



CITY OF HOUSTON

INVITATION TO BID

November 15, 2013

Bid Opening:

Sealed bids, in duplicate, will be received by the City Secretary of the City of Houston, in the City Hall Annex, Public Level, 900 Bagby, Houston, Texas 77002 until **10:30 A.M. Thursday, December 19, 2013**, and all bids will be opened and publicly read in the City Council Chamber, City Hall Annex, Public Level, 900 Bagby at 11:00 A.M. on that date for the purchase of:

**REPAIR OF PARKING GARAGE
FOR THE GENERAL SERVICES DEPARTMENT
Bid No. S50-C24804
NIGP Code: 913-75 / 913-94**

Buyer:

Questions regarding this solicitation should be addressed to Arturo Lopez, Senior Procurement Specialist, at **832-393-8731** or e-mail to **arturo.lopez@houstontx.gov**.

Electronic Bidding:

In order to submit a bid for the items associated with this procurement, you must fill in the pricing information on the "PLACE BID" page.

Prebid Conference:

A Pre-Bid Conference will be held for all Prospective Bidders in the Strategic Purchasing Division, Concourse Level (Basement), Conference Room #1, City Hall, 901 Bagby, at 10:00 am. on **Wednesday, December 4, 2013**. The site visit will be scheduled at the pre-bid conference.

All Prospective Bidders are urged to be present. It is the bidder's responsibility to ensure that they have secured and thoroughly reviewed all aspects of the solicitation documents prior to the Pre-Bid Conference. Any revisions to be incorporated into this solicitation document arising from discussions before, during and subsequent to the Pre-Bid Conference will be confirmed in writing by Letter(s) of Clarification prior to the bid due date. Verbal responses will not otherwise alter the specifications, terms and conditions as stated herein.

Bidding forms, specifications, and all necessary information should be downloaded from the Internet at www.purchasing.houstontx.gov. By registering and downloading this solicitation document, all updates to this solicitation document will be automatically forwarded via e-mail to any registered bidders. This information may also be obtained from the Supplier Assistance Desk, Strategic Purchasing Division, 901 Bagby, Concourse Level, Houston, Texas 77002.

The place of the bid opening may be transferred in accordance with Paragraph (b), (5) of Section 15-3 of The Code of Ordinances, Houston, Texas. The bid-opening meeting may be rescheduled in accordance with Paragraph (b), (6) of said Section 15-3.

The City reserves the right to reject any or all bids or to accept any bid or combination of bids deemed advantageous to it.

City employees are prohibited from bidding on this solicitation in accordance with the Code of Ordinances Section 15-1.

***CONTENTS:**

- A. OFFER
- B. SCOPE OF WORK/SPECIFICATIONS
- C. GENERAL TERMS AND CONDITIONS, GENERAL, SUPPLEMENTAL CONDITIONS AND BOND FORMS

*NOTE 1: Actual page numbers for each section may change when the solicitation document is downloaded from the Internet or because of letters of clarification. Therefore, bidders must read the solicitation document in its entirety and comply with all the requirements set forth therein.

*NOTE 2: **To be considered for award please submit the electronic bid form and the forms listed in section A, including the signature page, which must be signed by a company official authorized to bind the company and a 10% Bid Bond.**

SECTION A



FORMAL ONE-TIME BID

**REPAIR OF PARKING GARAGE
FOR THE GENERAL SERVICES DEPARTMENT
Bid No. S50-C24804
NIGP Code: 913-75 / 913-94**

To The Honorable Mayor
and City Council Members
of the City of Houston, Texas (the "City"):

The undersigned hereby offers to provide services necessary to **Repair the Parking Garage, located at 611 Walker, Houston, TX for the General Services Department**, F.O.B. destination point Houston, Texas, in accordance with the City's Specifications and General Terms & Conditions and/or samples/drawings provided herein. When issued by the City of Houston, Letters of Clarification shall automatically become part of this bid document and shall supersede any previous specifications or provisions in conflict with Letters of Clarification. It is the responsibility of the bidder to ensure that it has obtained all such letters. By submitting a bid on this project, bidder shall be deemed to have received all Letters of Clarification and to have incorporated them into the bid.

The City may accept this bid offer by issuance of a Notice of Award Letter and/or a Purchase Order at any time on or before the 120th day following the day this Official Bid Form is opened by the City. This offer shall be irrevocable for 120 days after bid opening or for 90 days after City Council awards the bid, whichever comes last, but this period may be extended by written agreement of the parties.

The City reserves the right to INCREASE quantities during the twelve-month period following the issuance of the first purchase order subject to agreement in writing by the Prime Contractor/Supplier to honor the same bid price.

The City reserves the option, after bids are opened, to adjust the quantities listed on the electronic bid form upward or downward, subject to the availability of funds, and/or make award (s) on a line item basis.

SECTION A

Documents/forms must be downloaded from the City's Website
<http://www.houstontx.gov/purchasing/index.html>

Additional Required Forms to be Included with this bid:

In addition to the electronic Bid Form and the Official Signature Page, the Forms listed in Table 1 **must be completed and submitted to the Office of the City Secretary on or before the date and time the bid is due:**

Table 1
Affidavit of Ownership
Fair Campaign Ordinance
Statement of Residence
Conflict of Interest Questionnaire
10% Bid Bond
Contractor References / Questionnaire
Pay or Play Health Insurance Program Acknowledgement Form 1A

Table 2 lists other documents and forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will request these forms, as applicable, to be completed and submitted to the City by the recommended/successful bidder:

Table 2
Formal Instructions for Bid Terms
Drug Forms
Sample Insurance Certificate / Over \$50,000
Construction Insurance OCP
Construction 2012 Building Wage Decision
Pay or Play Certification of Agreement Form 2
Pay or Play Form 3 / List of all Subcontractors
Bonds for Construction

Note:

Questions concerning the Bid should be submitted in writing to: City of Houston, Strategic Purchasing Division, 901 Bagby, Room B506, Houston, TX 77002, Attn: Arturo Lopez or via fax: 832-393-8759 or via email (preferred method) to arturo.lopez@cityofhouston.net no later than **4:00 PM, Monday, December 9, 2013.**

Although it is the intent of the City to award one contract as a result of this invitation to bid, the City reserves the right to award by line item/group.

PERMITS:

Successful Contractor shall be responsible for securing any and all permits for proposed work. Any fee charged for these permits should be the responsibility of the Contractor and

not the City of Houston.

CITY BUILDING CODES:

All work performed or equipment installed shall be in strict accordance with the City of Houston Building Codes. The Contractor will immediately correct any deficiencies discovered during work or after completion. Failure to correct deficiencies will result in the City having corrections made at the Contractor's expense.

BID BOND:

The Contractor shall be required to provide and submit with the bid a Bid Bond in the amount of 10% of the total amount bid by the Contractor. The Bid Bond shall be in the same form as that distributed by the City, and attached hereto, all duly executed by this Bidder (as "Principal") and by a corporate surety company licensed to do business in the State of Texas, and if the amount of the bond is greater than \$100,000.00 the surety must hold a certificate of authority from the United States Secretary of the Treasury, or a Cashier's or a Certified check in a like amount. Company or personal checks are not acceptable.

PERFORMANCE BOND and PAYMENT BOND:

The successful Contractor(s) shall be required to provide a Performance and Payment Bond in the total amount (100%) of the Contract if the award is in excess of \$25,000.00.

The Performance and/or Payment Bond shall be in the same form as that distributed by the City, and attached hereto, all duly executed by this bidder (as "Principal") and by an incorporated surety company licensed to do business in the State of Texas. If the amount of the bond is greater than \$100,000.00 the surety must hold a certificate of authority from the United States Secretary of the Treasury.

The Contractor(s) shall be required to provide a Performance and/or Payment Bond as outlined above, which will be delivered to the City Purchasing Agent of the City, on or before the tenth (10th) day following the day the bidder receives notice from the City.

MAINTENANCE BOND:

The Contractor shall furnish a maintenance bond in the total (100%) bid amount in the form required by the City (samples attached). One bond, also referred to as the One Year Maintenance Bond, will be conditioned upon Contractor's repair, replacement or restoration of any work or any portion of the work which is found to be defective or fails in any way to comply strictly with this contract or the plans and specifications for such work within a period of one (1) year from the date of acceptance of such work by the City Council or after the date that the "CO", or his designee in writing, determines, in a written notice to the Contractor, to be the date upon which the project is both substantially complete and available for the full and beneficial occupancy or use of the City.

QUALITY AND WORKMANSHIP

The bidder must be able to demonstrate upon request that it has performed satisfactorily, services similar to the services specified herein. The bidder will provide records of warranty and repair services performed for others upon request. The City of Houston shall be the sole judge whether the services performed are similar to the scope of services specified herein.

SITE INSPECTION

The City of Houston reserves the right to inspect the bidder's current place of business to evaluate equipment condition and capabilities, staff experience, training and capabilities, and storage capabilities as they relate to the performance of this contract.

A protest shall comply with and be resolved, according to the City of Houston Procurement Manual http://purchasing.houstontx.gov/docs/Procurement_Manual.pdf and rules adopted thereunder. Protests shall be submitted in writing and filed with both, the City Attorney and the Solicitation contact person. A pre-award protest of the ITB shall be received five (5) days prior to the solicitation due date and a post-award protest shall be filed within five (5) days after City Council approval of the contract award.

A protest shall include the following:

- The name, address, e-mail, and telephone number of the protester;
- The signature of the protester or its representative who has the delegated authority to legally bind its company;
- Identification of the ITB description and the ITB or contract number;
- A detailed written statement of the legal and factual grounds of the protest, including copies of relevant documents, etc.; and
- The desired form of relief or outcome, which the protester is seeking

INTERLOCAL AGREEMENTS:

Under the same terms and conditions hereunder, the Contract may be expanded to other government entities through inter-local agreements between the City of Houston and the respective government entity that encompass all or part of the products/services provided under this contract. Separate contracts will be drawn to reflect the needs of each participating entity.

NO CONTACT PERIOD:

Neither bidder(s) nor any person acting on bidder(s)'s behalf shall attempt to influence the outcome of the award by the offer, presentation or promise gratuities, favors, or anything of value to any appointed or elected official or employee of the City of Houston, their families or staff members. All inquiries regarding the solicitation are to be directed to the designated City Representative identified on the first page of the solicitation. Upon issuance of the solicitation through the pre-award phase and up to the award, aside from bidder's formal response to the solicitation, communications publicly made during the official prebid conference, written requests for clarification during the period officially designated for such purpose by the City Representative, neither bidder(s) nor persons acting on their behalf shall communicate with any appointed or elected official or employee of the City of Houston, their families or staff through written or oral means in an attempt to persuade or influence the outcome of the award or to obtain or deliver information intended to or which could reasonably result in an advantage to any bidder. However, nothing in this paragraph shall prevent a bidder from making public statements to the City Council convened for a regularly scheduled session after the official selection has been made and placed on the City Council agenda for action.

HIRE HOUSTON FIRST:

Designation as a City Business or Local Business

To be designated as a City or Local Business for the purposes of the Hire Houston First

Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the **Hire Houston First Application and Affidavit (“HHF Affidavit”)** to the Director of the Mayor’s Office of Business Opportunities and receive notice that the submission has been approved prior to award of a contract. Bidders are encouraged to secure a designation prior to submission of a bid or proposal if at all possible.

Download the HHF Affidavit from the Office of Business Opportunities Webpage at the City of Houston e-Government Website at the following location:

<http://www.houstontx.gov/hbsc/hirehoustonfirstaffidavit.pdf>

Award of Procurement of \$100,000 or More for Purchase of Non-Professional Services , Including Construction Services:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE")

- IF THE BID OF THE LOCAL BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A LOCAL BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER

CONTRACTOR'S QUESTIONNAIRE

In order to receive bid award consideration, the bidder must be able to demonstrate that they are currently providing or have had at least one contract, similar in size and scope, for ***parking garage repairs*** that is similar in size and scope to this contract. **Bidder must have references documenting that it has performed parking garage repairs of a similar size and scope as stipulated in the scope of work / specifications and attendant drawings.** The reference(s) should be included in the space provided below. Please attach another piece of paper if necessary. If references are not included with the bid, the bidder shall be required to provide such references to the City of Houston within five working days from receipt of a written request from the City of Houston to do so. **Bidder's capability and experience shall be a factor in determining the Contractor's responsibility.**

1. Business Name: _____
Business Address: _____
City, State, Zip: _____
Name of Owner/Contact Person: _____
Phone: _____ Fax: _____ Email: _____
No. of Years providing Service to this business: _____

2. Business Name: _____
Business Address: _____
City, State, Zip: _____
Name of Owner/Contact Person: _____
Phone: _____ Fax: _____ Email: _____
No. of Years providing Service to this business: _____

3. Business Name: _____
Business Address: _____
City, State, Zip: _____
Name of Owner/Contact Person: _____
Phone: _____ Fax: _____ Email: _____
No. of Years providing Service to this business: _____

4. Business Name: _____
Business Address: _____
City, State, Zip: _____
Name of Owner/Contact Person: _____
Phone: _____ Fax: _____ Email: _____
No. of Years providing Service to this business: _____

SECTION B
SCOPE OF WORK/SPECIFICATIONS

1.0 General:

- 1.1 The Contractor shall be required to provide all materials, labor, equipment, transportation, insurance, permits, bonds and other services necessary to repair the parking garage at the, located at 611 Walker, Houston, TX, 77002. The scope of work includes, but is not limited to the following: concrete surface crack repairs; joint sealant replacement; cove sealant installation; gutter waterproofing repair; overhead slab repair; concrete beam repair; concrete wall repair; concrete floor repair; concrete joist repair; masonry tuck-pointing; concrete masonry repair; cleaning and coating corroded steel; steel beam repair; plaster wall repair in stairwells and epoxy injection.

2.0 Performance Time:

- 2.1 The Contractor shall have **90 calendar days** to order all supplies/equipment and complete all the work associated with and required by the contract after receipt of the written Notice to Proceed from the City.

3.0 Warranty:

- 3.1 The Contractor shall warranty all materials, equipment for **five years** and workmanship for **one year**.

DOCUMENT 00 01 05

TITLE/CERTIFICATION PAGE

PROJECT: 611 Walker Parking Garage Repairs

PROJECT NUMBER: Walter P. Moore Project No. D03.13024.01

ENGINEER: Walter P. Moore and Associates, Inc.
1301 McKinney, Suite 1100
Houston, TX 77010
Fax: (713) 630-7396

Project Manager
D. Grant Corley, P.E.
Walter P. Moore and Associates, Inc.
(713) 630-7312

TECHNICAL SPECIFICATIONS AND DRAWINGS

FOR

**611 WALKER PARKING GARAGE REPAIRS
HOUSTON, TEXAS**

WALTER P. MOORE AND ASSOCIATES, INC.

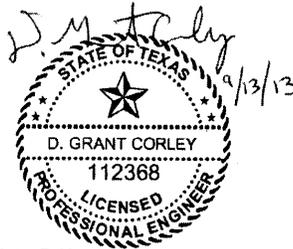
1301 McKinney, Suite 1100
Houston, TX 77010
(713) 630-7300

D03.13024.01

SECTION 00 01 07

SEALS PAGE

I HEREBY CERTIFY THAT THESE PLANS AND TECHNICAL SPECIFICATIONS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF TEXAS.



Walter P. Moore and Associates, Inc.
TBPE Firm Registration No. 1856

D. Grant. Corley, P.E. 112368

END OF SECTION 00 01 07

611 WALKER PARKING GARAGE REPAIRS
HOUSTON, TEXAS
WALTER P MOORE PROJECT NO. D03.13024.01

SEALS PAGE
00 01 07 - 1

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

Section 00 01 05 – Title/Certification Page

Section 00 01 07 – Seals Page

Section 00 01 10 – Table of Contents

DIVISION 01 - GENERAL REQUIREMENTS

Section 01 10 00 – Task Items

Section 01 11 00 – Summary of Work

Section 01 29 00 – Payment Procedures

Section 01 31 00 – Project Management and Coordination

Section 01 33 00 – Submittal Procedures

Section 01 45 00 – Quality Control

Section 01 73 29 – Cutting and Patching

Section 01 74 23 – Final Cleaning

Section 01 77 00 – Closeout Procedures

Section 01 78 36 – Product Warranties

DIVISION 03 – CONCRETE

Section 03 01 01 – Surface Preparation for Patching

Section 03 01 05 – Concrete Repair Materials

Section 03 10 00 – Concrete Forming and Accessories

Section 03 65 00 – Epoxy Related Work

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

Section 07 14 16 – Cold Fluid-Applied Waterproofing

Section 07 92 00 – Joint Sealants

END OF SECTION

SECTION 01 10 00

TASK ITEMS

PART 1 - GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General Conditions and Division-1 Specification sections, apply to work of this section.

