Project Manual

CITY OF DURHAM

Church Street Parking Deck
Structural Rehabilitation

DURHAM, NORTH CAROLINA

OWNER: CITY OF DURHAM
101 CITY HALL PLAZA
DURHAM, NORTH CAROLINA 27701

July 26, 2013

General Services Department
2011 Fay Street
Durham, NC 27704
(919) 560-4197

CONTRACT AND SPECIFICATIONS

CITY OF DURHAM, NORTH CAROLINA

MAYOR: WILLIAM V. "BILL" BELL

COUNCIL MEMBERS:

Cora Cole-McFadden
Diane N. Catotti
Howard Clement, III
Eugene A. Brown
Don Moffitt
Steve Schewel

CITY MANAGER: THOMAS J. BONFIELD

CITY ATTORNEY: PATRICK W. BAKER

CITY CLERK: D. ANN GRAY

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- END -

DURHAM
1869
CITY OF MEDICINE

CITY OF DURHAM
General Services Department
Project Management Division
2011 FAY STREET | DURHAM, NC 27704
919.560.4197 | F 919.560.4970

www.durhamnc.gov

INVITATION TO BIDDERS
CHURCH STREET PARKING DECK STRUCTURAL REHABILITATION

The City of Durham will open bids for the Church Street Parking Deck Structural Rehabilitation project at 2:00 P.M. on **Tuesday, September 3, 2013** at the City of Durham General Services Department, 2011 Fay Street, Durham, North Carolina 27704. Be sure to use all of the forms included in this manual for submitting your bid. **The following forms must be filled out and returned with the bid proposal.**

A. **Bid Forms**
B. **Non-Collusion Affidavit**
C. **SDBE Forms**
D. **Contractor Safety Record Information**
E. **Contractor Qualification Statement for Structural Work**
F. **Bid Bond**

Any bids submitted without these completed forms may be deemed as "non-responsive".

Summary of Work: The Work consists of concrete repair at floor slabs and vehicular ramp; structural steel repairs of beams, columns, stairs, metal decking, and miscellaneous steel; waterproofing repairs; masonry repairs; striping; and, accessibility upgrades to provide for additional ADA accessible spaces and accessible routes to the public way.

Bidders are strongly encouraged to attend a pre-bid conference on **Wednesday, August 14, 2013 at 10:00 AM** at the Church St. Garage, 109 South Mangum St, Durham NC 27701. Attendees will meet next to the parking attendant booth at the west end of the parking deck.

Plans and specifications are on file and available for viewing at:

- The Equal Opportunity/Equity Assurance Dept - 302 East Pettigrew St, C-180, Durham, NC 27701; 919-560-4180, Vincent Wingate at ext. 17241.
- The General Service Dept - 2011 Fay St., Durham, NC 27704; 919-560-4197, Doreen Sanfelici, at ext. 21249.

Plans and specifications are available electronically at the City of Durham's Purchasing website - http://durhamnc.gov/ich/as/fin/Pages/bids.aspx .

To ensure a fair bidding process, questions and/or clarifications requested by contractors will not be accepted after **Friday, August 23 at 4:00 PM**. Contractors must submit to Matt Sumpter at Kimley-Horn and Associates (Engineer) all questions in writing, by either FAX (919) 653-5847 or email matt.sumpter@kimley-horn.com. In order to be included in the Bidder's List and be notified of addenda or additional information, bidders must contact John Paces-Wiles at john.paces-wiles@durhamnc.gov.

Small Disadvantaged Business Enterprise participation goals are **MSDBE 3% and WSDBE 1%**. Bidders are required to pre-qualify with the City of Durham Equal Opportunity / Equity Assurance Department. Contractors who are not currently pre-qualified must fill out the Pre-Qualification forms included in the project bid manual. The deadline for submitting completed Contractor Pre-Qualification Forms will be **Friday, August 23 at 4:00 PM**, and should be directed via mail, fax, or email to:

Angela D. Henderson
EO/EA Specialist
City Of Durham
Equal Opportunity/Equity Assurance Department
302 East Pettigrew Street C-180, Durham, NC 27701
919-560-4180 ext. 17244
Fax: (919) 560-4513
Angela.Henderson@durhamnc.gov

Work on this project shall be covered by a Single Prime Contract.

Contractors who bid must be licensed to do work in the State of North Carolina under Chapter 87 of the N.C. General Statues. The Contractor's North Carolina License number shall be included in the Bid Proposal form.

Contractors who bid must complete the section "Contractor's Qualification Statement for Structural Restoration Work" and submit the completed form with their bid to demonstrate satisfactory prior experience in structural restoration work.

The City of Durham reserves the right to reject any and/or all bids, waive informalities, and/or accept such bid as appears in its judgment to be in the best interest of the City.

