.9						100
Total tickets Hours	2912	6534	5466	3652	2025	1860	1897	3328	6786	2730	902	384	286	70	180	48	17	72	19		21	22	23		144	72	96		1611 36						200682

Average ticket stay (hours)

16

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Peabody

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-04-30	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	18
2023-05-01	143	319	90	34	15	15	21	12	26	29	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	20	0	0	0	0	0	733
2023-05-02	120	325	114	41	17	11	7	30	29	49	15	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	25	0	0	0	0	0	786
2023-05-03	159	326	112	48	20	12	11	19	28	48	12	5	3	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	40	0	0	0	0	0	845
2023-05-04	169	267	104	90	27	22	19	20	35	26	9	14	2	1	0	1	3	0	0	0	0	0	0	1	1	0	0	0	40	0	0	0	0	0	851
2023-05-05	221	355	157	95	26	24	19	7	11	14	4	5	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	93	0	0	0	0	0	1036
2023-05-06	217	319	209	96	44	17	7	12	5	5	1	4	1	3	0	0	0	2	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	946
2023-05-07	0	1	2	3	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	19
2023-05-08	167	324	87	41	13	15	9	17	29	19	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	14	0	0	0	0	0	745
2023-05-09	126	283	101	55	17	16	20	26	41	29	7	6	5	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	23	0	0	0	0	0	758
2023-05-10	166	314	146	74	28	20	9	30	31	35	11	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	901
2023-05-11	220	372	147	65	35	26	8	21	37	32	7	2	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	50	0	0	0	0	0	1026
2023-05-12	216	411	187	85	37	15	11	11	13	17	7	3	5	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	74	0	0	0	0	0	1094
2023-05-13	274	413	228	90	38	26	10	8	6	4	1	2	2	1	0	1	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1108
2023-05-14	4	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	22
2023-05-15	166	340	115	48	35	22	10	13	21	15	12	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	820
2023-05-16	154	342	129	55	36	32	13	17	33	40	8	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	23	0	0	0	0	0	887
2023-05-17	250	337	135	67	25	22	19	16	33	36	10	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	0	979
2023-05-18	150	331	139	52	40	15	17	24	43	23	14	4	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	899
2023-05-19	183	366	160	53	39	20	10	10	16	18	6	3	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	72	0	0	0	0	0	960
2023-05-20	213	369	208	74	31	24	13	5	9	4	0	0	0	2	0	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	956
2023-05-21	0	3	2	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	28
2023-05-22	159	314	85	51	35	20	13	8	17	20	8	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	749

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Peabody

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-05-23	124	310	102	54	30	20	12	29	29	39	9	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	22	0	0	0	0	0	789
2023-05-24	173	330	124	54	30	17	17	13	32	34	12	3	2	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	21	0	0	0	0	0	865
2023-05-25	174	363	139	58	20	25	14	21	37	31	9	7	2	2	0	1	0	0	0	1	0	0	0	0	1	0	0	0	33	0	0	0	0	0	938
2023-05-26	224	387	201	74	33	28	17	8	16	11	2	2	0	0	2	0	1	0	0	0	0	0	0	0	1	0	0	0	61	0	0	0	0	0	1068
2023-05-27	169	282	171	82	44	18	8	6	8	2	1	2	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	796	
2023-05-28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	7
2023-05-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	11
2023-05-30	169	332	87	31	28	16	16	28	29	26	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20	0	0	0	0	0	799
2023-05-31	184	341	137	39	24	18	14	21	31	32	11	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	0	0	0	886
2023-06-01	55	72	11	3	4	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	189
Total tickets	4752	8849	3631	1616	776	516	344	433	646	638	193	110	36	19	5	5	9	7	1	2	3	1	0	3	9	2	4	2	902	0	0	0	0	0	23514
Percent	20.2	37.6	15.4	6.9	3.3	2.2	1.5	1.8	2.7	2.7	0.8	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	3.8						100
Total tickets Hours	4752	17698	10893	6464	3880	3096	2408	3464	5814	6380	2123	1320	468	266	75	80	153	126	19	40	63	22		72	432	144	384	240	12988						200764

Average ticket stay (hours)