1.2 TASK ITEM (T.I.) DESCRIPTION:

T.I. 1.1 PROJECT MOBILIZATION

A. Scope of Work

- 1. Work consists of coordinating, scheduling, obtaining and assembling at construction site all equipment, materials, permits, supplies, manpower and other essentials and incidentals necessary to perform Work defined in this Contract.

T.I. 1.2 CONCRETE FORMWORK

A. Scope of Work

- 1. Work consists of furnishing all labor, materials, equipment, supervision, and incidentals necessary to install shoring and formwork as required for cast-in-place concrete or trowel applied materials. Refer to Section "Concrete Forming and Accessories" for specific requirements. Work pertains particularly to Task Item 2.4 "Full Depth Concrete Floor Repair."

T.I. 2.3 PARTIAL DEPTH CONCRETE FLOOR REPAIR

A. Scope of Work

- 1. Work consists of furnishing all labor, materials, equipment, staging, formwork, supervision, and incidentals necessary to locate existing spalls, locate and remove full delaminated and unsound concrete from conventionally cast-in-place slab, prepare cavities, and install repair materials to restore concrete floor slab to original condition and appearance. Refer to Detail 1/S2.0 for specific requirements. Refer to Plan Sheets for location of work.

B. Materials

- 1. Material for repair areas shall be as specified in Section "Concrete Repair Materials."

C. Execution

- 1. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching." Marking will be done with methods approved by Engineer and Owner. The Contractor shall identify all critical repair work areas before starting the work.

2. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."
3. All steel exposed within cavities shall be cleaned to bare metal by abrasive methods or other approved methods as specified in Section "Surface Preparation for Patching."
4. Exposed steel shall be epoxy coated with an approved epoxy product as specified in Section "Surface Preparation for Patching."
5. The Contractor shall prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."
6. Patch installation procedures shall be in accordance with referenced specifications for selected material.

T.I. 2.4 FULL DEPTH CONCRETE FLOOR REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, shoring, formwork, supervision and incidentals necessary to locate and remove full depth delaminated concrete surfaces, form and install concrete slab to original condition and appearance. Refer to Detail 2/S2.0 for specific requirements. Refer to Plan Sheets for location of work.
2. Work for Task Item 1.2 "Concrete Formwork" and corresponding specification Section "Concrete Forming and Accessories" pertain primarily to work completed as part of Task Item 2.4.

B. Materials

1. Material for repair areas shall be as specified in Section "Concrete Repair Materials."

C. Execution

1. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching." Marking will be done with methods approved by Engineer and Owner. The Contractor shall identify all critical repair work areas before starting the work.
2. Install shoring as required to complete full depth concrete repair.
3. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."

4. All steel exposed within cavities shall be cleaned to bare metal by abrasive methods or other approved methods as specified in Section "Surface Preparation for Patching."
5. Exposed steel shall be epoxy coated with an approved epoxy product as specified in Section "Surface Preparation for Patching."
6. The Contractor shall form concrete with a approved materials and prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."
7. Patch installation procedures shall be in accordance with referenced specifications for selected material.

T.I. 2.6 CONCRETE CURB REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, staging, formwork, supervision and incidentals necessary to locate existing spalls, locate and remove full delaminated and unsound concrete from curbs, prepare cavities, and install repair materials to restore concrete floor slab to original condition and appearance. Refer to Detail 3/S2.0 for specific requirements. Refer to Plan Sheets for location of work.

B. Materials

1. Material for repair areas shall be as specified in Section "Concrete Repair Materials."

C. Execution

1. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching." Marking will be done with methods approved by Engineer and City. The Contractor shall identify all critical repair work areas before starting the work.
2. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."
3. All steel exposed within cavities shall be cleaned to bare metal by abrasive methods or other approved methods as specified in Section "Surface Preparation for Patching."
4. Exposed steel shall be epoxy coated with an approved epoxy product as specified in Section "Surface Preparation for Patching."
5. The Contractor shall prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."

6. Patch installation procedures shall be in accordance with referenced specifications for selected material.

T.I. 3.1 OVERHEAD SLAB REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision, scaffolding, shoring, and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare cavities, and install patching materials to restore slab to original condition and appearance. Refer to Detail 4/S2.0. Refer to Plan Sheets for location of work.

B. Materials

1. Material for repairs shall be as specified in Section "Concrete Repair Materials."

C. Execution

1. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching." The Contractor shall identify all critical repair work areas before starting the work.
2. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."
3. All steel exposed within cavities shall be cleaned to bare metal by abrasive methods as specified in Section "Surface Preparation for Patching."
4. Exposed steel shall be epoxy coated with an approved epoxy product as specified in Section "Surface Preparation for Patching."
5. The Contractor shall form concrete with approved materials and prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."
6. Patch installation procedures shall be in accordance with referenced specifications for selected material.

T.I. 3.5 ENCASED STEEL BEAM REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision, scaffolding, shoring, and incidentals necessary to locate and remove delaminated/spalled concrete, prepare cavities, and install patching materials to restore concrete beams to original condition and appearance. Refer to Detail 5/S2.0. Refer to Plan Sheets for location of work.

- B. Materials
 - 1. Material for repairs shall be as specified in Section "Concrete Repair Materials."
- C. Execution
 - 1. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching." The Contractor shall identify all critical repair work areas before starting the work.
 - 2. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."
 - 3. All steel exposed within cavities shall be cleaned to bare metal by abrasive methods as specified in Section "Surface Preparation for Patching."
 - 4. Exposed steel shall be epoxy coated with an approved epoxy product as specified in Section "Surface Preparation for Patching."
 - 5. The Contractor shall prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."
 - 6. Patch installation procedures shall be in accordance with referenced specifications for selected material.

T.I. 3.5A ENCASED STEEL BEAM REPAIR, OBSCURED

- A. Scope of Work
 - 1. Work consists of furnishing all labor, materials, equipment, supervision, scaffolding, shoring, and incidentals necessary to locate and remove materials obscuring concrete (such as wrapping constructed of rubber, foam or other material adhered to concrete surface), locate and remove delaminated/spalled concrete, prepare cavities, and install patching materials to restore concrete beams to original condition and appearance. Refer to Detail 6/S2.0. Refer to Plan Sheets for location of work.
- B. Materials
 - 1. Material for repairs shall be as specified in Section "Concrete Repair Materials."
- C. Execution
 - 1. Remove materials obscuring concrete surface. Contact Engineer for review prior to starting concrete demolition work.
 - 2. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching."

The Contractor shall identify all critical repair work areas before starting the work.

3. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."
4. All steel exposed within cavities shall be cleaned to bare metal by abrasive methods as specified in Section "Surface Preparation for Patching."
5. Exposed steel shall be epoxy coated with an approved epoxy product as specified in Section "Surface Preparation for Patching."
6. The Contractor shall prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."
7. Patch installation procedures shall be in accordance with referenced specifications for selected material.

T.I. 5.1 COLUMN REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, staging, signage, formwork, supervision, and incidentals necessary to locate existing spalls, locate and remove delaminated, unsound concrete, prepare cavities and place patching materials to restore concrete encased steel column to original condition and appearance. Refer to Detail 7/S2.0 for specific requirements. Refer to Plan Sheets for location of work.

B. Materials

1. Material for repair areas shall be as specified in Section "Concrete Repair Materials."

C. Execution

1. The Contractor shall locate and mark all work areas as specified in Section "Surface Preparation for Patching." Marking will be done with methods approved by Engineer and Owner. The Contractor shall identify all critical repair work areas before starting the work.
2. Procedure for delaminated, spalled, and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching."
3. All steel exposed within cavities shall be cleaned and coated in accordance with Section "Surface Preparation for Patching."

4. The Contractor shall prepare cavities for repair placement as specified in Section "Surface Preparation for Patching."
5. Install formwork and place patch material in accordance with referenced specifications for selected material.

T.I. 7.6 EPOXY INJECTION

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, staging, supervision and incidentals necessary to locate cracks prepare and inject approved cracks with epoxy resin. Refer to Plan Sheets for location of work.

B. Materials

1. Material for crack repairs shall be as specified in Section "Epoxy Related Work."

C. Execution

1. The Contractor shall locate all cracks to receive injection and report them to Engineer for verification.
2. Install repair materials in strict accordance with manufacturer's recommendations and referenced specifications for selected material.
3. At completion of the injection work, the Contractor shall remove injection ports, and repair the concrete profile to match existing conditions.

T.I. 7.14 REPLACE DRAIN PIPE

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to replace deteriorated drain pipe and connections. Refer to Detail 11/S2.0. Refer to Plan Sheets for location of work.

B. Materials

1. None.

C. Execution

1. Remove and replace in kind horizontal portion of drain piping as indicated in Detail 11/S2.0.
2. Route replacement drain piping to floor drain, similar to existing condition.

T.I. 7.15 GUTTER WATERPROOFING REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to repair existing deteriorated liquid-applied waterproofing and joint sealant at the joint between the building and garage inside the building gutter. Refer to Detail 8/S2.0 and 9/S2.0. Refer to Plan Sheets for location of work.

B. Materials

1. Material for waterproofing repairs shall be as specified in Section "Joint Sealants" and "Cold Fluid-Applied Waterproofing."

C. Execution

1. The Contactor shall locate all work areas within the building gutter.
2. Prepare cracks in gutter slab in accordance with Detail 8/S2.0.
3. Install joint sealant and waterproofing in accordance with Detail 9/S2.0.

T.I. 7.16 PLAZA WATERPROOFING REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to remove existing plaza pavers and grout bed, replace existing deteriorated waterproofing, and joint sealant at the joint between the building and garage. Refer to Detail 10/S2.0. Refer to Plan Sheets for location of work.

B. Materials

1. Material for waterproofing repairs shall be as specified in Section "Joint Sealants" and "Cold Fluid-Applied Waterproofing."
2. Granite paver stones (1" x 2'-6" x 2'-6") shall match existing texture and color. Contractor shall consult with owner for paver source and approval in the case that replacement pavers matching existing texture and color cannot be located.
3. Paver grout.

C. Execution

1. The Contactor shall locate all work areas within the building plaza.
2. Remove plaza pavers and grout bed in a manner that minimizes damage to adjacent finishes. Perform work in accordance with Detail 10/S.20.
3. Remove existing waterproofing membrane and prepare concrete surfaces by abrasive blasting.
4. Install joint sealant and waterproofing in accordance with Detail 10/S2.0.
5. Install new grout bed and new pavers to match existing.

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.2 Drawings and general provisions of Contract, including conditions included by Owner.

1.2 GENERAL DESCRIPTION OF WORK:

- 1.2.1 The Work of this Contract will be performed in the parking garage as shown on Drawings.
- 1.2.2 The Contractor shall be required to furnish all material, labor, tools, plant, supplies, permits, equipment, transportation, superintendence, barricades, temporary construction of every nature, insurance, taxes, contributions and all services and facilities, unless specifically excepted, and install all materials, items, and equipment required to complete the construction of the Project, as set forth in the Contract Documents.
- 1.2.3 Refer to Section “Task Items” for a description of work. Task Item specifications, details, and drawings shall govern all repair operations. Locations where Task Items apply are shown on Drawings as symbols.
- 1.2.4 Final Payment shall be made on basis of actual approved Work performed as measured in place.

1.3 MEASUREMENTS:

- 1.3.1 Before ordering any material or doing any Work, the Contractor shall verify all measurements at Project Site and shall be responsible for correctness of same.
- 1.3.2 Before proceeding with each Task Item, the Contractor shall locate, mark, and measure quantity of each item and report quantities to Engineer. If measured quantities exceed Engineer’s estimate, the Contractor shall obtain written authorization to proceed from the City before executing Work required for that Task Item.
- 1.3.3 Cost of Work included in each Task Item for quantities as indicated in Contract Documents shall be included in Base Bid.

1.4 WORK SEQUENCE:

- 1.4.1 Prior to commencement of Work, meet with Engineer and the City representatives to establish sequence and schedule of Work. Contractor shall give the City notice of areas to be cleared at least 7 working days in advance of actual Work.

- 1.4.2 The Contractor shall notify Owner's representative at least 24 hrs prior to commencing any abrasive blasting such as sandblasting, etc. operations.
- 1.4.3 Work will be conducted in phases to provide least possible interference to activities of Owner's personnel and facility users.
 - 1. The Contractor's work hours shall be limited to comply with noise ordinances. Contractor is allowed to work as necessary to complete work within the City's time schedule and conditions conducive to temperature sensitive materials.
- 1.4.4 The Contractor shall remove debris from Work area on daily basis and dispose of same at authorized sites.
- 1.4.5 The Contractor shall remove dust and air transported material from remainder of facility at conclusion of operations in Work area.

1.5 CONTRACTOR'S USE OF PREMISES:

- 1.5.1 Contractor shall limit his use of adjacent premises for Work, construction operations and for storage to allow for:
 - 1.5.1.1 Public use, including parking.
 - 1.5.1.2 Owner Occupancy:
 - 1.5.1.2.1 Where it is necessary for the Contractor to use portions of existing buildings and/or grounds for operations, such use shall be strictly in accordance with requirements and approval of the City.
 - 1.5.1.2.2 The Contractor shall organize his work in order that inconvenience to the people in the facility is minimized.
 - 1.5.1.2.3 Keep driveways and entrances serving the premises clear and available to the City and the City's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 - 1.5.1.2.4 Unless otherwise indicated or specified, or unless otherwise directed by the City; water, gas, lighting, power and telephone conduits and wires, sewer lines, and other surface and subsurface structures and lines, shall be maintained by the Contractor and shall not be disturbed, disconnected or damaged by him during progress of Work; provided that should the Contractor in performance of Work disturb, disconnect or damage any of above, expenses arising from disturbance or in replacing or repair shall be done by the Contractor.
 - 1.5.1.2.5 Elevators shall not be used for transfer of materials or equipment.
 - 1.5.1.3 Contractor shall:
 - 1.5.1.3.1 Not unreasonably encumber Site with materials and equipment.

- 1.5.1.3.2 Not load structure with weight that will endanger structure.
- 1.5.1.3.3 Assume full responsibility for protection and safekeeping of stored products.
- 1.5.1.3.4 Move stored products which interfere with operations of the City.
- 1.5.1.3.5 Obtain and pay for use of additional storage and work areas needed for operations.
- 1.5.1.4 Contractor Parking:
 - 1.5.1.4.1 The Contractor's personal vehicles shall park outside of construction area. Only vehicles equipment or delivering materials shall be in zone. Coordinate with City's representative.

1.6 OWNER OCCUPANCY:

- 1.6.1 Cooperate with the Owner's Representative in all construction operations to minimize conflict and to facilitate Owner usage.
- 1.6.2 Contractor shall at all times conduct his operations as to ensure the least inconvenience to the general public.

1.7 SURVEY OF EXISTING CONDITIONS:

- 1.7.1 The Contractor acknowledges by submitting a Bid, that he has visited and inspected the Project Site in which the Work is to be performed, that he has satisfied himself as to the nature and location of the Work, including any obstructions, amount of work, actual levels, the equipment and facilities needed preliminary to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under this Contract.
- 1.7.2 Failure by the Contractor to have acquainted himself with available information concerning Site conditions, including factors affecting costs and liabilities, shall not relieve the Contractor of responsibility for performance of Work in accordance with requirements of Contract Documents, and for amount of consideration named or otherwise determined.

1.8 INFORMATION OR CLARIFICATION OF CONDITIONS:

- 1.8.1 When the Contractor encounters condition requiring further information or a clarification, the Contractor shall submit to the City. The City will respond in writing with a letter of clarification to all R.F.I.'s.

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

1.2.1 This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS:

1.3.1 Schedule of Values: A statement furnished by the Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing the Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES:

1.4.1 Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1.4.1.1 Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

1.4.3.1.1 Application for Payment forms with Continuation Sheets.

1.4.2.1.2 Submittals Schedule.

1.4.2 Submit the Schedule of Values to Engineer at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

1.4.3 Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

1.4.4 Format and Content: Use the Project Manual Bid Form Task Items as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1.4.4.1 Identification: Include the following Project identification on the Schedule of Values:

1.4.4.1 Project name and location.

1.4.4.2 Name of Engineer.

1.4.4.3 Engineer's project number.

1.4.4.4 Contractor's name and address.

1.4.4.5 Date of submittal.

1.4.4.2 Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

1.4.4.2.1 Related Specification Section or Division.

1.4.4.2.2 Description of the Work.

1.4.4.2.3 Name of subcontractor.

1.4.4.2.4 Name of manufacturer or fabricator.

- 1.4.4.2.5 Name of supplier.
- 1.4.4.2.6 Change Orders (numbers) that affect value.
- 1.4.4.2.7 Dollar value.
 - 1.4.4.2.7.1 Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
- 1.4.4.3 Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
- 1.4.4.4 Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 1.4.4.5 Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
- 1.4.4.6 Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT:

- 1.5.1 Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the City.
 - 1.5.1.1 Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- 1.5.2 Payment Application Times: The date for each progress payment is the 15th day of each month or as otherwise directed by the Owner. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days before the date for each progress payment.
- 1.5.3 Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment or owner's approved forms.
- 1.5.4 Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
 - 1.5.4.1 Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.