INSTRUCTIONS TO BIDDERS

1. Bids will be received for Single Prime Contract. All proposals shall be for lump sum. The submission of a bid will assume that the Contractor has fully examined the site and knows existing conditions, and has made every provision for operating under the existing conditions, and has included all necessary items, and has read and understands the Bidding Documents. The Contractor shall review the report regarding lead based paint included in this document. No consideration shall be given to any claim for extra compensation or extension of contract time because of failure to comply with this provision.

2. The contractor will furnish all materials, labor, equipment, supervision, tools, machinery, etc. for complete construction of projects in accordance with plans and specifications of the City of Durham.

3. It shall be the contractor's responsibility to obtain all necessary and required permits and inspections. These permits shall be presented upon demand.

4. The Contractor will perform, or have performed, all the necessary site layout (both lines and grades) for this construction.

5. It is the intent of the City to award this bid to the lowest responsive and responsible bidder.

6. The bidder to whom the award is made shall be required to furnish work crews of adequate number, size, and experience to properly perform the work. The interpretation of the number of crews, size, and experience will be determined by the City of Durham as to their adequacy. The project shall be substantially complete one hundred eighty (180) days from the issuance of the Notice to Proceed to the Contractor. The Contractor shall coordinate the Work with the Owner as to minimize interruptions of the Church St. Garage operations.

7. Except to the extent allowed by statute, bids shall not be withdrawn and bids shall remain subject to acceptance by the City for a period of 90 days.

8. Bidders must present satisfactory evidence that they have been regularly engaged in the business of constructing such work, and that they are fully prepared with the necessary capital, equipment, etc., to begin the work promptly, and complete the same in accordance with specifications, if so requested.

9. No bid shall be considered or accepted by the City unless at the time of its filing, it is accompanied by a deposit of cash, or a cashier's check, or a certified check on some bank or trust company insured by the FDIC in an amount equal to not less than five percent (5%) of the bid. In lieu of making that deposit, the bidder may file a bid bond executed by a corporate surety licensed under the laws of North Carolina to execute such bonds, conditioned that the surety will upon demand forthwith make payment to the City of Durham upon the bond if the bidder fails to execute the contract in accordance with the bid bond. This deposit shall be retained by the City if the successful bidder fails to execute the contract within 10 days after the award or fails to give satisfactory performance bonds or deposit as required herein. A form for the bid bond is included in this project manual.

10. The Contractor must provide the City of Durham with a safety plan of their organization, prior to approval of the contract.

11. The City reserves the right to extend the work in this Contract upon the same terms and the same unit prices, provided that such extensions shall not exceed in cost fifty per cent (50%) of the original Contract price of the Contract being extended. Refer to Section 012200 of the Technical Specifications for additional requirements regarding approved repair quantities and unit price renegotiation.

12. The following standard AIA documents shall be used for their intended purposes unless the Owner consents to use other forms:

    - Standard Form of Agreement Between Owner and Contractor AIA Form A101-1987
    - General Conditions of the Contract for Construction AIA Form A201 – 1987
    - City of Durham Supplementary Conditions to AIA Form A201 – 1987
    - Application and Certification for payment AIA Form G702-1992
    - Continuation Sheet AIA Form G703-1992
    - Architect's Supplemental Instructions AIA Form G710-1992
    - Contractor's Affidavit of Release of Liens AIA G706A-1994
    - Certificate of Substantial Completion AIA Form G704-1992
    - Consent of Surety to Final Payment AIA Form G707-1994
    - Certificate of Insurance Construction AIA Form G705-1987

13. The contract between the Owner and Engineer is based on a non-standard EJCDC contract. Any conflicting language for the scope and services of the Engineer between the EJCDC contract and the AIA construction contract shall be governed by the Owner-Engineer EJCDC contract.

14. All bids submitted must be on the blank proposal forms herein provided and prices given shall be both in writing and figures and the complete form shall be without any lineation, alterations, or erasures. In case of conflicting prices, the written prices shall govern.

15. The omission of prices upon any item for which bids are asked or the tendering of an unbalanced bid will be the cause of the rejection of the bid submitted.

16. Bids shall be received in strict accordance with requirements of the General Statutes of North Carolina. All copies of the Bid, and any other documents required to be submitted with the Bid shall be enclosed in a double envelope. The envelope can be hand delivered or mailed and shall be addressed to the City of Durham, General Services Department, 2011 Fay Street, Durham, North Carolina, 27704, Attn: John Paces-Wiles, and should be identified with the project name, time and date of bid Opening, the Bidder's name and address, and Bidder's General contracting license number.

17. Each proposal shall contain the full name and address of each bidder. When firms bid, the name of each member shall be signed and the firm name and address.

18. The contractor(s) to whom the award is made must carry insurance in the amounts and types outlined in the Insurance Requirements section of this document. Any costs associated with the required insurance limits shall be included in the amount of the bid.

19. The insurance herein required shall be with an insurance company authorized to do business in North Carolina and having a BEST rating of A or better.