9

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Park

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-04-30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	11
2023-05-01	116	134	50	40	21	14	21	17	25	9	7	1	4	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0	27	0	0	0	0	0	490
2023-05-02	165	154	102	60	33	22	33	31	54	30	3	5	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	712	
2023-05-03	179	161	86	52	26	23	26	28	64	37	12	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	717	
2023-05-04	230	218	119	125	31	40	24	35	40	17	9	7	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0	0	926	
2023-05-05	303	292	168	140	46	26	20	20	25	10	3	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	1101	
2023-05-06	263	297	212	197	59	23	13	16	25	13	0	3	4	1	0	0	0	0	1	0	0	1	0	0	0	0	0	42	0	0	0	0	0	1170	
2023-05-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	9	
2023-05-08	135	170	63	54	30	10	16	19	21	11	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	556	
2023-05-09	185	234	118	70	33	25	19	44	51	22	7	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	819	
2023-05-10	212	214	120	61	27	22	25	34	59	28	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	835	
2023-05-11	201	217	111	69	43	26	18	33	33	17	5	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	798	
2023-05-12	288	303	165	109	35	25	36	23	15	9	4	1	0	0	1	1	0	0	0	0	0	0	0	0	4	0	0	58	0	0	0	0	0	1077	
2023-05-13	324	316	224	164	45	11	15	18	18	10	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1154	
2023-05-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	0	0	0	0	0	53	
2023-05-15	141	154	74	38	18	18	17	23	24	8	6	2	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	8	0	0	0	0	0	535	
2023-05-16	196	196	119	73	37	29	25	44	62	20	7	4	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	830	
2023-05-17	196	245	109	57	28	23	26	35	45	22	11	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	14	0	0	0	0	0	815	
2023-05-18	242	211	114	72	34	35	23	44	29	22	8	6	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	855	
2023-05-19	270	227	158	68	30	24	19	29	23	10	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	0	0	0	0	0	951	
2023-05-20	309	254	199	109	28	15	15	16	17	4	8	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	979	
2023-05-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	13	
2023-05-22	134	124	81	51	25	16	12	26	17	6	8	3	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	517	

Transients parking time report

51

From: 05/01/23 To: 05/31/23

Park

Numer of:	Hours																								Days										
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	3	4	5	6	7	8	9	10	10+	Total
2023-05-23	125	144	116	60	36	18	26	33	56	20	10	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	661
2023-05-24	203	212	102	57	31	40	31	33	60	28	7	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	833
2023-05-25	209	196	170	70	27	27	20	30	43	27	4	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	840	
2023-05-26	319	265	231	121	45	17	16	18	19	4	3	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	75	0	0	0	0	0	1136
2023-05-27	254	196	243	113	42	19	12	22	12	5	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	924	
2023-05-28	12	8	11	5	2	2	4	4	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	58	
2023-05-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	13	
2023-05-30	180	164	114	45	33	20	19	40	57	19	9	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	738	
2023-05-31	189	229	128	65	24	33	23	40	59	34	16	6	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	865	
2023-06-01	27	24	3	6	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	79	
Total tickets	5608	5559	3510	2151	870	603	554	755	954	445	176	69	36	15	10	8	3	0	1	1	1	1	0	0	7	0	0	0	733	0	0	0	0	0	22070
Percent	25.4	25.2	15.9	9.7	3.9	2.7	2.5	3.4	4.3	2.0	0.8	0.3	0.2	0.1	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0									100	
Total tickets Hours	5608	1111 8	1105 0	3860	4435	0361	8387	8604	0858	6445	0193	6828	4682	1015	0128	51			19	20	21	22			336				1055 52						176523

Average ticket stay (hours)

8

Occupancy – Rolling Year

AVG CAPACITY	Apr-23	Mar-23	Feb-23	Jan-23	Dec-22	Nov-22	Oct-22	Sep-22	Aug-22	Jul-22	Jun-22	May-22
Chester Garage (880)	68.00%	60.69%	54.80%	29.42%	33.31%	36.54%	39.26%	37.32%	34.58%	33.62%	33.62%	26.50%
Old Woodward (745)	68.00%	46.21%	62.02%	51.36%	42.92%	48.38%	52.45%	50.18%	50.13%	49.80%	51.00%	45.50%
Park Garage (811)	66.00%	33.86%	57.46%	56.40%	49.98%	58.44%	60.35%	53.55%	57.41%	54.66%	48.00%	48.00%
Peabody Garage (437)	66.00%	86.41%	58.05%	78.95%	69.82%	74.46%	81.91%	77.56%	83.45%	82.66%	82.00%	78.00%
Pierce Garage (706)	74.00%	75.90%	62.71%	62.22%	66.41%	69.11%	75.68%	74.01%	73.63%	67.60%	75.00%	64.00%

MONTHLY PARKING PERMIT & ACTIVITY REPORT

For the month of: April
Date Compiled: May 12, 2023

Space Count	Pierce	Park	Peabody	N.Old Wood	Chester					Total
Total Garage Spaces	706	811	437	745	880					3579
Garage Monthly Permits Authorized	879	1045	536	981	1368					4809

cost per month	\$70	\$70	\$70	\$70	\$50					
Permits Issued	Pierce	Park	Peabody	N.Old Wood	Chester					Total
Garage permits end of previous month	826	945	522	839	1060					4192
Garage permits canceled in month	4	2	0	61	10					77
Garage permits added in month	5	1	3	20	13					42
Total Garage permits end of month	827	944	525	798	1063					4157
Garage permits available	52	101	11	183	305					652
Garage evening passes	45	7	19	12	11					94

						\$210	\$150	\$180	\$105	
Hangtags						Lot #6	Lot #6 econ	Lot A & C	Lot B	Total
Total Hangtag Lot Spaces						174	79	8	40	301
Hangtag Lot Quarterly Permits Authorized						177	40	8	30	255
Hangtags issued						144	18	3	5	170
Hangtags available						33	22	5	25	85

Waiting List	Pierce	Park	Peabody	N.Old Wood	Chester	Lot #6	Lot #6 econ	Lot A & C	Lot B	Total
On Wait List - end of month	372	402	352	0	0					1126
people on waitlist	173	93	74	0	0					