- 1.5.4.1.2 Include amounts of Change Orders and Construction Change Directives issued before last day of
- 1.5.5 Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 - 1.5.5.1 Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- 1.5.6 Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors and suppliers for construction period covered by the previous application.
 - 1.5.6.1 Submit partial waivers on each item for amount requested, before deduction for retainage, on each item, if applicable.
 - 1.5.6.2 When an application shows completion of an item, submit final or full waivers.
 - 1.5.6.3 The City reserves the right to designate which entities involved in the Work must submit waivers.
 - 1.5.6.4 Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanic's lien for construction period covered by the application.
 - 1.5.6.4.1 Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application that is lawfully entitled to a lien.
 - 1.5.6.5 Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- 1.5.7 Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1.5.7.1 List of subcontractors.
 - 1.5.7.2 Schedule of Values.
 - 1.5.7.3 The Contractor's Construction Schedule (preliminary if not final).
 - 1.5.7.4 Products list.
 - 1.5.7.5 Schedule of unit prices.
 - 1.5.7.6 Submittals Schedule (preliminary if not final).
 - 1.5.7.7 List of Contractor's staff assignments.

- 1.5.7.8 List of Contractor's principal consultants.
 - 1.5.7.9 Copies of building permits.
 - 1.5.7.10 Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 1.5.7.11 Initial progress report.
 - 1.5.7.12 Report of preconstruction conference.
 - 1.5.7.13 Certificates of insurance and insurance policies.
 - 1.5.7.14 Initial settlement survey and damage report if required.
- 1.5.8 Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
- 1.5.8.1 Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - 1.5.8.2 This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- 1.5.9 Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
- 1.5.9.1 Evidence of completion of Project closeout requirements.
 - 1.5.9.2 Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 1.5.9.3 Updated final statement, accounting for final changes to the Contract Sum.
 - 1.5.9.4 AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 - 1.5.9.5 AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 - 1.5.9.6 Evidence that claims have been settled.
 - 1.5.9.7 Final, liquidated damages settlement statement.

PART TWO - PRODUCTS (Not Applicable)

PART THREE - EXECUTION (Not applicable)

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

- 1.2.1.1 General project coordination procedures.
- 1.2.1.1 Coordination Drawings.
- 1.2.1.2 Administrative and supervisory personnel.
- 1.2.1.3 Project meetings.

- 1.2.2 Related Sections: The following Sections contain requirements that relate to this Section:

- 1.2.2.1 Division 01 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION:

- 1.3.1 Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

- 1.3.1.1 Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
- 1.3.1.2 Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
- 1.3.1.3 Make adequate provisions to accommodate items scheduled for later installation.

- 1.3.2 If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

- 1.3.2.1 Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

- 1.3.3 Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

- 1.3.3.1 Preparation of Contractor's Construction Schedule.
- 1.3.3.2 Preparation of the Schedule of Values.

- 1.3.3.3 Installation and removal of temporary facilities and controls.
- 1.3.3.4 Delivery and processing of submittals.
- 1.3.3.5 Progress meetings.
- 1.3.3.6 Pre-installation conferences.
- 1.3.3.7 Project closeout activities.

1.4 SUBMITTALS:

1.4.1 Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1.4.1.1 Indicate relationship of components shown on separate Shop Drawings.

1.4.1.2 Indicate required installation sequences.

1.4.2 Staff Names: Within 15 days of starting construction operations, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, e-mail addresses, and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1.4.2.1 Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

1.5.1 General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.6 PROJECT MEETINGS:

1.6.1 General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1.6.1.1 Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.

1.6.1.2 Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

1.6.1.3 Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including the City and the Engineer, within 3 days of the meeting.

1.6.2 Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to the City and the Engineer, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

- 1.6.2.1 Attendees: Authorized representatives of the City, Engineer and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
- 1.6.2.2 Agenda: Discuss items of significance that could affect progress, including the following:
 - 1.6.2.2.1 Tentative construction schedule.
 - 1.6.2.2.2 Phasing.
 - 1.6.2.2.3 Critical work sequencing.
 - 1.6.2.2.4 Designation of responsible personnel.
 - 1.6.2.2.5 Procedures for processing field decisions and Change Orders.
 - 1.6.2.2.6 Procedures for processing Applications for Payment.
 - 1.6.2.2.7 Distribution of the Contract Documents.
 - 1.6.2.2.8 Submittal procedures.
 - 1.6.2.2.9 Preparation of Record Documents.
 - 1.6.2.2.10 Use of the premises.
 - 1.6.2.2.11 Responsibility for temporary facilities and controls.
 - 1.6.2.2.12 Parking availability.
 - 1.6.2.2.13 Office, work, and storage areas.
 - 1.6.2.2.14 Equipment deliveries and priorities.
 - 1.6.2.2.15 First aid.
 - 1.6.2.2.16 Security.
 - 1.6.2.2.17 Progress cleaning.
 - 1.6.2.2.18 Working hours.
- 1.6.3 Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
 - 1.6.3.1 Attendees: In addition to representatives of the City and the Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 1.6.3.2 Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could

affect progress. Include topics for discussion as appropriate to status of Project.

1.6.3.2.1 Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1.6.3.2.2 Review present and future needs of each entity present, including the following:

1.6.3.2.2.1 Sequence of operations.

1.6.3.2.2.2 Status of submittals.

1.6.3.2.2.3 Access.

1.6.3.2.2.4 Site utilization.

1.6.3.2.2.5 Temporary facilities and controls.

1.6.3.2.2.6 Work hours.

1.6.3.2.2.7 Hazards and risks.

1.6.3.2.2.8 Progress cleaning.

1.6.3.2.2.9 Quality and work standards.

1.6.3.2.2.10 Change Orders.

1.6.3.2.2.11 Documentation of information for payment requests.

1.6.4 Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

1.6.4.1 Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.6.5 Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work

1.6.6 Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

END OF SECTION
SECTION 01 33 00
SUBMITTAL PROCEDURES

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
- 1.2.2 Related Sections include the following:
 - 1.2.2.1 Division 01 Section "Payment Procedures."
 - 1.2.2.2 Division 01 Section "Project Management and Coordination" for submitting Coordination Drawings.
 - 1.2.2.3 Division 01 Section "Quality Control" for submitting test and inspection reports and Delegated-Design Submittals.
 - 1.2.2.4 Division 01 Section "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS:

- 1.3.1 Action Submittals: Written and graphic information that requires Engineer's responsive action.
- 1.3.2 Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES:

- 1.4.1 Resubmittals: Engineer will review each of the Contractor's shop drawings and/or submittal data the initial time and, should resubmittal be required, one additional time to verify that reasons for resubmittal have been addressed by the Contractor and corrections made. Resubmittal changes/revisions/corrections shall be circled. Engineer will review only circled items and will not be responsible for non-circled changes/revisions/corrections and additions. Should additional resubmittals be required, the Contractor shall reimburse the City for all costs incurred, including the cost of Engineer's services made necessary to review such additional resubmittals. The City will in turn reimburse Engineer.
- 1.4.2 General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Engineer for Contractor's use in preparing submittals.
- 1.4.3 Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

- 1.4.3.1 Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
- 1.4.3.2 Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - 1.4.3.2.1 Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- 1.4.4 Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.
 - 1.4.4.1 Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
- 1.4.5 Identification: Place a permanent label or title block on each submittal for identification.
 - 1.4.5.1 Indicate name of firm or entity that prepared each submittal on label or title block.
 - 1.4.5.2 Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer [and Construction Manager].
 - 1.4.5.3 Include the following information on label for processing and recording action taken:
 - 1.4.5.3.1 Project name.
 - 1.4.5.3.2 Date.
 - 1.4.5.3.3 Name and address of Engineer.
 - 1.4.5.3.4 Name and address of Contractor.
 - 1.4.5.3.5 Name and address of subcontractor.
 - 1.4.5.3.6 Name and address of supplier.
 - 1.4.5.3.7 Name of manufacturer.
 - 1.4.5.3.8 Unique identifier, including revision number.
 - 1.4.5.3.9 Number and title of appropriate Specification Section.
 - 1.4.5.3.10 Drawing number and detail references, as appropriate.

1.4.5.3.11 Other necessary identification.

- 1.4.6 Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- 1.4.7 Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
 - 1.4.7.1 All submittals must be electronically stamped by the General Contractor. The Contractor shall provide the submittals in electronic portable document format (PDF).
 - 1.4.7.2 Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- 1.4.8 Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review, received from sources other than the Contractor.
 - 1.4.8.1 On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
 - 1.4.8.2 Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
 - 1.4.8.3 Transmittal Form: Provide locations on form for the following information:
 - 1.4.8.3.1 Project name.
 - 1.4.8.3.2 Date.
 - 1.4.8.3.3 Destination (To :).
 - 1.4.8.3.4 Source (From :).
 - 1.4.8.3.5 Names of subcontractor, manufacturer, and supplier.
 - 1.4.8.3.6 Category and type of submittal.
 - 1.4.8.3.7 Submittal purpose and description.
 - 1.4.8.3.8 Submittal and transmittal distribution record.
 - 1.4.8.3.9 Remarks.
 - 1.4.8.3.10 Signature of transmitter.
- 1.4.9 Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, and installer's authorities having

jurisdiction and others as necessary for performance of construction activities. Show distribution on transmittal forms.

- 1.4.10 Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART TWO – PRODUCTS:

2.1 ACTION SUBMITTALS:

- 2.1.1 General: Prepare and submit Action Submittals required by individual Specification Sections.

- 2.1.1.1 Number of Copies: All submittals must be electronically stamped by the General Contractor. Mark up and retain one returned copy as a Project Record Document. Contractor shall provide the submittals in electronic portable document format (PDF).

- 2.1.2 Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

- 2.1.2.1 If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

- 2.1.2.2 Mark each copy of each submittal to show which products and options are applicable.

- 2.1.2.3 Include the following information, as applicable:

- 2.1.2.3.1 Manufacturer's written recommendations.

- 2.1.2.3.2 Manufacturer's product specifications.

- 2.1.2.3.3 Manufacturer's installation instructions.

- 2.1.2.3.4 Standard color charts.

- 2.1.2.3.5 Manufacturer's catalog cuts.

- 2.1.2.3.6 Mill reports.

- 2.1.2.3.7 Standard product operating and maintenance manuals.

- 2.1.2.3.8 Compliance with recognized trade association standards.

- 2.1.2.3.9 Compliance with recognized testing agency standards.

- 2.1.2.3.10 Application of testing agency labels and seals.

- 2.1.2.3.11 Notation of coordination requirements.

2.2 INFORMATIONAL SUBMITTALS:

- 2.2.1 General: Prepare and submit Informational Submittals required by other Specification Sections.

- 2.2.1.1 Number of Copies: All submittals must be electronically stamped by the General Contractor. Contractor shall provide the submittals in electronic portable document format (PDF).
- 2.2.1.2 Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- 2.2.1.3 Test and Inspection Reports: Comply with requirements in Division 01 Section "Quality Control."
- 2.2.2 Contractor's Construction Schedule: Provide Level 3 Schedule with progress monitoring and project control level unless Owner has more stringent scheduling requirements.
- 2.2.3 Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Engineers and owners, and other information specified.
- 2.2.4 Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.
- 2.2.5 Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- 2.2.6 Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- 2.2.7 Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
- 2.2.8 Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
- 2.2.9 Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.
- 2.2.10 Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- 2.2.11 Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.
- 2.2.12 Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on

evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

- 2.2.13 Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 01 Section "Closeout Procedures."
- 2.2.14 Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - 2.2.14.1 Preparation of substrates.
 - 2.2.14.2 Required substrate tolerances.
 - 2.2.14.3 Sequence of installation or erection.
 - 2.2.14.4 Required installation tolerances.
 - 2.2.14.5 Required adjustments.
 - 2.2.14.6 Recommendations for cleaning and protection.
- 2.2.15 Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 2.2.15.1 Name, address, and telephone number of factory-authorized service representative making report.
 - 2.2.15.2 Statement on condition of substrates and their acceptability for installation of product.
 - 2.2.15.3 Statement that products at Project site comply with requirements.
 - 2.2.15.4 Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 2.2.15.5 Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 2.2.15.6 Statement whether conditions, products, and installation will affect warranty.
 - 2.2.15.7 Other required items indicated in individual Specification Sections.

2.3 REQUESTS FOR INFORMATION:

- 2.3.1 Engineer reserves the right to reject, unprocessed, any RFI that the Engineer, at its sole discretion, deems already answered in the Contract Documents.

PART THREE – EXECUTION:

3.1 CONTRACTOR'S REVIEW:

- 3.1.1 Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- 3.1.2 Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section specifies administrative and procedural requirements for quality control services.
- 1.2.2 Quality control services include inspections, tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by Engineer.
- 1.2.3 Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- 1.2.4 Related Sections: Following Sections contain requirements that relate to this Section:
 - 1.2.4.1 Division 01 Section "Cutting and Patching" specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.
 - 1.2.4.2 Division 01 Section "Submittal Procedures" specifies requirements for development of a schedule of required tests and inspections.

1.3 RESPONSIBILITIES:

- 1.3.1 Contractor Responsibilities:
 - 1.3.1.1 Retesting: Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.

- 1.3.1.1.1 Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
- 1.3.1.2 Associated Services: Cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
 - 1.3.1.2.1 Provide access to the Work.
 - 1.3.1.2.2 Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 - 1.3.1.2.3 Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 - 1.3.1.2.4 Provide facilities for storage and curing of test samples.
 - 1.3.1.2.5 Deliver samples to testing laboratories.
 - 1.3.1.2.6 Provide the agency with a preliminary design mix proposed for use for material mixes that require control by the testing agency.
 - 1.3.1.2.7 Provide security and protection of samples and test equipment at the Project Site.
- 1.3.2 City Responsibilities: The City will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity. Costs for these services are not included in the Contract Sum.
 - 1.3.2.1 The City will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the City's responsibility.
- 1.3.3 Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 - 1.3.3.1 The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.4 SUBMITTALS:

- 1.4.1 Testing Agency shall submit a certified written report of each inspection, test or similar service, to Engineer, in duplicate, unless Contractor is responsible for the service. If Contractor is responsible for the service,

submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.

- 1.4.1.1 Submit additional copies of each written report directly to the governing authority, when the authority so directs.
- 1.4.1.2 Report Data: Written reports of each inspection test or similar service shall include, but not be limited to:
 - 1.4.1.2.1 Date of issue.
 - 1.4.1.2.2 Project title and number.
 - 1.4.1.2.3 Name, address and telephone number of testing agency.
 - 1.4.1.2.4 Dates and locations of samples and tests or inspections.
 - 1.4.1.2.5 Names of individuals making the inspection or test.
 - 1.4.1.2.6 Designation of the Work and test method.
 - 1.4.1.2.7 Identification of product and Specification Section.
 - 1.4.1.2.8 Complete inspection or test data.
 - 1.4.1.2.9 Test results and interpretations of test results.
 - 1.4.1.2.10 Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
 - 1.4.1.2.11 Name and signature of laboratory inspector.
 - 1.4.1.2.12 Recommendations on retesting.

1.5 QUALITY ASSURANCE:

- 1.5.1 Qualification for Testing Agencies: Engage testing agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 - 1.5.1.1 Each independent testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

PART TWO - PRODUCTS (Not Applicable):

PART THREE – EXECUTION:

1.4 REPAIR AND PROTECTION:

- 1.3.1 General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

- 1.3.2 Protect construction exposed by or for quality control service activities, and protect repaired construction.
- 1.3.3 Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section includes procedural requirements for cutting and patching.
- 1.2.2 Related Sections include the following:
 - 1.2.2.1 Divisions 02 through 07 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS:

- 1.3.1 Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- 1.3.2 Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS:

- 1.4.1 Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1.4.1.1 Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 1.4.1.2 Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 1.4.1.3 Products: List products to be used and firms or entities that will perform the Work.
 - 1.4.1.4 Dates: Indicate when cutting and patching will be performed.
 - 1.4.1.5 Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

1.4.1.6 Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

1.4.1.7 Engineer's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE:

1.5.1 Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1.5.2 Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or those results in increased maintenance or decreased operational life or safety.

1.5.3 Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

1.5.4 Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.6 WARRANTY:

1.6.1 Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART TWO – PRODUCTS:

2.1 MATERIALS:

2.1 General: Comply with requirements specified in other Sections of these Specifications.

2.2 Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

2.2.1 If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART THREE – EXECUTION:

3.1 EXAMINATION:

3.1.1 Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

- 3.1.1.1 Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- 3.1.1.2 Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION:

- 3.2.1 Temporary Support: Provide temporary support of Work to be cut.
- 3.2.2 Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- 3.2.3 Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- 3.2.4 Existing Services: Where existing services are required to be removed, relocated, or abandoned bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE:

- 3.3.1 General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 3.3.1.1 Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- 3.3.2 Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 3.3.2.1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 3.3.2.2 Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3.3.2.3 Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 3.3.2.4 Proceed with patching after construction operations requiring cutting are complete.
- 3.3.3 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and

comply with installation requirements specified in other Sections of these Specifications.