20. Insurance shall be evidenced by a certificate:

    - Providing notice to the City of not less than 30 days prior to cancellation or reduction of coverage.
    - Certificates should be addressed to:
      City of Durham, North Carolina
      Attn: John Paces-Wiles
      General Services Department
      2011 Fay Street
      Durham, NC 27704

21. Indemnification – See section 3.18 of Supplementary Conditions to AIA 201 included in the Project Manual.

22. The successful bidder is required to commence work within **ten (10) days** after written notice from the Project Manager. Termination of work shall also be controlled by the City of Durham.

23. The bidder is hereby directed **NOT** to include the N.C. Sales Tax in the bid total**.** The successful bidder to whom the award is made will be required to submit a sworn statement on the first day of each month itemizing the purchases and taxes paid thereon and certifying that the articles purchased were used in work performed for the City of Durham. The N.C. Sales and Use Tax so itemized will be made a part of the monthly estimate. A sample form which must be followed to qualify for these payments to Sales and Use Tax is shown in the Contract Documents.

24. General Contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for general contractor.
    NOTE: Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed. Therefore a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license.

25. Bidders are requested to return bids to the City of Durham General Services Department by the date and time stated in the Invitation to bidders. Bids will be opened promptly at the time specified in the legal Notice – Advertisement for bids. Bidders are cautioned to be prompt since No Bids Will Be Accepted after the Time Designated for the Bid Opening. The precise time will be monitored by the person responsible for opening the bids.

26. Contractors who bid must complete the section "Contractor's Qualification Statement for Structural Restoration Work" and submit the completed form with their bid to demonstrate satisfactory prior experience in structural restoration work. A bid that fails to demonstrate sufficient minimum qualification(s) and prior experience(s) shall be rejected as non-responsive and/or bidder deemed unqualified or not responsible to perform the work.

27. Bidders are required to pre-qualify with the City of Durham Equal Opportunity / Equity Assurance Department. Contractors who are not currently pre-qualified must fill out the Pre-Qualification forms included in the project bid manual. The deadline for submitting completed Contractor per-Qualification Forms is specified in the invitation to bidders, and should be directed via mail, fax, or email to:

Angela D. Henderson
EO/EA Specialist
City of Durham
Equal Opportunity/Equity Assurance Department
302 East Pettigrew St, C-180
Durham, NC 27701
(919) 560-4180 Ext. 17244
Fax: (919) 560-4513
Angela.Henderson@durhamnc.gov

The City of Durham has established the following goals for Small disadvantaged Business Enterprise Program (SDBE) participation in the procurement of goods, services and construction.
Minority SDBE participation Goal – Based on the specification outlined for this project, the MSDBE participation goal is 3%.
Women SDBE participation Goal – Based on the specification outlined for this project, the WSDBE participation goal is 1%.

28. The bids will be evaluated and the contract awarded in accordance with statutory public contract requirements as supplemented or altered by the City of Durham's Small Disadvantaged Business Enterprise Requirements supplied with this bid. **These forms, indicated on the Bid Proposal Form, must be filled out and returned with the bid proposal. Any bids submitted without these completed forms may be deemed as "non-responsive".** If there are any questions or problems in filling out these forms, please contact:

    City of Durham
    Equal Opportunity/Equity Assurance Department
    302 East Pettigrew St, Suite C-180
    Durham, NC 27701
    (919) 560-4180

29. A prebid conference shall be held at the date and time stated in the Invitation to Bidders at the Church St. Garage, 109 South Mangum St, Durham, NC 27701.

30. Substitutions: Any Bidder proposing a substitution shall bear the entire cost of incorporating the substitution into the finished work, including costs of administration, redetailing, redesigning and changing the work of other contractors and sub-contractors. Material substitutions will be considered no later than ten (10) days prior to the receipt of bids.

31. Change Orders: Refer to Article 7 of AIA 201-1987.

32. Unit Prices: All unit prices shall be bid. Unit Prices shall be net, no profit or overhead shall be added or deducted when applying Unit Prices to the contract sum adjustments.

33. Plans and specifications are available electronically on the City of Durham Website:

    http://durhamnc.gov/ich/as/fin/Pages/bids.aspx

    Plans and specifications are also on file and available for viewing at: The City of Durham General Services Department – 2011 Fay Street, Durham, NC, 27704; 919-560-4197, and at The City of

Durham Equal Opportunity/Equity Assurance Department – 302 East. Pettigrew Street, C-180, Durham, NC 27701; (919) 560-4180.

34. All work under this contract shall be substantially completed within one hundred eighty (180) days from the date of the Notice to Proceed.

35. Any questions regarding the Contract Conditions should be directed to John Paces-Wiles at (919) 560-4197 ext. 21252, or at john.paces-wiles@durhamnc.gov.

36. **Any questions regarding the Bid Documents should be directed to:** Matt Sumpter, Kimley-Horn and Associates at (919) 653-6649 or at matt.sumpter@kimley-horn.com.