3.3.3.1 Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

3.3.3.2 Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

END OF SECTION

SECTION 01 74 23

FINAL CLEANING

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

1.2.1 This Section specifies administrative and procedural requirements for final cleaning at Substantial Completion.

1.2.1.1 Special cleaning requirements for specific elements of Work are included in appropriate Sections of Divisions 02 through 07.

1.2.2 General Project closeout requirements are included in Section "Closeout Procedures."

1.2.3 Environmental Requirements: Conduct cleaning and waste disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.

1.2.3.1 Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.

1.2.3.2 Burning or burying of debris, rubbish or other waste material on the premises will not be permitted.

PART TWO – PRODUCTS:

2.1 MATERIALS:

2.1.1 Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

PART THREE – EXECUTION:

3.1 FINAL CLEANING:

3.1.1 General: Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from commercial

building cleaning and maintenance program. Comply with manufacturer's instructions.

- 3.1.1.1 Clean Project site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
- 3.1.1.2 Remove tools, construction equipment, machinery and surplus material from the site.
- 3.1.1.3 Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- 3.1.1.4 Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
- 3.1.1.5 Broom clean concrete floors in unoccupied spaces.
- 3.1.1.6 Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- 3.1.1.7 Remove labels that are not permanent labels.
- 3.1.1.8 Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
- 3.1.1.9 Wipe surfaces of mechanical and electrical equipment, elevator equipment and similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.
- 3.1.1.10 Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- 3.1.1.11 Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
- 3.1.1.12 Leave Project clean and ready for occupancy.

- 3.1.2 Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction period.

- 3.1.3 Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of in a lawful manner.
 - 3.1.3.1 Where extra materials of value remain after completion of associated construction has become the City's property, dispose of these materials as directed.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1.2.1.1 Inspection procedures.
 - 1.2.1.2 Submittal of warranties.
 - 1.2.1.3 Final cleaning.
- 1.2.2 Closeout requirements for specific construction activities are included in appropriate Sections in Divisions 02 through 07.

1.3 SUBSTANTIAL COMPLETION:

- 1.3.1 Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete following. List exceptions in request.
 - 1.3.1.1 In Application for Payment that coincides with, or first follows, date Substantial Completion is claimed, show 100% completion for portion of Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and statement showing an accounting of changes to Contract Sum.
 - 1.3.1.1.1 If 100% completion cannot be shown, include list of incomplete items, value of incomplete construction, and reasons Work is not complete.
 - 1.3.1.2 Advise the City of pending insurance change-over requirements.
 - 1.3.1.3 Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 1.3.1.4 Obtain and submit releases enabling Owner unrestricted use of Work and access to services and utilities; include

occupancy permits, operating certificates and similar releases.

- 1.3.1.5 Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
- 1.3.1.6 Deliver tools, spare parts, extra stock, and similar items.
- 1.3.1.7 Make final change-over of permanent locks and transmit keys to the City. Advise the City's personnel of change-over in security provisions.
- 1.3.1.8 Complete start-up testing of systems, and instruction of Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from site, along with construction tools, mock-ups, and similar elements.

1.3.2 Inspection Procedures: On receipt of request for inspection, Engineer will either proceed with inspection or advise Contractor of unfilled requirements. Engineer will prepare Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before certificate will be issued.

- 1.3.2.1 Engineer will repeat inspection when requested and assured that Work has been substantially completed.
- 1.3.2.2 Engineer will provide one repeat inspection under its contract with the City. Subsequent inspections shall be at the Contractor's expense.
- 1.3.2.3 Results of completed inspection will form basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE:

1.4.1 Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in request.

- 1.4.1.1 Submit final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
- 1.4.1.2 Submit an updated final statement, accounting for final additional changes to Contract Sum.
- 1.4.1.3 Submit certified copy of the Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and list has been endorsed and dated by the Engineer.
- 1.4.1.4 Submit consent of surety to final payment.
- 1.4.1.5 Submit final liquidated damages settlement statement.
- 1.4.1.6 Submit evidence of final, continuing insurance coverage complying with insurance requirements.

PART TWO – PRODUCTS (Not Applicable):

PART THREE – EXECUTION:

3.1 CLOSEOUT PROCEDURES:

- 3.1.1 Operating and Maintenance Instructions: Arrange for each installer of equipment or materials that require regular maintenance to meet with Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives.

END OF SECTION

SECTION 01 78 36

PRODUCT WARRANTIES

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section includes administrative and procedural requirements for warranties required by Contract Documents, including manufacturers' standard warranties on products and special warranties.

- 1.2.1.1 Refer to General Conditions for terms of Contractor's period for correction of Work.

- 1.2.2 Related Sections: Following Sections contain requirements that relate to this Section:

- 1.2.2.1 Division 01 Section "Submittal Procedures" specifies procedures for submitting warranties.

- 1.2.2.2 Division 01 Section "Closeout Procedures" specifies contract closeout procedures.

- 1.2.2.3 Divisions 02 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

- 1.2.2.4 Certifications and other commitments and agreements for continuing services to the City are specified elsewhere in Contract Documents.

- 1.2.3 Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of warranty on Work that incorporates products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 WARRANTY REQUIREMENTS:

- 1.3.1 Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been

damaged as result of such failure or must be removed and replaced to provide access for correction of warranted construction.

- 1.3.2 Reinstatement of Warranty: When Work covered by warranty has failed and been corrected by replacement or rebuilding, reinstate warranty by written endorsement. Reinstated warranty shall be equal to original warranty with equitable adjustment for depreciation.
- 1.3.3 Replacement Cost: Upon determination that Work covered by warranty has failed replace or rebuild Work to an acceptable condition complying with requirements of Contract Documents. Contractor is responsible for cost of replacing or rebuilding defective Work regardless of whether Owner has benefited from use of Work through portion of its anticipated useful service life.
- 1.3.4 City's Recourse: Expressed warranties made to Owner are in addition to implied warranties, and shall not limit duties, obligations, rights and remedies otherwise available under law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1.3.4.1 Rejection of Warranties: Owner reserves right to reject warranties and to limit selection to products with warranties not in conflict with requirements of Contract Documents.
- 1.3.5 Where Contract Documents require a special warranty, or similar commitment on Work or part of Work, the City reserves the right to refuse to accept Work, until Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.4 SUBMITTALS:

- 1.4.1 Submit written warranties to Engineer prior to date certified for Substantial Completion. If Engineer's Certificate of Substantial Completion designates commencement date for warranties other than date of Substantial Completion for Work, or designated portion of Work, submit written warranties upon request of Engineer.
- 1.4.2 When designated portion of Work is completed and occupied or used by the City, by separate agreement with Contractor during construction period, submit properly executed warranties to Engineer within 15 days of completion of that designated portion of Work.
 - 1.4.2.1 When Contract Documents require Contractor, or Contractor and subcontractor, supplier or manufacturer to execute a special warranty, prepare written document that contains appropriate terms and identification, ready for execution by required parties. Submit draft to the City through Engineer/Architect for approval prior to final execution.
- 1.4.3 Prepare written document utilizing appropriate form, ready for execution by the Contractor, or by the Contractor and subcontractor, supplier or manufacturer. Submit draft to the City through Engineer for approval prior to final execution.
 - 1.4.3.1 Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submittal of special warranties

- 1.4.4 Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents and sized to receive 8.5 in. by 11in. paper.
 - 1.4.4.1 Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark tab to identify product or installation. Provide typed description of product or installation, including name of product, and name, address and telephone number of Installer.
 - 1.4.4.2 Identify each binder on front and spine with typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
 - 1.4.4.3 When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF SECTION

SECTION 01 74 23

FINAL CLEANING

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- 1.2.1 This Section specifies administrative and procedural requirements for final cleaning at Substantial Completion.
 - 1.2.1.1 Special cleaning requirements for specific elements of Work are included in appropriate Sections of Divisions 02 through 07.
- 1.2.2 General Project closeout requirements are included in Section "Closeout Procedures."
- 1.2.3 Environmental Requirements: Conduct cleaning and waste disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.
 - 1.2.3.1 Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.
 - 1.2.3.2 Burning or burying of debris, rubbish or other waste material on the premises will not be permitted.

PART TWO – PRODUCTS:

2.2 MATERIALS:

- 2.1.1 Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

PART THREE – EXECUTION:

3.1 FINAL CLEANING:

- 3.1.1 General: Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 - 3.1.1.1 Clean Project site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
 - 3.1.1.2 Remove tools, construction equipment, machinery and surplus material from the site.
 - 3.1.1.3 Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - 3.1.1.4 Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
 - 3.1.1.5 Broom clean concrete floors in unoccupied spaces.
 - 3.1.1.6 Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - 3.1.1.7 Remove labels that are not permanent labels.
 - 3.1.1.8 Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
 - 3.1.1.9 Wipe surfaces of mechanical and electrical equipment, elevator equipment and similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.

- 3.1.1.10 Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- 3.1.1.11 Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
- 3.1.1.12 Leave Project clean and ready for occupancy.
- 3.1.2 Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction period.
- 3.1.3 Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of in a lawful manner.
 - 3.1.3.1 Where extra materials of value remain after completion of associated construction has become the City's property, dispose of these materials as directed.

END OF SECTION

SECTION 03 01 01

SURFACE PREPARATION FOR PATCHING

PART ONE – GENERAL:

1.1 SUMMARY:

- 1.1.1 This Section includes the provisions of all labor, materials, supervision and incidentals required to locate and remove all delaminated and unsound concrete, including preparation of cavities created by removal to receive patching material and preparation of existing surface spalls to receive patching material.
- 1.1.2 Related Sections include the following:
 - 1.1.2.1 Division 03 Section "Concrete Repair Materials."
- 1.1.3 The Contractor shall fully acquaint himself with the existing job site conditions and discuss the accessibility of the work areas with the City.
- 1.1.4 Provide barricades around the work area with appropriate signage to keep non-construction people from entering work area.
- 1.1.5 The Contractor shall provide all traffic cones or barriers to direct traffic during the repair of the facility. This work shall be done in consultation with the City.

1.2 REFERENCES:

- 1.2.1 Applicable Standards:
 - 1.2.1.1 American Concrete Institute (ACI), latest version:
 - ACI 301 Specifications for Structural Concrete
 - ACI 546R Concrete Repair Guide

PART TWO – PRODUCTS:

2.1 PRODUCTS AND MANUFACTURERS:

- 2.1.1 Epoxy Coating for existing exposed non-prestressed steel reinforcement:
 - 2.1.1.1 BASF: Emaco P24
 - 2.1.1.2 Sika Chemical Corporation: Armatec 110
 - 2.1.1.3 Euclid Chemical: Duralprep A.C.
- 2.1.2 Substitutions may be considered provided complete technical information and job references are furnished to the Owner/Engineer and approved prior to commencement of work.
- 2.1.3 Changes in products required to suit temperature and environmental conditions at the time of material application shall be specified as separate line items by the Contractor showing credit or additions to the price for the various tasks.
- 2.1.4 In using the above products, follow strictly the manufacturer's specifications and directions for mixing and application. Also heed all label warnings by manufacturer. Make application in accordance with applicable safety laws.

PART THREE – EXECUTION:

3.1 INSPECTION:

- 3.1.1 Horizontal Surfaces
 - 3.1.1.1 The Contractor shall sound all designated floor areas for delaminations.
- 3.1.2 Vertical and Overhead Surfaces
 - 3.1.2.1 The Contractor shall sound only vertical and overhead surfaces in designated areas that show evidence of cracking and/or staining. Cracks, usually horizontal in orientation along beam faces, and vertical in orientation near column corners are indicators of delaminated concrete.
- 3.1.3 Delaminated areas: Once located by the Contractor, the Contractor shall further sound and mark them to define limits.
- 3.1.4 Spalls: Contractor shall locate spalls by visual inspection, and mark boundaries.
- 3.1.5 Engineer may mark additional unsound concrete for removal.
- 3.1.6 Areas to be removed shall be rectangular to provide adequate appearance.
- 3.1.7 The Contractor shall locate and determine the depth of all embedded reinforcement and electrical conduit in repair area and mark these locations for reference during concrete removal. Do not cut any embeds unless approved by Engineer.

3.2 REPAIR PREPARATION:

- 3.2.1 The Contractor shall review all marked removal and preparation areas and request clarification by Engineer of shoring requirements in questionable areas. Shores shall be in place prior to concrete removal and cavity preparation in any area requiring shores.
- 3.2.2 All delaminated, spalled and unsound concrete shall be removed from within marked boundary to minimum depth of $\frac{3}{4}$ " using 15 to 30 lb. air hammers equipped with chisel point bits. When directed by Engineer, chipping hammers less than 15 lb. shall be used to minimize damage to sound concrete. If delaminations exist beyond minimum removal depth, chipping shall continue until all unsound and delaminated concrete has been removed from cavity.
- 3.2.3 Where embedded reinforcement, anchorages, or electrical conduit is exposed by concrete removal, proceed with caution to avoid damaging it during removal of unsound concrete. If bond between exposed embedded reinforcement/anchorages and adjacent concrete is impaired by the Contractor's removal operation, the Contractor shall perform additional removal around and beyond perimeter of reinforcement for minimum of $\frac{3}{4}$ " along entire length affected at no cost to the City.
- 3.2.4 Large areas requiring the removal of a thin layer of concrete shall be treated with other methods such as hydrodemolition.
- 3.2.5 Necessary approvals shall be obtained by the Contractor from authorizing governmental or other agencies prior to abrasive-blasting. Abrasive-blasting operations shall comply with the requirements of OSHA and NIOSH (National Institute for Occupational Safety and Health) Standard PB-246-697.
- 3.2.6 If rust is present on embedded reinforcement where it enters sound concrete, additional removal of concrete along and beneath reinforcement will be required. Additional removal shall continue until non-rusted reinforcement is exposed, or may be terminated per Engineer's instructions.
- 3.2.7 Removal of concrete for repair requires saw cutting $\frac{3}{4}$ " into floor slab of the perimeter of the removal, unless a more stringent criteria applies. For vertical and overhead surfaces marked areas shall be saw-cut, ground, or chipped to depth of $\frac{1}{2}$ " to existing concrete, measured from original surface.
- 3.2.8 Edges of patch areas shall be dressed perpendicular to member face to eliminate feather edges. All edges shall be straight and patch areas square or rectangular-shaped.
- 3.2.9 The Contractor shall exercise extra caution during saw cutting to avoid damaging existing reinforcement particularly post-tensioned tendons, sheathing, electrical conduit and any other embedded items near surface of concrete. Any damage to existing embedded items shall be repaired by the Contractor with Engineer's approved methods at no additional cost to the City.

3.3 INSPECTION OF REPAIR PREPARATION:

- 3.3.1 After removals are complete, but prior to final cleaning, cavity and exposed reinforcement shall be inspected by Contractor and subject to verification by Engineer for compliance with requirements of this Section.
- 3.3.2 The Contractor shall inspect embedded reinforcement and conduits exposed within cavity for defects due to corrosion or damage resulting from removal operations. The Contractor shall notify Engineer of all defective and damaged reinforcement or conduits. Replacement of damaged or defective reinforcement/conduits shall be performed in accordance to the requirements of this Section.

3.4 CLEANING OF REINFORCEMENT:

- 3.4.1 All exposed reinforcing steel shall be cleaned and free of rust and other contaminants. Cleaning shall be accomplished by abrasive methods. Cleaning shall be completed immediately before patch placement to insure that base metal is not exposed to elements and further rusting for extended periods of time. Use powered wire brushes in locations where reinforcing steel cannot be cleaned by abrasive-blasting or water-blasting.
- 3.4.2 All exposed reinforcing steel shall be coated with a corrosion inhibiting product specified in the Section "Products" in this specification prior to mortar application. Protect prepared surfaces from damage prior to and during patch placement.

3.5 REINFORCEMENT IN REPAIR AREAS:

- 3.5.1 All embedded reinforcement exposed during surface preparation that has lost more than 10% of original cross-sectional area due to corrosion shall be considered defective. Defective reinforcement shall be supplemented in accordance to Engineer's instructions and shall be paid for by.
- 3.5.2 Damaged reinforcement caused during removals made by the Contractor shall be supplemented in accordance to Engineer's instructions and shall be paid for by the Contractor.
- 3.5.3 Supplement defective or damaged embedded reinforcement of equal diameter with a Class B splice in accordance to ACI-318 beyond damaged portion of reinforcement. Secure new reinforcement to existing reinforcement with approved anchors. Supplemental steel shall be A615 Grade 60 steel except where more stringent requirements apply in drawings and/or details.
- 3.5.4 Loose reinforcement exposed during surface preparation shall be securely anchored prior to patch placement. Loose reinforcement shall be adequately secured with wire ties to bonded reinforcement or with drilled-in anchors. Drilled-in anchors shall be TW-1400 anchors by ITW Ramset/Red Head, Tie-Wire Wedge-All anchors by Simpson Strong-Tie, or approved equal. Engineer will determine adequacy of wire ties and anchors. Securing loose reinforcement is incidental to surface preparation.
- 3.5.5 Minimum of 1 ½" concrete cover shall be provided over all new/existing reinforcement except where more stringent requirements apply in drawings and/or details.