BID PROPOSAL FORM

(USE THIS FORM ONLY)

SUBMIT PROPOSALS IN CARE OF:
General Services Department
City of Durham
2011 Fay Street
Durham, NC 27704
(919) 560-4197

BIDDER'S FIRM NAME_____

DATE:_____

PROPOSAL: **Church Street Parking Deck Structural Rehabilitation**

The Undersigned, as Bidder, hereby declares that only person or persons interested in this proposal as principals or principals is or are named herein and that no other persons than herein mentioned has any interest in this proposal or in the contract to be entered, that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respect fair and in good faith without collusion or fraud.

The bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the specifications for the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids, that he has satisfied himself relative to the work to be performed.

Materials to be furnished shall be in compliance with standard specifications and special provisions. CONTRACTOR'S responsibility shall continue uninterrupted until expiration of the warranty period as stated in the specifications after completion of the work. The owner (City of Durham) reserves the right to select any or all of the alternates and to increase or decrease the total contract amount utilizing the unit prices supplied by the CONTRACTOR in the bid form.

The Base Bid and Alternates shall not include any state or local sales tax. Such tax shall be accounted for separately and will be reimbursed from a separate source.

The Bidder agrees, if his proposal is accepted, to contract with the City of Durham, 101 City Hall Plaza, Durham, NC 27701, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, and labor necessary to complete within the time allotted as specified, the General Construction work on the Owner's property, in complete accordance with the Plans, Specifications, and Contract Documents bearing the title **Church Street Parking Deck Structural Rehabilitation,** with a definite understanding that no money will be allowed for extra work except as set forth in the Contract Documents for the sums as follows:

The undersigned proposes to perform alternatives for stated resulting additions from the Base Bid. Additions shall include any modifications of work or additional work that the undersigned may be required to perform by reason of acceptance of any alternative.

Base Bid:

				Unit Price	Subtotal Price
00 General					
0.1	Mobilization	1	LS	$ _____	$_____
03 Concrete Repairs					
3.1	Elevated Ramp Slab Replacement	1	LS	$ _____	$_____
3.2	Shallow Spall Repair	850	SF	$ _____	$_____
3.3	Repair Exposed Rebar	50	SF	$ _____	$_____
3.4	Repair Cracks/Joints	1,550	LF	$ _____	$_____
3.5	Two-Way Crossover Removal	1	LS	$ _____	$_____
3.6	Stair 1 Curb Repair	1	LS	$ _____	$_____
3.7	ADA Curb Cut	1	LS	$ _____	$_____
3.8	Vehicular Exit Curb	1	LS	$ _____	$_____
3.9	SOG Shaving	1	LS	$ _____	$_____
3.10	Deep Spall Repair	30	SF	$ _____	$_____
04 Masonry					
4.1	Repair Brick Isolation Joint	1	LS	$ _____	$_____
4.2	Replace Wall Joint	330	LF	$ _____	$_____
4.3	Rotated Brick Repair	1	LS	$ _____	$_____
05 Metals					
5.1	Extensive Moment Connection	3	EA	$ _____	$_____
5.2	Stair 1 Repairs	140	SF	$ _____	$_____
5.3	Stair 2 Repairs	1	LS	$ _____	$_____
5.4	Stair 3 Repairs	1	LS	$ _____	$_____
5.5	Perimeter Steel Beam Repairs	2,500	LF	$ _____	$_____
5.6	Metal Decking Repairs	950	SF	$ _____	$_____
5.7	Beam Repairs Adjacent to Stair 1	1	LS	$ _____	$_____
5.8	Typical Moment Connection	66	EA	$ _____	$_____
5.9	Filler Beam Connection	10	EA	$ _____	$_____
5.10	Steel Plate Installation	25	LF	$ _____	$_____
5.11	Trench Drain Repair	1	LS	$ _____	$_____
5.12	Stair 1 Railing Repair	1	LS	$ _____	$_____
5.13	Steel Bar Repair	220	LF	$ _____	$_____
5.14	Stair Pan Remove/Replace	60	SF	$ _____	$_____
5.15	Steel Cleaning/Repainting	330	SF	$ _____	$_____
5.16	Web Repair Plates	6	EA	$ _____	$_____
5.17	Column Line E Steel Beam Repairs	1,000	LF	$ _____	$_____

07 Moisture Protection					
7.1	Expansion Joint	366	LF	$ _____	$_____
7.2	Joint Sealant	8,800	LF	$ _____	$_____
7.3	Apply Silane Sealer	100,000	SF	$ _____	$_____
09 Finishes					
9.1	Restripe Pavement Markings	1	LS	$ _____	$_____
9.2	Stripe Pavement Markings	1	LS	$ _____	$_____
10 Specialties					
10.1	Signage	1	LS	$ _____	$_____
26 Electrical					
26.1	Relocate Light Fixture	1	LS	$ _____	$_____

Total Base Bid Price

($_____)_____dollars

Plumbing Subcontractor: _____ License _____

Mechanical Subcontractor: _____ License _____

Electrical Subcontractor: _____ License _____

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as a subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

ADDENDA

The following addenda are acknowledged as having been received and noted, the provisions for which are included in the proposal(s). Failure to acknowledge receipt of any addenda will subject the bidder to disqualification. CONTRACTOR to sign below.

Addendum No. 1:_____

Addendum No. 2:_____

Addendum No. 3:_____

Addendum No. 4:_____

ALLOWANCES

				Unit Price	Subtotal Price
1	Retaining Wall Repair	1	LS	$ 10,000.00_____	$ 10,000.00_____

ALTERNATES

				Unit Price	Subtotal Price
1	Stair 2 Removal	1	LS	$ _____	$_____
2	Garage Repainting	1	LS	$ _____	$_____
3	High-Solids Fluoropolymer Coating	*	SF	$ _____	$_____
4	Power Wash Cleaning	70,000	SF	$ _____	$_____

*Quantity as indicated in conjunction with all other steel coating work

REQUIRED FORMS

The following forms have been completed by the CONTRACTOR and are attached hereto. CONTRACTOR to acknowledge.

Contractor's Qualification Statement for Structural Restoration Work: _____

Bid Bond: _____

Non Collusion Affidavit: _____

Contract Safety Record Information: _____

SDBE Form(s):

E101 SDBE Participation on Base Bid _____

E102 SDBE Participation on Alternates_____

Respectfully submitted this _____ day of _____, 20___.

Signature: _____

Title: _____

Firm: _____

Address: _____

_____

_____

Phone: _____

Email Address: _____

Phone Number: _____

License No._____ Expiration Date _____

BID BOND for the City of Durham

Contract name and number or other description of the Contract:

Name of Bidder:

Name, address, and telephone number of Surety's N. C. Resident Agent:

Telephone number of Surety's home office:

Surety is a corporation organized and existing pursuant to the laws of the State of:

Amount of this bond: *check (a) or (b):*

___ (a) *(write or type the amount in words and figures*) All numbers in this section are in U. S. dollars.
($)

___ (b) five percent of the amount of the proposal

Bond number:

Date of execution of this bond:

Obligee: CITY OF DURHAM, a North Carolina municipal corporation.

• *

KNOW ALL PERSONS BY THESE PRESENTS, that the Surety executing this bond, which Surety is duly licensed to act as surety in North Carolina, is held and firmly bound unto the City of Durham, Obligee, in the penal sum of the amount stated above, for the payment of which sum, well and truly to be made, the Surety binds itself and its successors and assigns, jointly and severally, by these presents. Whereas the Bidder is herewith submitting a proposal for the Contract referred to above, and the Bidder desires to file this Bid Bond in lieu of making the cash deposit pursuant to G.S. 143-129; NOW THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the Bidder shall be awarded the contract for which the bond is submitted, and shall, within ten days after the award is made, execute and deliver to the Obligee the contract and give satisfactory surety as required by G.S. 143-129, then this obligation shall be null and void, otherwise to remain in full force and virtue; and if the Bidder fails or refuses to so execute and deliver said contract or give said satisfactory surety, the Surety shall upon demand forthwith pay to the Obligee the full penal sum of this bond. The Surety waives all extensions of time, and notice of extensions of time, for the opening of proposals and for the modification, award, execution, and delivery of the contract. IN WITNESS WHEREOF, the Surety has executed this instrument under its seal as of the date of execution indicated above, pursuant to authority of its governing body.

_____
(name of Surety)

_____
(signature of Surety's attorney in fact)
(Affix Surety's corporate seal.)
(Instructions to Surety: If you use a raised corporate seal, press hard enough to make it legible.)

ACKNOWLEDGMENT OF SURETY'S EXECUTION OF BID BOND

State of _____ County of _____

I, _____, a notary public in and for said county and state, certify that _____ personally appeared before me this day and acknowledged that he or she is Attorney in Fact for

_____,
the Surety named in the foregoing Bid Bond, in which bond the Obligee is the City of Durham, and that he or she executed said bond, under the seal of the Surety, on behalf of the Surety.

This the _____ day of _____, 20_____.

My commission expires: _____
_____ Notary Public

Church Street Parking Deck Structural Rehabilitation
Contract Safety Record Information

The Contractor's safety record shall be reviewed and evaluated in addition to other quality and performance criteria as part of bid evaluation process. Failure to provide the requested information and documentation may result in rejection of your bid as non-responsive. Accordingly, all bidders must submit the following information regarding their safety record.

The following definitions shall apply to this section:

"DART incident rate" – Acronym for "Days Away, Restrictions and Transfers". The DART incident rate may be used to show the relative level of injuries and illnesses within a firm compared to the industry. It is based only on those injuries and illnesses severe enough to warrant "Days Away, Restrictions and Transfers". The DART incident rate is calculated using OSHA's Form 300 and the following formula:
((Number of entries in column H (days away from work) + column I (job transfer or restriction) x 200,000) / (Number of hours worked by all employees) = DART Incident rate.