3.6 PREPARATION OF CAVITY FOR PATCH PLACEMENT:

- 3.6.1 Cavities will be examined prior to commencement of patching operations. Sounding surface shall be part of examination. Delaminations noted during sounding shall be removed as specified in this Section.
- 3.6.2 All debris shall be removed from site prior to commencement of patching.

END OF SECTION

SECTION 03 01 05

CONCRETE REPAIR MATERIALS

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY:

- 1.2.1 This Section includes the provisions of all labor, materials, supervision and incidentals required to prepare deteriorated or damaged concrete surfaces and install patching materials to restore original surface condition and integrity.
- 1.2.2 Related Sections include the following:
 - 1.2.2.1 Division 03 Section "Surface Preparation for Patching."
- 1.2.3 The Contractor shall fully acquaint himself with the existing job site conditions and discuss the accessibility of the work areas with the City.
- 1.2.4 The Contractor shall ensure that there is adequate ventilation in areas where repair work is being performed and that no work results in nauseating, annoying or toxic fumes and odors from entering occupied areas. Provide barricades around the work area with appropriate signage to keep non-construction people from entering work area.
- 1.2.5 The Contractor shall provide all traffic cones or barriers to direct traffic during the repair of the facility. This work shall be done in consultation with the City.

1.3 SUBMITTALS:

- 1.3.1 Make submittals in accordance with requirements of Division 01 and as specified in this Section.
- 1.3.2 At the preconstruction meeting, the Contractor shall submit procedures to protect fresh patches from weather and traffic.

1.4 QUALITY ASSURANCE:

- 1.4.1 Work shall conform to requirements of the American Concrete Institute (ACI) as applicable except where more stringent requirements are shown on Drawings or specified in this Section.

- 1.4.2 Manufacturer's Qualifications: Companies furnishing the repair materials shall have a proven track record of at least five years. Furthermore, they shall have in existence a program of training, certifying, and supporting a nationally organized program of approved contractors. Evidence of this shall be made available to the Engineer/City upon request.
- 1.4.3 Contractor's Qualifications: The Contractor performing the work shall be an approved contractor by the manufacturer furnishing the repair materials, and shall have no less than five years experience in the various types of polymer related work required in this project. Upon request by the Engineer, a notarized certification from the manufacturer attesting to the training shall be submitted to the Engineer/City

1.5 REFERENCES:

- 1.5.1 Applicable Standards:
 - 1.5.1.1 American Concrete Institute (ACI), latest version:
 - ACI 301R Specifications for Structural Concrete
 - ACI 305R Hot Weather Concreting
 - ACI 306R Cold Weather Concreting
 - ACI 308R Guide to Curing Concrete
 - ACI 318R Building Code Requirements for Structural Concrete
 - ACI 548.1R Guide for Use of Polymers in Concrete
 - 1.5.1.2 American Society for Testing and Materials (ASTM):
 - ASTM C109 Test Method for Compressive Strength of Hydraulic Cement Mortars

PART TWO – PRODUCTS:

2.1 GENERAL REQUIREMENTS FOR POLYMER MODIFIED CEMENTITIOUS MORTARS:

- 2.1.1 Mortar used for bonding, patching, and resurfacing in exposed or exterior environmental conditions with large cyclic temperature changes shall have the following properties:
 - 2.1.1.1 Mortar shall be non-sagging.
 - 2.1.1.2 Acceptable materials shall have minimum 7-day compressive strength of 3,000 psi, and 5,000 psi at 28 days as certified by manufacturer.
 - 2.1.1.3 Coefficient of thermal expansion shall be comparable with that of concrete (5.5×10^{-6} in/in/°F).
 - 2.1.1.4 Sand used in preparing mortar shall be graded oven dry quartzite furnished in bags.
 - 2.1.1.5 The mortar patch material shall match the existing texture and color of existing exposed/cured concrete without giving a

blotchy appearance. A test patch shall be applied for approval prior to final acceptance of the mortar. Size of test patch shall be approximately equal to the size of the average mortar patch to be used on the project.

2.2 PRODUCTS AND MANUFACTURERS:

- 2.2.1 Acceptable materials for this Work are: HORIZONTAL REPAIRS (POLYMER MODIFIED):
 - 2.2.1.1 EMACO R300 CI, EMACO R310 CI by BASF Sika Top 122 Plus by Sika
 - 2.2.1.2 Eucocrete Supreme by Euclid Chemical Company
- OVERHEAD/VERTICAL REPAIRS: (POLYMER MODIFIED):
 - 2.2.1.3 Gel Patch by BASF
 - 2.2.1.4 Sika Top 123 Plus by Sika
 - 2.2.1.5 Verticoat Supreme by Euclid Chemical Company
- 2.2.2 Substitutions may be considered provided complete technical information and job references are furnished to the City/Engineer and approved prior to commencement of work.
- 2.2.3 Changes in products required to suit temperature and environmental conditions at the time of material application shall be specified as separate line items by the Contractor showing credit or additions to the price for the various tasks.
- 2.2.4 In using the above products, follow strictly the manufacturer's specifications and directions for mixing and application. Also read all label warnings by manufacturer. Make application in accordance with applicable safety laws.

PART THREE – EXECUTION:

3.1 POLYMER MODIFIED CEMENTITIOUS MORTAR PATCH:

- 3.1.1 Applicator's Qualifications
 - 3.1.1.1 Mortar repair work shall only be performed by contractors who have successfully used this process on at least three similar structural repairs of equal scope which have performed successfully for a minimum period of five years.
 - 3.1.1.2 Only adequately trained and experienced personnel shall be used on the job.
- 3.1.2 Surface Preparation
 - 3.1.2.1 Concrete surface to which the mortar is to be applied shall be exposed parent concrete free of loose and unsound materials. Preparation of cavity to receive new mortar shall be in accordance to Section "Surface Preparation for Patching" and manufacturer's instructions.

- 3.1.3 Concrete Surface Inspection: Ensure that the surface and ambient temperature is at least 45°F and rising at the time of application.
- 3.1.4 Bonding Agent
 - 3.1.4.1 Apply bonding agent in strict accordance with manufacturer's recommendations.
 - 3.1.4.2 If bonding agent dries, cavity shall not be patched until it has been re-cleaned and prepared as indicated in Section "Surface Preparation for Patching." Bonding agent shall not be applied to more cavities than can be patched within 15 min. by available manpower.
 - 3.1.4.3 Patching materials shall be placed immediately following bonding agent application in strict accordance with manufacturer's instructions.
- 3.1.5 Mortar Application
 - 3.1.5.1 Condition polymer mortar material to 65°F-80°F unless otherwise recommended by the manufacturer. Materials beyond this range of temperature shall not be used.
 - 3.1.5.2 Mix the two components in a clean container free of contaminants as recommended by the manufacturer.
 - 3.1.5.3 Thoroughly blend components and aggregates with portable mixers (such as Jiffy mixers) to a uniform and homogenous mixture. Small batches of one quart or less may be mixed by spatulas, palette knives or similar devices.
 - 3.1.5.4 Mixing should be accomplished within three minutes when using portable mixers or five minutes when mixed by hand.
 - 3.1.5.5 Apply mortar by means suitable for the consistency of the mortar mix.
 - 3.1.5.6 Use appropriate forms as required for retaining mortar if mixed to a flowable consistency.
 - 3.1.5.7 Consolidate the mortar thoroughly to remove entrapped air.
 - 3.1.5.8 Supplemental wire mesh shall be required for delamination and spall repairs greater than 2" in depth. Fresh bonding agent is required between successive lifts of patching material.
 - 3.1.5.9 Finish surface of mortar to match the texture and contours of existing concrete.
- 3.1.6 Curing
 - 3.1.6.1 Immediately after finishing, keep patch material continually moist for at least 24 hrs. Continue curing for first 7 days after patch placement. During initial and final curing periods maintain patch material above 50 °F.
 - 3.1.6.1 Prevent rapid drying at end of curing period.

- 3.1.6.2 Provide additional curing as required by manufacturer's recommendations.
- 3.1.7 Cleanup
 - 3.1.7.1 Protect surfaces surrounding the work areas against spillage.
 - 3.1.7.2 Material spillage shall be cleaned before they set and become difficult to remove.
 - 3.1.7.3 Cleanup all portions of the existing structure that are soiled or stained in the process of mortar repair work.

3.2 FIELD QUALITY CONTROL:

- 3.2.1 Testing Agency:
 - 3.2.1.1 Independent testing laboratory employed by Owner and acceptable to Engineer.
 - 3.2.1.2 Sampling and testing of mortar shall be performed by ACI certified Concrete Field Technicians Grade I. Certification shall be no more than three years old.
 - 3.2.1.3 Testing Agency is responsible for conducting, monitoring, and reporting results of all tests required under this Section. Testing Agency has authority to reject mortar not meeting Specifications.
 - 3.2.1.4 Concrete Compressive Strength (Mold test cubes per ASTM C-109):
 - 3.2.1.4.1 Take minimum of 6 cubes (2"x2") for each 10 ft³ or fraction of each repair mortar placed in any one day.
 - 3.2.1.4.2 Additional cubes shall be taken as directed by Engineer.
 - 3.2.1.5.3 Cover and protect molds from contact with water for the first 24-hrs., after molding.
 - 3.2.1.4.4 Follow ACI Specifications for storage and handling of specimens.
 - 3.2.1.4.5 Test 3 cubes at 7 days.
 - 3.2.1.4.6 Test 3 cubes at 28 days.

3.3 ACCEPTANCE OF REPAIRS:

- 3.3.1 Acceptance of completed concrete repair will be in accordance to ACI 301.
- 3.3.2 Patched areas shall be sounded by Engineer and Contractor after curing for 72 hours. Contractor shall repair all hollowness detected by removing and replacing patch or affected area at no cost to the City.

- 3.3.3 If shrinkage cracks appear in patch area after the initial curing period is concluded, the patch in question shall be considered unacceptable, and it shall be removed and replaced by Contractor at no cost to the City.

END OF SECTION

SECTION 03 10 00

CONCRETE FORMING AND ACCESSORIES

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

- 1.1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- 1.2.1 The work of this section includes all labor, materials and equipment required to form all cast-in-place concrete shown on the drawings including but not limited to full-depth slab repairs and other repairs as necessary.

1.3 CODES AND STANDARDS:

- 1.3.1 Comply with the provision of the following codes, specifications and standards except where more stringent requirements are shown or specified:
- 1.3.1.1 ACI 301 "Specifications for Structural Concrete for Buildings"
 - 1.3.1.2 ACI 318 "Building Code Requirements for Reinforced Concrete"
 - 1.3.1.3 ACI 117 "Specifications for Tolerances for Concrete Construction and Materials".
 - 1.3.1.4 Concrete Reinforcing Steel Institute "Manual of Standard Practice"

1.4 RESPONSIBILITY:

- 1.4.1 The design, construction and safety of all formwork shall be the responsibility of the Contractor. All forms, shores, backshores, falsework, bracing, and other temporary supports shall be engineered to support all loads imposed including the wet weight of concrete, construction equipment, live loads, lateral loads due to wind and wet concrete imbalance. The Contractor shall also be responsible for determining when temporary supports, shores, backshores, and other bracing may be safely removed.

PART TWO – PRODUCTS:

2.1 FORM-FACING MATERIALS:

- 2.1.1 Non-specific formed concrete: Unless otherwise specified, the default finish for formed surfaces shall be rough-form finish constructed with

plywood, lumber, metal or other acceptable material. Lumber shall be dressed on at least two edges and one side for tight fit. The minimum grade shall be B-C, exterior grade.

2.2 FORMWORK COATINGS:

2.2.1 Formwork coatings shall be a commercial formulation that will not bond with, stain, nor adversely affect concrete surfaces or impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede curing with water or curing compounds. Provide a product that has a maximum VOC (Volatile Organic Compounds) of 50 g/l but not greater than that permitted by the local government agency having jurisdiction in the area where the project is located. Products: Subject to compliance with requirements, provide one of the following:

2.2.1.1 "Bio-Release EF", Dayton Superior

2.2.1.2 "Farm Fresh", Unitex

2.2.1.3 "Form-Eze Natural", the Euclid Chemical Company, Inc.

2.2.1.4 "Bio-Form", Universal Form Clamp

2.2.1.5 "Aqua Blue", US Spec

2.3 NAILS AND FASTENERS:

2.3.1 Use only galvanized nails and fasteners for securing formwork in structures exposed to weather or unconditioned spaces such as garages.

2.4 FORM TIES:

2.4.1 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 minimize spalling of concrete on removal.

2.4.1.1 Exposed to Weather or Unconditioned Space: Provide glass-fiber-reinforced plastic, stainless steel, or galvanized form ties that will leave no corrodible metal closer than 1 1/2 inches in surfaces that will be exposed to weather or in an unconditioned space in the final structure. The ties shall leave holes no larger than 1 inch in diameter in concrete surfaces when the ends or end-fasteners are removed.

2.5 CHAMFER STRIPS:

2.5.1 Provide wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

PART THREE – EXECUTION:

3.1 FABRICATION AND CONSTRUCTION:

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

3.1.2 Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds,

bulkheads, anchorages and inserts and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

- 3.1.3 Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates 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, recesses, and the like, to prevent swelling and for easy removal.
- 3.1.4 Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- 3.1.5 Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and patch forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.
- 3.1.6 Chamfer exposed corners and edges as indicated, using specified chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

3.2 CLEANING AND TIGHTENING:

- 3.2.1 Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and all other debris just prior to concrete placement. Retighten forms and bracing prior to concrete placement as required to prevent mortar leaks and maintain proper alignment.

3.3 CLEANING AND RE-USE OF FORMS:

- 3.3.1 Forms reused in the work shall be repaired and cleaned. Split, frayed, delaminated, or otherwise damaged facing material will not be acceptable for exposed surfaces. Forms intended for successive concrete placement shall have surfaces cleaned, fins and laitance removed, and joints tightened to avoid surface offsets. New form coating compound shall be applied to reused forms. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.4 TOLERANCES:

- 3.4.1 Unless specified otherwise, all tolerances for concrete formwork shall conform to ACI Standard 117, "Standard Tolerances for Concrete Construction and Materials". Before concrete placement the Contractor shall check lines and levels of erected formwork and make any

corrections and adjustments as required to ensure proper size and location of concrete members and stability of forming systems. During concrete placement the Contractor shall check formwork and supports to ensure that forms have not displaced and that completed work will be within specified tolerances.

3.5 SHORES AND SUPPORTS:

3.5.1 Definitions

3.5.1.1 Shores: Vertical or inclined support members designed to carry the weight of formwork, concrete, and construction loads above. Comply with requirements of ACI 301 for shoring in concrete construction and as herein specified where more stringent.

3.5.2 Design: Shores must be designed to carry all loads transmitted to them. A rational analysis should be used to determine the loads transmitted to the shores as a result of the construction sequence. The analysis should consider, but should not necessarily be limited to, the following:

3.5.2.1 Dead load weight of the concrete and formwork.

3.5.2.2 Construction live loads, such as placing crews and equipment or stored materials.

3.5.2.3 Design strength of concrete specified.

3.5.2.4 Strength of concrete at time it is required to support shoring loads from above.

3.5.2.5 Span of slab or structural member between permanent supports.

3.5.2.6 Type of formwork systems, i.e., span of horizontal formwork components, individual shore loads, etc.

3.5.2.7 Minimum age where appropriate.

3.6 REMOVAL OF FORMS AND SUPPORTS:

3.6.1 Determination by Contractor's: The Contractor shall determine and record the time and sequence of formwork and shore removal subject to the criteria as specified below.

3.6.2 Determining *in situ* Strength of Concrete: The Contractor shall be responsible for making and curing concrete cylinders, cured under field conditions, for the purpose of determining concrete strength at time of form and shore removal. Such cylinders shall be made by the Contractor and tested by his testing laboratory. Alternatively, the *in situ* strength of concrete may be determined by the Maturity Method following the requirements of ASTM C 1074. An acceptable system for this method is the "*intelli*Rock" system manufactured and supplied by Engius Constructive Intelligence of Stillwater, OK.

3.6.3 Records of Weather Conditions: The Contractor shall be responsible for keeping records of weather conditions to be used in the decision on when to remove forms.

3.6.4 Formwork Supporting Weight of Concrete: Formwork supporting weight of concrete such as beam soffits, slabs and other structural elements shall not be removed until concrete has attained at least the following percentages of the design compressive strength:

3.6.4.1 Beam Soffits - 70%, but not less than 2800 psi

3.6.4.2 Slabs - 70%, but not less than 2800 psi

END OF SECTION

SECTION 03 65 00

EPOXY RELATED WORK

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

1.1.1 Drawings and general provisions of contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to the work of this section.