"EMR" – Acronym for "Experience Modification Rate," is an indicator of a contractor's past safety performance, widely used by the insurance industry as an equitable means of determining premiums for workers' compensation insurance. The rating system considers the average workers' compensation losses for a given firm's type of work and amount of payroll and predicts the dollar amount of expected losses to be paid by that employer in a designated rating period, usually three years. The rating is based on comparison of firms doing similar types of work, and the employer is rated against the average expected performance in each work classification. Losses incurred by the employer for the rating period are then compared to the expected losses to develop an experience rating.

"OSHA" – Acronym for the Federal Occupational Health and Safety Administration. The term "OSHA" as used in this Policy also refers to any state or local agency having jurisdictional authorization to enforce worker safety requirements and assess fines or warnings for violation of worker safety standards.

1. OSHA DART Incident Rate. Provide the bidder's DART Incident Rate calculated from OSHA's Form 300 for the last three years and the other required information shown in the example table below. *The bidder must attach all supporting documentation and calculations including certified OSHA forms*.

YEAR	CONTRACTOR **DART** INCIDENT RATE	INDUSTRY **DART** INCIDENT RATE	INDUSTRY FIELD AND CODE

2. Experience Modification Rate (EMR). Provide the bidder's most recent Experience Modification Rate (EMR) based on insurance claims history. *The bidder must provide the source of the EMR information and contact information of insurer entity providing the EMR*.

YEAR	CONTRACTOR **EMR**	INDUSTRY FIELD AND CODE	NAME AND CONTACT INFO FOR **EMR** INFORMATION

3. Answer the following OSHA Specific Questions:

(a) Within the last 2 years, has the bidder received any citations classified by OSHA as being (1) serious, (2) willful and/or (3) repeat violations where your company operates?
Yes _____ No _____
If yes, attach a copy of each such citation and violation.

(b) Has the bidder experienced any work-related fatalities within the last five years?
Yes _____ No _____

(c) Has the bidder had any citations issued by OSHA as a result of work related fatalities within the past 5 years?
Yes _____ No _____

(d) Is the bidder under investigation for any work-related fatalities?
Yes _____ No _____

(e) If your answer is "yes" to 3(b), (c) or (d), provide a copy of the citation(s), list of number(s) of fatalities and documented explanation of the fatality.

4. Safety Plan:
(a) Does the company have a written safety program that includes responsibility for all aspects of safety management?
Yes_____ No _____
(b) Does the company have a written plan for safety training of new employees and ongoing training of existing employees?
Yes_____ No _____
(c) Does the company have documented evidence of safety training that they have conducted?
Yes_____ No _____
(d) If the company has employees with limited English ability, does the company have a written plan for ensuring that their employees understand the training they are being given?
Yes_____ No _____
(e) Do all supervisors have an appropriate documented level of OSHA training (e.g., a minimum of 30 hour OSHA construction safety training)?
Yes_____ No _____

(f) Do employees have documented basic OSHA 10 hour construction safety training?
Yes_____ No _____
(g) Does the company have a documented Hazard Communication Program?
Yes_____ No _____

5. Required Written Explanation of Safety Record. If the bidder has any of the following: (a) DART incident rate greater than its industry average, (b) an EMR greater than 1.0, (c) answered "yes" to any of the OSHA Specific Question above, or (d) answered "no" to any of the Safety Plan questions, the bidder shall provide the City, in its bid, a detailed written explanation of its safety record and the reasons why such safety history is NOT representative of its future performance and what specific actions it has taken to improve its overall safety record. Failure to provide a written explanation of its safety record pursuant to this paragraph may be deemed as non-responsive by the City.

Church Street Parking Deck Structural Rehabilitation
Insurance Requirements

Contractor shall maintain insurance not less than the following:

Commercial General Liability, covering

- premises/operations
- products/completed operations
- broad form property damage
- explosion, collapse, and underground hazards if the hazards exist in the performance of this contract
- contractual liability
- independent contractors, if any are used in the performance of this contract
- City of Durham must be named additional insured, and an original of the endorsement to effect the coverage must be attached to the certificate (if by blanket endorsement, then agent may so indicate in the GL section of the certificate, in lieu of an original endorsement); additional insured coverage shall be primary and non-contributing
- combined single limit not less than $2,000,000 per occurrence; aggregate limit not less than $4,000,000 per year

Automobile Liability Insurance, covering

- owned, hired, or borrowed vehicles
- employee vehicles, if used in performance of this contract
- combined single limit not less than $2,000,000 per occurrence; aggregate limit not less than $4,000,000 per year
- City of Durham must be named additional insured, and an original of the endorsement to effect the coverage must be attached to the certificate (if by blanket endorsement, then agent may so indicate in the GL section of the certificate, in lieu of an original endorsement); additional insured coverage shall be primary and non-contributing
- combined single limit not less than $1,000,000 per occurrence; aggregate limit not less than $1,000,000 per year

Workers' Compensation Insurance, covering

- statutory benefits;
- covering employees; covering owners partners, officers, and relatives (who work on this contract)
- employers' liability, $1,000,000.
- Waiver of subrogation in favor of the City of Durham

Insurance shall be provided by:

- companies authorized to do business in the State of North Carolina
- companies with Best rating of A-VIII or better.

Insurance shall be evidenced by a certificate:

- providing notice to the City of not less than 30 days prior to cancellation or reduction of coverage
- certificates shall be addressed to:

  City of Durham, North Carolina
  General Services Department
  2011 Fay Street
  Durham, NC 27704
- both the insurance certificate and the additional insured endorsement must be originals and must be approved by the City's Finance Director before Contractor can begin any work under this contract.

PERFORMANCE BOND AND PAYMENT BOND

Date of Contract**:**

Contract Name and Number**:**

Name of Principal (Name of Contractor)**:**

The Principal is organized and existing under the laws of the following State**:**

Name of Surety**:**

Name, address, and telephone number of Surety's N. C. Resident Agent**:**

Amount of Performance Bond (in words and figures)**:**

dollars

($)

Bond number**:**

Date of Execution of these Bonds**:**

Contracting Body: **CITY OF DURHAM, a North Carolina municipal corporation**.
Amount of Payment Bond: **same dollar amount as the dollar amount of the Performance Bond.**
*** ***

KNOW ALL PERSONS BY THESE PRESENTS, That we, the PRINCIPAL AND SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to or with respect to the work, scope of work, and specifications. The undertakings, covenants, terms, conditions, and agreements of said contract shall include, without limitation, the Principal's obligations, if any, with respect to damages for delay, to indemnify, and to provide warranties.

* * * * * * * * * * * * * * * * * * * *

KNOW ALL PERSONS BY THESE PRESENTS, That we, the PRINCIPAL AND SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to or with respect to the work, scope of work, and specifications.

* * * * * * * * * * * * * * * * * * * *

The Performance Bond and the Payment Bond are being combined here only for purposes of convenience in signing and acknowledging, and the obligations of the Principal and of the Surety are the same as if the bonds were on separate documents. Each bond is in the dollar amount stated above, and the amounts of these bonds are not combined. The Surety agrees that both of these bonds are fully binding on it whether or not the Principal executes these bonds. These bonds are given pursuant to Article 3 of Chapter 44A of the N. C. General Statutes.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument (for both the Performance Bond and the Payment Bond) under their several seals on the date of execution indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____

(name of Principal)

[Execution by Principal when the Principal is a corporation]

By:_____

Title of officer: _____

(*Affix Principal's corporate seal*.)

[Execution by Principal when the Principal is a limited liability company]

By: _____

Manager of Principal

[Surety's execution]

_____

(name of Surety)

_____

(signature of attorney in fact)

(Affix Surety's corporate seal.)

(Instructions to Surety and Principal: ***If you use a raised corporate seal, press hard enough to make it legible****.)*

ACKNOWLEDGMENT OF CONTRACTOR'S EXECUTION OF CONTRACT AND PERFORMANCE BOND AND PAYMENT BOND

[Acknowledgment when the Contractor (the Principal) is a corporation]

State of _____ County of _____

I, a notary public in and for the aforesaid county and state, certify that _____ _____ personally appeared before me this day and stated that he or she is

(***strike through the inapplicable***:) chairperson/ president/ chief executive officer/ vice-president/ assistant vice-president/ treasurer/ chief financial officer of _____ _____, a corporation, and that by authority duly given and as the act of the corporation, he or she signed the foregoing contract with the City of Durham and Performance Bond and Payment Bond with respect to the contract and the corporate seal was affixed to said instrument(s). This the _____ day of _____, 20_____.

My commission expires: _____
Notary Public

[Acknowledgment when the Contractor (the Principal) is a limited liability company]

State of _____ County of _____

I, _____, a notary public for said county and state, certify that _____ (1) appeared before me this day, (2) stated that he or she is a manager of _____ _____, a limited liability company, (3) acknowledged that the foregoing contract with the City of Durham and the Performance Bond and Payment Bond with respect to the contract carry on the company's business in the usual way, and (4) acknowledged the due execution of the contract and the Performance Bond and Payment Bond on behalf of the company.

This the _____ day of _____, 20_____.

My commission expires: _____
Notary Public

ACKNOWLEDGMENT OF SURETY'S EXECUTION OF PERFORMANCE BOND AND PAYMENT BOND

State of _____ County of _____

I, a notary public in and for the aforesaid county and state, certify that _____ _____ personally appeared before me this day and stated that he or she is Attorney in Fact for _____ _____, the Surety named in the foregoing Performance Bond and Payment Bond, in both of which bonds the contracting body is the City of Durham, and that he or she executed said bonds, under the seal of the Surety, on behalf of the Surety.