1.2 SCOPE OF WORK:

1.2.1 The following epoxy related work is shown on the drawings and in this project manual:

1.2.1.1 Crack locations for epoxy injection work. These drawings are for the Contractor's guidance only, and are to be considered as a minimum for pricing. The Contractor shall not do any additional work beyond what is shown in the drawings without prior written approval of the Engineer.

1.2.2 The Contractor shall fully acquaint himself with the existing job site conditions and discuss the accessibility of the work areas with the City.

1.2.3 The Contractor shall ensure that there is adequate ventilation in areas where epoxy repair work is being performed and that no work results in nauseating, annoying or toxic fumes and odors from entering occupied areas. Provide barricades around the work area with appropriate signage to keep non-construction people from entering work area.

1.2.4 The Contractor shall provide all traffic cones or barriers to direct traffic during the repair of the parking garage. This work shall be done in consultation with the City.

1.3 QUALITY ASSURANCE:

1.3.1 Applicable Standards

1.3.1.1 American Society for Testing and Materials (ASTM) C881 Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

1.3.1.2 American Concrete Institute (ACI)

1.3.1.2.1 ACI 503 Use of Epoxy Compounds with Concrete

1.3.1.2.2 ACI 548.1R Guide For Use of Polymers in Concrete

- 1.3.2 Manufacturer's Qualifications: Companies furnishing the epoxy materials shall have a proven track record of at least five years. Furthermore, they shall have in existence a program of training, certifying and supporting a nationally organized program of approved contractors. Evidence of this shall be made available to the Engineer/Architect upon request.
- 1.3.3 Contractor's Qualifications: Contractor performing the work shall be an approved contractor by the manufacturer furnishing the epoxy materials, and shall have no less than five years' experience in the various types of epoxy related work required in this project. A notarized certification from the manufacturer attesting to the training shall be submitted to the Engineer/Architect along with the proposal to do the work.
- 1.3.4 Injection Equipment Requirements: Injection equipment used by the Contractor shall be from a manufacturer who has been producing such equipment for a minimum of five years. Such equipment shall have a record of satisfactorily proportioning mixing, and dispensing of the injection resin being used.

PART TWO – PRODUCTS:

2.1 GENERAL REQUIREMENTS FOR EPOXY MATERIALS:

- 2.1.1 All epoxy material shall be new and manufactured within the shelf life limitations set forth by the manufacturer.
- 2.1.2 Epoxy shall be a two-part epoxy adhesive material, and shall be of epichlorohydrin/amine type. Polysulphide epoxies are not acceptable.
- 2.1.3 Epoxy used shall be insensitive to the presence of water and moisture, and shall be capable of application and of strength development even when applied to damp surfaces having a temperature of 40°F or above.
- 2.1.4 Epoxy used shall develop a minimum strength of 2000 psi in tension and 4000 psi in compression at the end of seven days.
- 2.1.5 Epoxies used shall not deteriorate under approximately 200 freeze thaw cycles.
- 2.1.6 Epoxies used shall be 100% solids without solvents.
- 2.1.7 With the exception of epoxy penetrant sealers, epoxies used shall be 100% solids without solvents.
- 2.1.8 Bonding and strength characteristics of epoxies shall be stable when exposed to ultraviolet rays.
- 2.1.9 The viscosity of the epoxy used for injection work shall be low enough (about 300 cps at 77°F) to completely fill hairline cracks as small as 10 mils.

2.2 PRODUCTS AND MANUFACTURERS:

- 2.2.1 Epoxy Injection Work
- 2.2.1.1 Master Builders Technologies: Concreative 1380.

2.2.1.2 Sika Chemical Corporation: Sikadur 35 Hi-Mod LV or Sikadur 52 Injection Resin.

2.2.2 Substitutions may be considered provided complete technical information and job references are furnished to the Engineer and approved prior to commencement of work.

2.2.3 Changes in products required to suit temperature and environmental conditions at the time of material application shall be specified as separate line items by the Contractor showing credit or additions to the price for the various tasks.

2.2.4 In using the above products, follow strictly the manufacturer's specifications and directions for mixing and application. Also heed all label warnings by manufacturer. Make application in accordance with applicable safety laws.

2.3 ABRASIVE MATERIAL FOR ABRASIVE BLASTING:

2.3.1 Coal slag shall be used as the blast abrasive in abrasive blasting operations.

2.4 CORROSION INHIBITING PAINT:

2.4.1 Z.R.C. Cold Galvanizing Compound manufactured by ZRC Chemical Products Company, Quincy, Massachusetts.

2.4.2 Substitutions may be considered provided complete technical information and job references are furnished to and approved by the Architect/Engineer prior to commencement of work.

PART THREE – EXECUTION:

3.1 EPOXY INJECTION:

3.1.1 Applicator's Qualifications

3.1.1.1 Epoxy injection work shall only be performed by contractors who have successfully used this process on at least five similar structural repairs of 1000 linear feet or longer, and which have performed successfully for a minimum period of five years.

3.1.1.2 Only adequately trained epoxy injection applicators shall be used on the job. Furnish certificate of training prior to commencing work.

3.1.2 Preparation

3.1.2.1 Before proceeding, the space in the vicinity of the crack location receiving epoxy shall be swept and be in a generally clean condition to permit proper bonding of surface seal.

3.1.2.2 Cracks may be dry or damp, but free of standing water and frost.

3.1.2.3 Entry points shall be established judiciously at a distance along the seal so that epoxy penetrates the crack completely. Spacing of entry points, however, shall be no greater than

the thickness of the concrete at that location. Tighter joints will require closer spacing of entry ports.

- 3.1.2.4 Adequate surface seal shall be applied to the face of the crack between the entry points. Use masking tape at the pre-established entry points to prevent the surface sealer from sealing the entry points. Alternatively, drill and port method may be used to establish entry points. Use only rotary-percussion type drills for drilling holes. Drills shall be fitted with bits having single tooth that produce large cuttings, and hollow stem drill rods that permit simultaneous blowing of compressed air providing immediate expulsion of the cuttings from the hole. Ensure that the drilling operation does not contaminate the cracks.
- 3.1.2.5 For through cracks, surface seal shall be applied to both faces. Provide entry ports on both faces staggered with each other when the cracked concrete element is greater than 8" thick. Injection of cracks from both faces shall also be necessary when the cracks are contaminated in concrete elements equal to or less than 8" thick.
- 3.1.2.6 Pre-sealing between ports may be done using a material meeting the requirements of these specifications.
- 3.1.2.7 Allow adequate time for the surface seal material to cure before proceeding with the injection.

3.1.3 Equipment for Injection

- 3.1.3.1 Pumps used for injection shall be a positive displacement type with interlock to provide positive ratio control in proper proportions. The pumps used shall be electrically or air powered, portable and shall provide an in-line mixing and metering system for the two-component epoxy. The pressure hoses and injection nozzle shall be of such a design as to allow proper mixing of the two components of the epoxy. Dwell time in mixing head shall not exceed ten seconds.
- 3.1.3.2 The injection equipment shall have automatic pressure control, and shall be capable of injection pressures up to 300 psi to ensure complete penetration of cracks. Equipment used shall also have the capability of presetting the pressures, and shall be equipped with manual pressure control override.
- 3.1.3.3 The presence of a stand-by injection unit shall be required.

3.1.4 Crack Cleaning

- 3.1.4.1 All cracks shall be cleaned and flushed with water, and checked for port-to-port transmission.
- 3.1.4.2 Blow the water out of the cracks using compressed air, and allow adequate time for drying before injecting with epoxy.

- 3.1.4.3 If in the process of water flushing the cracks, the Contractor notices rust particles being flushed out with the water, or if the water has rust stains, the Engineer shall be notified prior to doing any epoxy injection work. The Engineer will then evaluate the extent of corrosion in the embedded reinforcement, and make necessary adjustments in the repair procedure. The Engineer/Owner reserves the right to either issue a change order for any additional work involved or to delete those portions of the work which show evidence of corrosion of the reinforcing steel. When work is deleted, the Contractor shall give a credit to the Owner on the basis of unit prices quoted for the project.
- 3.1.4.4 When temperature is near the freezing point of water, ensure that the crack is free of ice before doing the injection work.
- 3.1.5 Epoxy Injection
 - 3.1.5.1 Condition epoxy materials at temperature between 65°F-80°F unless otherwise recommended by the manufacturer. Epoxies beyond this range of temperature shall not be used. Do not store epoxy (even for a short period) in direct sunlight.
 - 3.1.5.2 Epoxy adhesive shall be injected into the crack at the first lower entry port with sufficient pressure to advance the epoxy to the next adjacent port. The original port shall be sealed and entry shifted to the port in which the epoxy appears. This manner of port-to-port injection shall be continued until each joint has been injected for the entire length.
 - 3.1.5.3 If port-to-port travel of epoxy is not achieved, the crack shall be identified, and the Architect/Engineer notified.
 - 3.1.5.4 Samples of mixed material shall be injected into a paper cup every 60 minutes to test ratio mix. These samples shall be dated and numbered and left at the sampling location until reviewed by the testing laboratory.
 - 3.1.5.5 Solvents shall not be used to thin epoxy introduced into the cracks.
- 3.1.6 Finishing
 - 3.1.6.1 Allow epoxy adhesive in the cracks to cure before removing the surface seal. Ensure that there is no drainage of epoxy from the cracks due to premature removal of surface seal.
 - 3.1.6.2 The surface of the crack herein treated shall be finished flush with the adjacent concrete surfaces and shall show no indentations or evidence of port fittings.
 - 3.1.6.3 All work shall be performed and conducted in a neat, orderly manner. Clean-up whatever portions of the existing structure that get soiled or stained in the process of epoxy injection work.

END OF SECTION

SECTION 07 14 16

COLD FLUID-APPLIED WATERPROOFING

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY:

- 1.2.1 This Section includes the following:
 - 1.2.1.1 Two-component, polyurethane waterproofing.
- 1.2.2 Related Sections include the following:
 - 1.2.1.2 Division 07 Section "Joint Sealants" for joint-sealant materials and installation.

1.3 PERFORMANCE REQUIREMENTS:

- 1.3.1 Provide waterproofing membrane that prevents the passage of water.

1.4 SUBMITTALS:

- 1.4.1 Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.
- 1.4.2 Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
- 1.4.3 Product Test Reports: From a qualified independent testing agency indicating and interpreting test results of waterproofing for compliance with requirements, based on comprehensive testing of current waterproofing formulations.

1.5 QUALITY ASSURANCE:

- 1.4.4 Installer Qualifications: A qualified installer who is authorized, approved, or licensed by waterproofing manufacturer to install manufacturer's products.
 - 1.4.4.1 Minimum of 5 years' experience in application of similar systems and products on projects of similar size and scope.
 - 1.4.4.2 Installer shall designate a single individual as project foreman who shall be on site at all times during installation.
- 1.4.2 Manufacturer Qualifications: Minimum 15 years of experience in manufacturing of high-build coatings.
- 1.4.3 Source Limitations: Obtain waterproofing materials and molded-sheet drainage panels through one source from a single manufacturer.

- 1.4.4 Mockups: Apply waterproofing to 20 sq. ft. of horizontal substrate to demonstrate surface preparation, crack and joint treatment, corner treatment, thickness, texture, and execution quality.
 - 1.4.4.1 Manufacturer's representative or designated representative will review workmanship for compliance with manufacturer's system requirements.
 - 1.4.4.2 If Engineer determines mockups do not comply with requirements, reapply waterproofing until mockups are approved. Do not proceed with rest of Work until mockups are approved.
 - 1.4.4.3 Field sample will be standard for judging workmanship on remainder of Work.
 - 1.4.4.4 Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- 1.4.5 Pre-installation Conference: Conduct conference at Project site. Review requirements for waterproofing, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.5 DELIVERY, STORAGE, AND HANDLING:

- 1.5.1 Deliver liquid materials to Project site in original containers with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.
- 1.5.2 Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by waterproofing manufacturer.
- 1.5.3 Remove and replace liquid materials that cannot be applied within their stated shelf life.
- 1.5.4 Protect stored materials from direct sunlight.

1.6 PROJECT CONDITIONS:

- 1.6.1 Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate, when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F (3 deg C) above dew point.
 - 1.6.1.1 Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application and curing period.
- 1.6.2 Maintain adequate ventilation during application and curing of waterproofing materials.

PART 2 – PRODUCTS:

2.1 MANUFACTURERS:

- 2.1.1 Available Products: Subject to compliance with requirements.
- 2.1.2 Products: Subject to compliance with requirements, provide one of the following products:
 - 2.1.2.1 Two-component, Polyurethane Waterproofing:
 - 2.1.2.1.1 Neogard System:
 - 2.1.2.1.1.1 Epoxy primer (7740/7741)
 - 2.1.2.1.1.2 24 mil/coat polyurethane base and top coating (7825/7851)
 - 2.1.2.1.1.3 5 mil epoxy urethane finish primer (Ureprime HS4)
 - 2.1.2.1.1.4 5 mil urethane finish coating (Acrylithane HS2)
 - 2.1.2.1.2 Kemper System:
 - 2.1.2.1.2.1 Epoxy resin primer (Kempertec EP or EP5)
 - 2.1.2.1.2.2 70 mil polyurethane with polyester reinforcing fleece
 - 2.1.2.1.2.3 3 mil/coat aliphatic polyurethane coating (Kempedur Deko Finish)
 - 2.1.2.1.3 C.I.M. Industries System:
 - 2.1.2.1.3.1 Epoxy primer (CIM 61BG)
 - 2.1.2.1.3.2 60 mil asphalt extended polyurethane (CIM 1000)

2.2 WATERPROOFING MATERIALS

- 2.1.1 General: Provide waterproofing materials recommended by manufacturer to be compatible with one another and able to develop bond to substrate under conditions of service and application, as demonstrated by waterproofing manufacturer based on testing and field experience.
 - 2.1.1.1 Produce waterproofing materials suitable for application to vertical, horizontal, and sloped substrates, as applicable.
 - 2.1.1.2 Provide waterproofing materials with not less than 90 percent solids.
- 2.1.2 Cold Fluid-Applied Waterproofing: Comply with ASTM C 836, with manufacturer's written physical requirements, and as follows:
 - 2.1.2.1 two-component, polyurethane waterproofing.

- 2.1.3 Performance Requirements: The following properties are based on an industry standard system.
 - 2.1.3.1 Minimum Recovery: 90 percent.
 - 2.1.3.2 Swelling in Water (3 days at room temperature): None.
 - 2.1.3.3 Service Temperature Range:
 - 2.1.3.3.1 Minimum: Minus 40 degrees F (Minus 40 degrees C).
 - 2.1.3.3.2 Maximum: 120 degrees F (49 degrees C).
 - 2.1.3.4 Hardness, Shore OO: 85, ASTM C836
 - 2.1.3.5 Tensile Strength: 150 psi (1.0 MPa), ASTM D412.
 - 2.1.3.6 100 Modulus: 80 psi (0.6 MPa), ASTM D412
 - 2.1.3.7 Moisture-Vapor Permeability (dry perms): 0.1, ASTM E96.
 - 2.1.3.8 Crack Bridging Test: Passed 1/16 inch (2 mm); ASTM C836
 - 2.1.3.9 Extensibility After Heat Aging: No cracking, ASTM C836.
 - 2.1.3.10 Weight Loss (20 percent maximum): 16 percent, ASTM C836.

2.3 AUXILIARY MATERIALS:

- 2.3.1 Primer: As recommended by waterproofing membrane system manufacturer.
- 2.3.2 Joint Sealant: Multi-component polyurethane sealant, compatible with waterproofing, complying with ASTM C 920 Type M, Class 25; Grade NS for sloping and vertical applications or Grade P for deck applications; Use NT exposure; and as recommended by manufacturer for substrate and joint conditions.
 - 2.3.2.1 Backer Rod: Closed-cell polyethylene foam.
- 2.3.3 Bond Breaker Over Sealed Joints: Manufacturer's recommended tape of wax.
- 2.3.4 Protection Board: Semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:
 - 2.3.4.1 Thickness: 1/8 inch, nominal.
 - 2.3.4.2 Adhesive: Rubber-based solvent type recommended by waterproofing manufacturer for type of protection course.

PART THREE – EXECUTION:

3.1 EXAMINATION

- 3.1.1 Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.

- 3.1.1.1 Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
- 3.1.1.2 Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
- 3.1.1.3 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION:

- 3.2.1 Clean and prepare substrate according to manufacturer's written recommendations. Provide clean, dust-free, and dry substrate for waterproofing application.
- 3.2.2 Mask off adjoining surfaces not receiving waterproofing to prevent spillage or overspray affecting other construction.
- 3.2.3 Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.
- 3.2.4 Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
 - 3.2.4.1 Abrasive blast clean concrete surfaces uniformly to expose top surface of fine aggregate according to ASTM D 4259 with a self-contained, recirculating, blast-cleaning apparatus. Remove material to provide a sound surface free of laitance, glaze, efflorescence, curing compounds, concrete hardeners, or form-release agents. Remove remaining loose material and clean surfaces according to ASTM D 4258.
 - 3.2.4.2 Prepare substrate to ICRI CSP – 4 profile, minimum.
- 3.2.5 Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, and other voids.

3.3 PREPARATION AT TERMINATIONS AND PENETRATIONS:

- 3.3.1 Prepare vertical and horizontal surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, and sleeves according to ASTM C 898 and manufacturer's written instructions.
- 3.3.2 Prime substrate, unless otherwise instructed by waterproofing manufacturer.
- 3.3.3 Apply a single thickness of waterproofing and embed a joint reinforcing strip in preparation coat when recommended by waterproofing manufacturer.
 - 3.3.3.1 Provide sealant cants around penetrations and at inside corners of deck-to-wall butt joints when recommended by waterproofing manufacturer.

3.4 PRESTRIPING AND JOINT / CRACK TREATMENT:

- 3.4.1 Before applying final membrane, seal joints, cracks, and openings around protrusions by caulking or prestripping (a preliminary coating of waterproofing membrane applied with trowel or stiff bristled brush). Allow drying overnight before applying final membrane.
- 3.4.2 When final membrane is applied, verify overall thickness over joints and cracks, at coves, and around penetrations of approximately 100 wet mils on standard system, or approximately 200 wet mils on high build system.
- 3.4.3 Static Joints and Cracks: Fill joints and cracks less than 1/16 inch by prestripping. Apply material so it both fills and overlaps joint or crack to 4 inch width on each side.
- 3.4.4 Working or Expansion Joints:
 - 3.4.4.1 Seal joints over 1/8 inch with joint sealant. Rout moving joints less than 1/8 inch (3 mm) to 1/8 inch minimum and fill with joint sealant.
 - 3.4.4.2 Prevent waterproofing membrane from adhering to joint sealant, which could cause sealant or membrane failure, by applying coat of wax or Teflon tape over cured sealant.
 - 3.4.4.3 Prestripe over crack with 60 mil thick detail coat of waterproofing. Overlap joint or crack to 4 inch width on each side.

3.5 WATERPROOFING APPLICATION:

- 3.5.1 Apply waterproofing according to ASTM C 898 and manufacturer's written instructions.
- 3.5.2 Start installing waterproofing in presence of manufacturer's technical representative.
- 3.5.3 Apply manufacturer recommended primer over prepared substrate.
- 3.5.4 Mix materials and apply waterproofing by spray, roller, notched squeegee, trowel, or other application method suitable to slope of substrate.
 - 3.5.4.1 Apply one or more coats of waterproofing to obtain a seamless membrane free of entrapped gases, with an average dry film thickness of 60 mils (1.5 mm) and a minimum dry film thickness of 50 mils (1.3 mm) at any point.
 - 3.5.4.2 Allow coat to cure overnight.
 - 3.5.4.3 Verify wet film thickness of waterproofing every 100 sq. ft.

3.6 FIELD QUALITY CONTROL:

- 3.6.1 Engineer will observe the installation after completing waterproofing but before overlying construction is placed.

3.7 CURING, PROTECTING, AND CLEANING:

- 3.7.2 Cure waterproofing according to manufacturer's written recommendations, taking care to prevent contamination and damage during application stages and curing.
 - 3.7.2.1 Do not permit foot or vehicular traffic on unprotected membrane.
- 3.7.3 Protect waterproofing from damage and wear during remainder of construction period.
- 3.7.4 Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- 3.7.5 Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART ONE – GENERAL:

1.1 RELATED DOCUMENTS:

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

1.2 SUBMITTALS:

- 1.2.1 Product Data: Submit manufacturer's technical data for each joint sealant product required, including instructions for joint preparation and joint sealant application.
- 1.2.2 Certificates: Submit certificates from manufacturers of joint sealants attesting that their products comply with Specification requirements and are suitable for the use indicated.

1.3 QUALITY ASSURANCE:

- 1.3.1 Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required. Provide one year warranty on installation and materials.
- 1.3.2 Review and approve joint details before construction.

1.4 DELIVERY, STORAGE, AND HANDLING:

- 1.4.1 Deliver materials to Project Site in original unopened containers, or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multicomponent materials.
- 1.4.2 Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.5 PROJECT CONDITIONS:

- 1.5.1 Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 - 1.5.1.1 When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturers.
 - 1.5.1.2 When joint substrates are wet due to rain, frost, condensation or other causes.
 - 1.5.1.3 Joint Width Conditions: Do not proceed with installation of joint sealants when joint widths are less than allowed by sealant manufacturer for application indicated.

PART TWO – PRODUCTS:

2.1 MATERIALS, GENERAL:

- 2.1.1 Compatibility: Provide joint sealants, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

2.2 SEALANT FOR HORIZONTAL (NON-COVE) JOINTS:

- 2.2.1 Products: Acceptable joint sealants:
 - 2.2.1.1 “Sonolastic SL-2” by Chemrex - BASF
 - 2.2.1.2 “Sikaflex-2c NS TG” by Sika
- 2.2.2 Self-leveling sealants require tooling in accordance with details.
- 2.2.3 Compounds used for sealants shall not stain concrete or masonry. Aluminum pigmented compounds not acceptable..
- 2.2.4 The color of sealants shall match adjacent surfaces.

2.3 SEALANT FOR VERTICAL JOINTS AND COVE JOINTS:

- 2.3.1 Products: Acceptable joint sealants:
 - 2.3.1.1 “Sonolastic NP-2” by BASF
 - 2.3.1.2 “Sikaflex-2c NS” by Sika
- 2.3.2 Compound used for sealants shall not stain concrete or masonry. Aluminum pigmented compounds not acceptable.
- 2.3.3 The color of sealants shall match adjacent surfaces.

2.4 JOINT SEALANT BACKING:

- 2.4.1 In addition to locations and extent of sealant shown on Drawings, provide sealant at following locations:
 - 2.4.1.1 At all control/construction joint in concrete slabs, pour strips, topping, and all joints between precast double tee flanges, if applicable.
 - 2.4.1.2 Around perimeter of all floor drains and grates.

- 2.4.1.3 At all exterior horizontal joints.
- 2.4.1.4 At all vertical and horizontal joints between walls and columns and/or the miscellaneous conditions exposed to weather.
- 2.4.2 General: Provide sealant backings of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- 2.4.3 Plastic Foam Joint-Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
 - 2.4.3.2 Either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer.
- 2.4.4 Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back surface of joint. Provide self-adhesive taper where applicable.

2.5 MISCELLANEOUS MATERIALS:

- 2.5.1 Primer: Provide type recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate and field tests.
- 2.5.2 Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials which are not harmful to substrates and adjacent nonporous materials.
- 2.5.3 Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and surfaces adjacent to joints.

PART THREE – EXECUTION:

3.1 INSPECTION:

- 3.1.1 Require installer to inspect joints indicated to receive joint sealants for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Obtain installer's written report listing any condition detrimental to performance of joint sealant work. Do not allow joint sealant work to proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

- 3.2.1 Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturers and the following requirements:
 - 3.2.1.1 Remove all foreign material from joint substrates which could interfere with adhesion of joint sealant, including dust; paint, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; waterproofing; water repellants; water; surface dirt and frost.
 - 3.2.1.2 Clean concrete, substrate surfaces, by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3.2.1.3 Remove laitance from concrete.
- 3.2.2 Joint Priming: Prime all joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primers to areas of joint sealant bond. Do not allow spillage or migration onto adjoining surfaces.
- 3.2.3 Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS:

- 3.3.1 General: Comply with joint sealant manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- 3.3.2 Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- 3.3.3 Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 - 3.3.3.1 Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.
 - 3.3.3.2 Do not leave gaps between ends of joint-fillers.
 - 3.3.3.3 Do not stretch, twist, puncture or tear joint-fillers.
 - 3.3.3.4 Remove absorbent joint-fillers which have become wet prior to sealant application and replace with dry material.

3.3.3.5 Install bond breaker tape between sealants and joint-fillers, compression seals or back of joint where required to prevent third-side adhesion of sealant to back of joint.

3.3.4 Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability. Do not smear sealant onto adjacent surfaces.

Tooling of Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants in concave joint configuration per ASTM C 1193, unless otherwise indicated to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.3.5 The Contractor and Engineer shall verify sealant profile as follows:

3.3.5.1 The Contractor, at Engineer's direction, shall cut out lesser of 1% of total linear footage placed of total 100 linear ft of joint sealant at random locations for Engineer and Manufacturer's representative inspection of sealant profile.

3.3.5.2 The Contractor to repair all random joint sealant cut out sections at no cost to the City.

3.4 PROTECTION AND CLEANING:

3.4.1 Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and reseal joints with new materials to produce sealant installations with repaired areas indistinguishable from original work.

3.4.2 Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by the manufacturer of the sealants and of the products used in the joints.

END OF SECTION

STRUCTURAL DRAWINGS FOR 611 WALKER
PARKING GARAGE REPAIRS

can be also viewed on the following website

<https://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C24804>

CITY OF HOUSTON

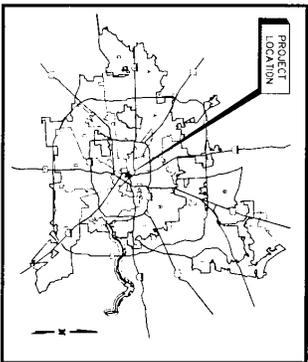
611 WALKER

PARKING GARAGE REPAIRS 611 WALKER, HOUSTON, TX 77002

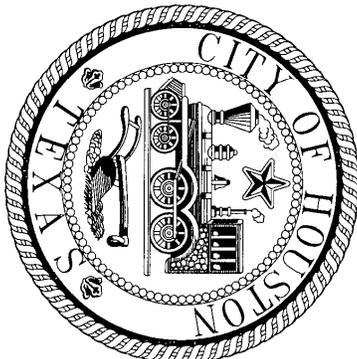
SEPTEMBER 13, 2013



VICINITY MAP
KEY MAP NO. 833



LOCATION MAP



MAYOR
ANNISE D. PARKER
CONTROLLER
RONALD C. GREEN

COUNCIL MEMBERS		DISTRICT	
HELENA BROWN DISTRICT A	JERRY CLAMS DISTRICT B	EILEEN COHEN DISTRICT C	WANDA ADAMS DISTRICT D
MAE SULLIVAN DISTRICT E	AL YOUNG DISTRICT F	OLIVER PENNINGTON DISTRICT G	EDUARDO GONZALEZ DISTRICT H
JAMES G. RODRIGUEZ DISTRICT I	MARK LASTER DISTRICT J	LARRY GREEN DISTRICT K	

PUBLIC WORKS AND ENGINEERING DEPARTMENT
DANIEL W. KRUEGER, P.E., DIRECTOR

AT-LARGE COUNCIL MEMBERS

STEPHEN C. COSTELLO POSITION 1	MARISA NORRGA POSITION 3
ANDREW C. BIRCH, JR. POSITION 2	C.O. "BOBBY" BAUMFORD POSITION 4
JACK CRANKRINE POSITION 5	

CONTRACTING AUTHORITY
FOR THE
CITY OF HOUSTON:
GENERAL SERVICES DEPARTMENT
SCOTT MINNIX, DIRECTOR

CITY DWG. NO. _____
SHEET NO. 1 OF 7 SHEETS

DRAWING SHEETS	
S0.0	COVER SHEET
S0.1	GENERAL NOTES
S1.0	PLAN - PLAZA LEVEL AND GARAGE ENTRANCE RAMP
S1.1	PLAN - LEVELS 1 AND 2
S1.2	PLAN - LEVELS 3 AND 4
S1.3	PLAN - LEVELS 5 AND 6
S2.0	DETAILS

WALTER P MOORE

WALTER P. MOORE AND ASSOCIATES, INC.
1307 HOUSTON STEAKS 27010
PHONE: 713.650.7398 FAX: 713.650.7395

HOUSTON, TX 77002
REGISTERED ARCHITECT NO. 28786 - EXPIRES 12/31/2014



GENERAL NOTES

1

1. **EXISTING UTILITIES**
 - A. GENERAL INFORMATION
 1. Refer to the General Notes for the requirements of the proposed utility lines.
 2. Refer to the General Notes for the requirements of the proposed utility lines.
 - B. GENERAL INFORMATION
 1. Refer to the General Notes for the requirements of the proposed utility lines.
 2. Refer to the General Notes for the requirements of the proposed utility lines.
 - C. GENERAL INFORMATION
 1. Refer to the General Notes for the requirements of the proposed utility lines.
 2. Refer to the General Notes for the requirements of the proposed utility lines.
2. **CONSTRUCTION REQUIREMENTS**
 - A. GENERAL INFORMATION
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 2. Refer to the General Notes for the requirements of the proposed utility lines.
 - B. GENERAL INFORMATION
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 2. Refer to the General Notes for the requirements of the proposed utility lines.

2

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 2. Refer to the General Notes for the requirements of the proposed utility lines.

ITEM NO.	DESCRIPTION
1	CONSTRUCTION OF UTILITY LINES
2	CONSTRUCTION OF UTILITY LINES
3	CONSTRUCTION OF UTILITY LINES
4	CONSTRUCTION OF UTILITY LINES
5	CONSTRUCTION OF UTILITY LINES
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50	CONSTRUCTION OF UTILITY LINES

WALTER P MOORE

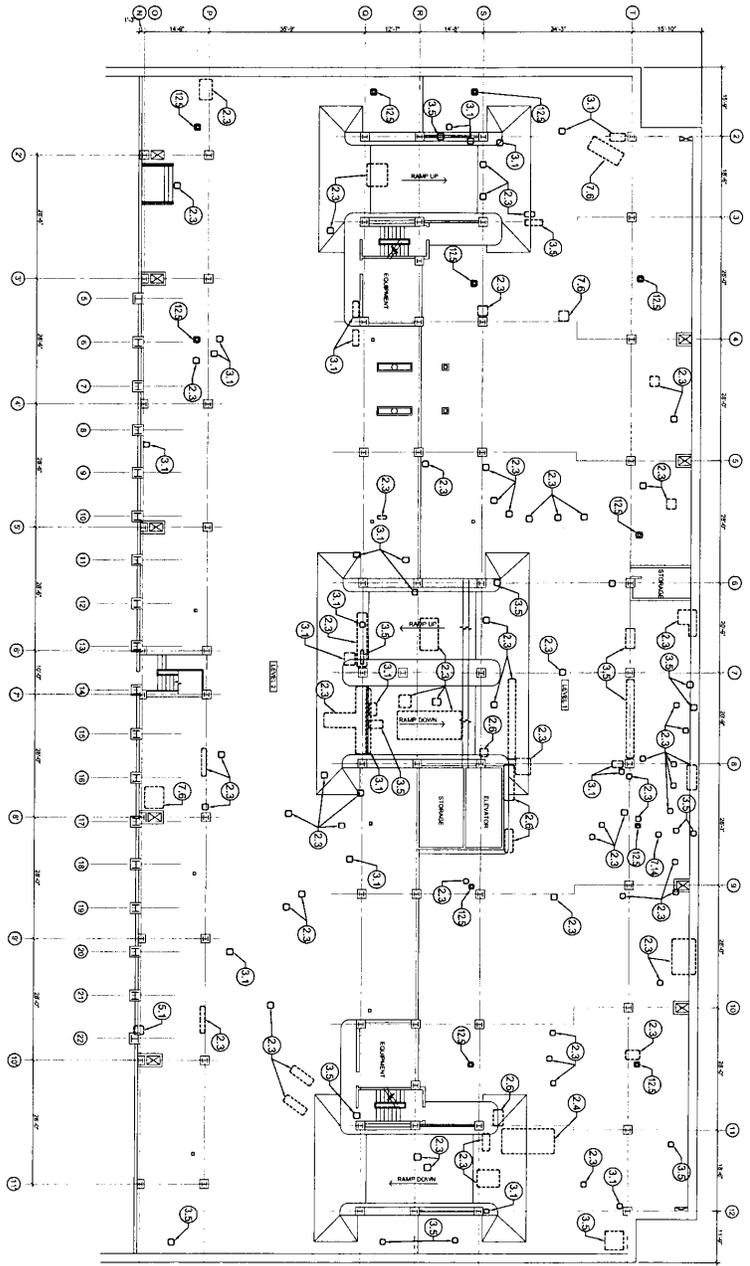
611 WALKER
PARKING GARAGE
REPAIRS

CITY OF HOUSTON

ISSUED FOR BID

GENERAL NOTES

SO.1



SECTION
 1 - THROUGH 1 - SHOW REVISIONS TO CHANGES IN ORIGINAL DATA

1 PLAN - LEVELS 1 AND 2

WALTER P MOORE

611 WALKER
 PARKING GARAGE
 REPAIRS

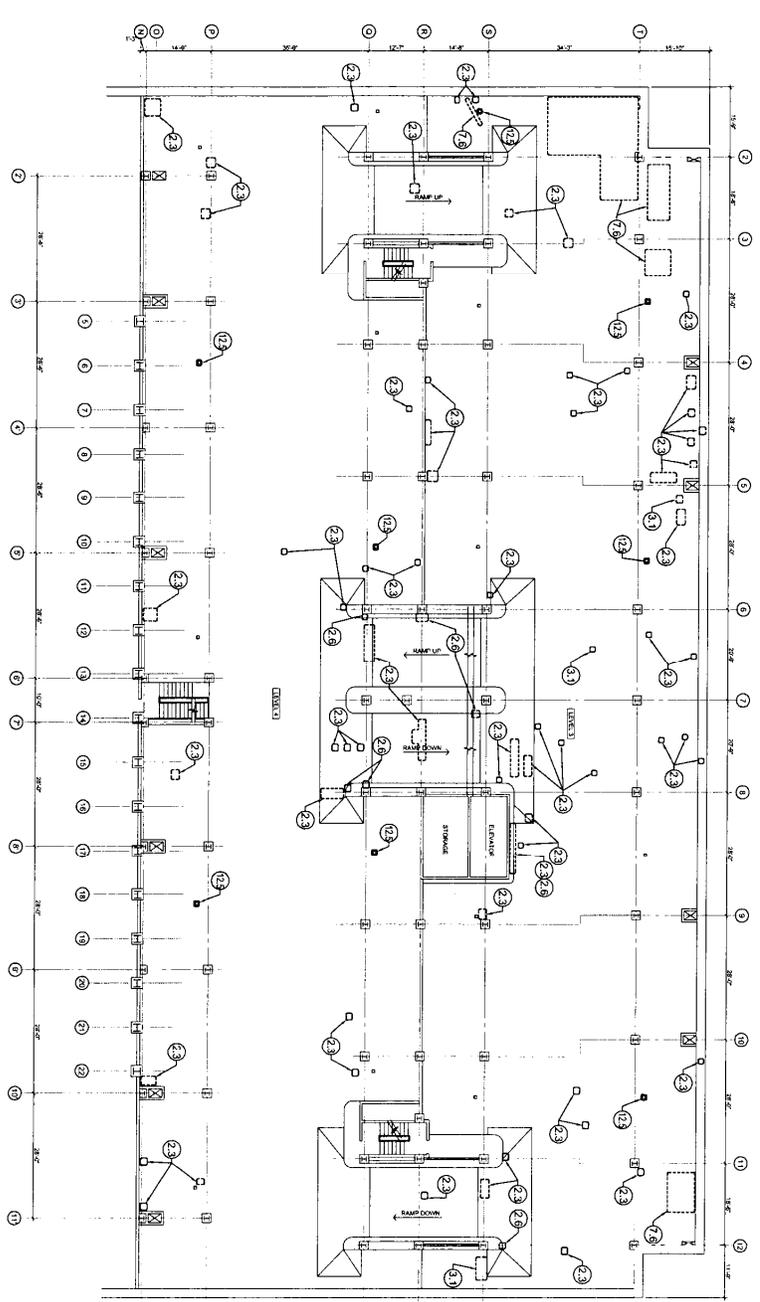
CITY OF HOUSTON

ISSUED FOR BID



THESE PLANS AND SPECIFICATIONS SHALL BE CONSIDERED TO BE THE ENTIRE CONTRACT DOCUMENTS FOR THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INSURANCE COVERAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY BONDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY UTILITIES INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY SURVEYING INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORD DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY AS-BUILT DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION LOGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PHOTOGRAPHS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY MEETINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CORRESPONDENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CHANGE ORDERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PAYMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY ARCHIVES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY BACKUPS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RESTORES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECOVERIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REPAIRS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REPLACEMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REMOVALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY DEMOLITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY MAINTENANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY SHUTDOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY STARTUP. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY COMMISSIONING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY TRAINING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY SUPPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY HANDOVER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CLOSEOUT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY AS-BUILT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY ARCHIVES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY BACKUPS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RESTORES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECOVERIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REPAIRS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REPLACEMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REMOVALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY DEMOLITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY MAINTENANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY SHUTDOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY STARTUP. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY COMMISSIONING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY TRAINING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY SUPPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY HANDOVER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CLOSEOUT.

S1.1



1 PLAN - LEVELS 3 AND 4

WALTER P MOORE

611 WALKER
PARKING GARAGE
REPAIRS

CITY OF HOUSTON

ISSUED FOR BID

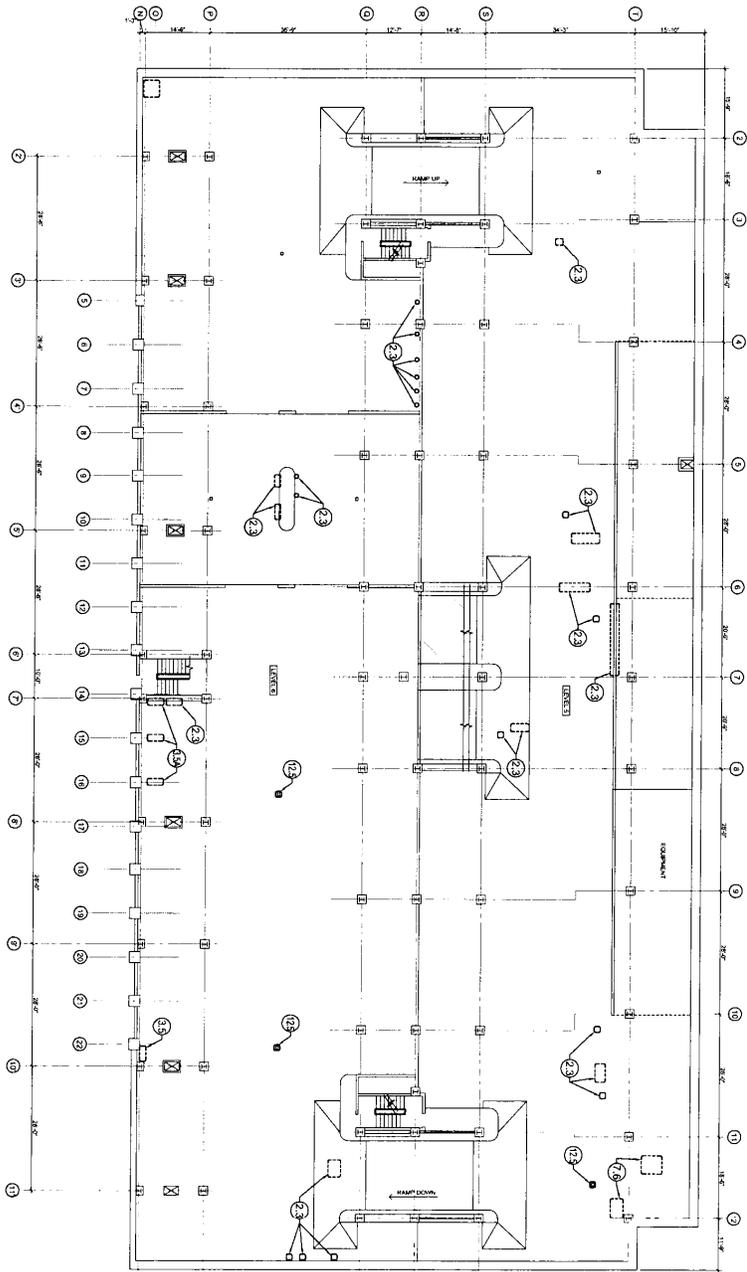


PLAN LEVELS
3 AND 4

S1.2

1 PLAN - LEVELS 5 AND 6

NOTES:
1. TAKE FIELD TO - ELEVATION DIMENSIONS TO CENTER OF DIMENSION LINE.



WALTER P MOORE

6111 WALKER
PARKING GARAGE
REPAIRS

CITY OF HOUSTON

ISSUED FOR BID



PLANLEVELS
5 AND 6

S1.3

SECTION C

A PDF version of this 2013 Building Wage Decision
can be viewed on the following web link

<https://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C24408>

GENERAL TERMS AND CONDITIONS

A PDF version of the General Terms and Conditions can be viewed on the
following web link

<https://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C24408>

Document 00800

SUPPLEMENTARY CONDITIONS

The following Paragraphs amend and supplement the 2011 edition of General Conditions.
Unaltered portions of General Conditions remain in effect.

ARTICLE 3 - THE CONTRACTOR

3.5 *LABOR: Insert the following Paragraph 3.5.3.1.1.*

- 3.5.3.1.1 Contractor shall make good faith efforts to comply with the City ordinances regarding Minority and Women Business Enterprises (MWBE) and Persons with Disabilities Business Enterprises (PDBE) participation goals which are as follows:
- .1 the MWBE goal is 0 percent, and
 - .2 the PDBE goal is 0 percent.

3.28 **CONTRACTOR DEBT**

- 3.28.1 **IF CONTRACTOR, AT ANY TIME DURING THE TERM OF THIS AGREEMENT, INCURS A DEBT, AS THE WORD IS DEFINED IN SECTION 15-122 OF THE HOUSTON CITY CODE OF ORDINANCES, IT SHALL IMMEDIATELY NOTIFY CITY CONTROLLER IN WRITING. IF CITY CONTROLLER BECOMES AWARE THAT CONTRACTOR HAS INCURRED A DEBT, IT SHALL IMMEDIATELY NOTIFY CONTRACTOR IN WRITING. IF CONTRACTOR DOES NOT PAY THE DEBT WITHIN 30 DAYS OF EITHER SUCH NOTIFICATION, CITY CONTROLLER MAY DEDUCT FUNDS IN AN AMOUNT EQUAL TO THE DEBT FROM ANY PAYMENTS OWED TO CONTRACTOR UNDER THIS AGREEMENT, AND CONTRACTOR WAIVES ANY RECOURSE THEREFORE.**

ARTICLE 8 - TIME

- 8.1 *PROGRESS AND COMPLETION: Delete Paragraph 8.1.6. and replace with the following 8.1.6.*
- 8.1.6.1 Contractor shall credit the City by Change Order for inspection services for overtime work or work performed on Sundays or Legal Holidays. The amount Contractor credits the City will be **\$50.00 per hour** per inspector for inspection services.

ARTICLE 9 - PAYMENTS AND COMPLETION

- 9.1 *UNIT PRICE WORK: Delete Section 9.1 in its entirety and insert the following Section 9.1.*
- 9.1 *References to Unit Prices in individual Specification sections are not applicable to the Contract. Include payment for portions of the Work required by these sections in the Stipulated Price for the Contract.*
- 9.12 **LIQUIDATED DAMAGES:** *Insert the following Paragraph 9.12.1.1.*
- 9.12.1.1 The amount of liquidated damages provided in General Conditions Paragraph 9.12.1 payable by Contractor or Surety for each and every day of delay beyond Contract Time, are **\$1,200.00 per day.**

ARTICLE 11 - INSURANCE AND BONDS

- 11.2 *INSURANCE TO BE PROVIDED BY CONTRACTOR: Delete Paragraph 11.2.8. and replace with the following 11.2.8.*
- 11.2.1.4 Contractor shall provide Owners and Contractor's Protective Liability Insurance only if the contractor's bid price is equal to or greater than \$100,000.00.
- 11.2.8 *Endorsement of Primary Insurance:* Each policy except Workers' Compensation Insurance must contain an endorsement that the policy is primary insurance to any other insurance available to additional insured with respect to claims arising under the Contract.

Document 00612
ONE-YEAR MAINTENANCE BOND

THAT WE, _____, as Principal, hereinafter called Contractor, and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation, in the sum of \$ _____, for the payment of which sum well and truly to be made to the City of Houston and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with the City of Houston for _____,
_____,
all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall comply with the provisions of Paragraph 11.5.1 of the General Conditions, and correct work not in accordance with the Contract documents discovered within the established one-year period, then this obligation shall become null and void, and shall be of no further force and effect; otherwise, the same is to remain in full force and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

Name of Contractor

By: _____

Name:

Title:

By: _____

Name:

Title:

Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____

Name:

Title:

Date:

By: _____

Name:

Title: Attorney-in-Fact

Date:

This Ordinance or Contract has been reviewed as to form by the undersigned legal assistant and have been found to meet established Legal Department criteria. The Legal Department has not reviewed the content of these documents.

Legal Assistant

Date

Document 00610
PERFORMANCE BOND

THAT WE, _____, as Principal, (the "Contractor"), and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston (the "City"), a municipal corporation, in the penal sum of \$_____ for the payment of which sum, well and truly to be made to the City, its successors and assigns, Contractor and Surety do bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with the City for _____, _____, all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall faithfully and strictly perform the Contract in all its terms, provisions, and stipulations in accordance with its true meaning and effect, and in accordance with the Contract documents referred to therein and shall comply strictly with each and every provision of the Contract and with this Bond, then this obligation shall become null and void and shall have no further force and effect; otherwise the same is to remain in full force and effect. Should the Contractor fail to faithfully and strictly perform the Contract in all its terms, including but not limited to the indemnifications thereunder, the Surety shall be liable for all damages, losses, expenses and liabilities that the City may suffer in consequence thereof, as more fully set forth herein.

It is further understood and agreed that the Surety does hereby relieve the City or its representatives from the exercise of any diligence whatever in securing compliance on the part of the Contractor with the terms of the Contract, and the Surety agrees that it shall be bound to take notice of and shall be held to have knowledge of all acts or omissions of the Contractor in all matters pertaining to the Contract. The Surety understands and agrees that the provision in the Contract that the City will retain certain amounts due the Contractor until the expiration of 30 days from the acceptance of the Work is intended for the City's benefit, and the City will have the right to pay or withhold such retained amounts or any other amount owing under the Contract without changing or affecting the liability of the Surety hereon in any degree.

It is further expressly agreed by Surety that the City or its representatives are at liberty at any time, without notice to the Surety, to make any change in the Contract documents and in the Work to be done thereunder, as provided in the Contract, and in the terms and conditions thereof, or to make any change in, addition to, or deduction from the Work to be done thereunder; and that such changes, if made, shall not in any way vitiate the obligation in this Bond and undertaking or release the Surety therefrom.

It is further expressly agreed and understood that the Contractor and Surety will fully indemnify and save harmless the City from any liability, loss, cost, expense, or damage arising out of Contractor's performance of the Contract.

If the City gives Surety notice of Contractor's default, Surety shall, within 45 days, take one of the following actions:

1. Arrange for Contractor, with consent of the City, to perform and complete the Contract; or
2. Take over and assume completion of the Contract itself, through its agents or through independent contractors, and become entitled to the payment of the balance of the Contract Price.

If the Surety fails to take either of the actions set out above, it shall be deemed to have waived its right to perform and complete the Contract and receive payment of the balance of the Contract Price and the City shall be entitled to enforce any remedies available at law, including but not limited to completing the Contract itself and recovering any cost in excess of the Original Contract Price from the Surety.

This Bond and all obligations created hereunder shall be performable in Harris County, Texas. This Bond is given in compliance with the provisions of Chapter 2253, Texas Government Code, as amended, which is incorporated herein by this reference.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other Party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

EXECUTED in multiple originals this _____ day of _____, 20_____.

ATTEST/SEAL: (if a corporation)
WITNESS: (if not corporation)

(Name of Principal)

(Address of Principal)

By: _____
Name:
Title:
Date:

By: _____
Name:
Title:
Date:

ATTEST/SEAL
SURETY WITNESS:

(Name of Surety)

(Address of Surety)

By: _____
Name:
Title:
Date:

By: _____
Name:
Title:
Date:

REVIEWED:

This Bond has been reviewed as to form by the undersigned Paralegal and has been found to meet established Legal Department criteria.

Date

Paralegal

Document 00611
STATUTORY PAYMENT BOND

THAT WE, _____, as Principal, hereinafter called Contractor and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound unto the City of Houston, a municipal corporation, in the sum of \$_____ for the payment of which sum, well and truly to be made to the City of Houston, and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a contract in writing with the City of Houston for _____, _____, all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein;

NOW, THEREFORE, if the said Contractor shall pay all claimants supplying labor and materials to him or a Subcontractor in the prosecution of the Work provided for in the Contract, then, this obligation shall be void; otherwise the same is to remain in full force and effect;

PROVIDED HOWEVER, that this Bond is executed pursuant to the provisions of Chapter 2253, Texas Government Code, as amended, and all liabilities on this Bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)
WITNESS: (if not a corporation)

Name of Contractor

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____
Name:
Title:
Date:

By: _____
Name:
Title: Attorney-in-Fact
Date:

This Ordinance or Contract has been reviewed as to form by the undersigned legal assistant and have been found to meet established Legal Department criteria. The Legal Department has not reviewed the content of these documents.

Legal Assistant

Date