This the _____ day of _____, 20_____.

My commission expires: _____

_____
Notary Public

SECTION 001153

CONTRACTOR'S QUALIFICATION STATEMENT FOR STRUCTURAL RESTORATION WORK

This statement is required in advance of consideration of application to bid or as a qualification statement in advance of a restoration contract.

SUBMITTED TO: City of Durham
Attn: John Paces-Wiles
2011 Fay Street
Durham, NC 27704

SUBMITTED BY: _____

ADDRESS: _____

_____

PHONE: (_____) _____

CONTACT: _____

__ Corporation
__ Partnership
__ Individual
__ Joint Venture
__ Other (Explain)

_____

_____

STRUCTURAL RESTORATION CONTRACTOR'S QUALIFICATION QUESTIONNAIRE

1. How many years has your organization been in business as a structural restoration contractor?

2. How many years has your organization been in business as a general contractor?

3. How many years has your organization been in business under its present business name?

4. List states in which your organization is legally qualified to do business.

5. What percentage of the work do you normally perform with your own work forces?

6. In the **Minimum Qualification Form**, list five projects within the last ten years that meet the stated repair criteria.

7. On **Table I** list five representative building structural restoration projects your firm has completed. Two projects should be of a parking deck.

8. On **Table II** list the structural parking garage restoration projects your organization has in progress at this time.

9. Have you ever failed to complete any work awarded to you? If so, attach a separate sheet of explanation.

10. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? If so, attach a separate sheet of explanation.

11. On **Table III** list the construction experience of the managers and superintendents of your company.

12. What is your present bonding capacity? $

13. Who is your bonding agent?

    NAME: _____

    ADDRESS: _____

    PHONE: (_____) _____

    CONTACT: _____

14. List on **Table IV** the equipment you own that is available for restoration work.

15. Are there any liens against the above? _____ If so, total amount $_____

16. Attach your company's most recent audited Balance Sheet, prepared in accordance with generally accepted accounting principles.

Date of Balance Sheet:_____

Name of firm Balance Sheet: _____

DATED AT _____ THIS _____ DAY OF _____, 20_____.

Name of Organization: _____

By: _____

TITLE: _____

STATE OF: _____

COUNTY OF: _____

_____ being duly sworn, deposes and says that he/she is _____ of the above organization and that the answers to the questions in the foregoing questionnaire and all statements therein contained are true and correct.

SUBSCRIBING AND SWORN TO BEFORE ME THIS _____ DAY OF _____ 20_____.

NOTARY PUBLIC: _____

MY COMMISSION EXPIRES:_____

MINIMUM QUALIFICATION FORM

PROJECT: CHURCH ST. GARAGE REPAIRS

PROPOSER INFORMATION:

COMPANY NAME: _____

BUSINESS ADDRESS: _____

CITY, STATE, ZIP CODE: _____

TELEPHONE: _____

FAX: _____

EMAIL: _____

PROPOSER MUST PROVIDE THE FOLLOWING INFORMATION IN TABLE I:

Structural Restoration: Bidder must provide detailed project information and valid contact information for all completed building structural restoration projects in the last ten years and which include structural concrete repair, concrete waterproofing, and structural steel repair services as described. The listed projects should include the following minimum criteria:

a. A minimum of two parking deck structure restoration projects. Each parking deck structure should exceed 250 parking spaces and restoration work should have 500 square feet or more of concrete restoration work.
b. A building restoration project with structural steel repair work that exceeds 500 square feet.
c. A parking deck restoration project with expansion joint and waterproofing repairs.
d. A minimum of one project with a construction contract value of at least $500,000.
e. A minimum of one project where lead paint abatement was required.

TABLE I – MIMINUM QUALIFICATION FORM FIVE REPRESENTATIVE PARKING GARAGE RESTORATION JOBS COMPLETED							
Name and Address of Contractor:			Date:		Lead Abatement - Y/N Expansion Joint Waterproofing - Y/N		
Name, Address, Contact Info of Owner	Description of Restoration Work (Attach separate sheet if more space is required)	Building/Deck Size (sf) Number of Spaces	Contract Amount	Date Completed	Building or Parking Deck		

TABLE II – LIST OF STRUCTURAL RESTORATION JOBS IN PROGRESS				
Name and Address of Contractor				Date:
Name, Address, Contact Info of Owner	Description of Restoration Work (Attach separate sheet if more space is required)	Building/Deck Size (sf) Number of Spaces	Contract Amount	Date Completed

TABLE III - CONSTRUCTION EXPERIENCE OF MANAGERS AND SUPERINTENDENTS					
Name and address of Contractor:					Date:
Name	Position	Years Experience		Type of Work	Contract Amount
		Construction	Restoration		

TABLE IV - LIST OF EQUIPMENT			
Name and address of Contractor:			Date:
Description of Equipment	Quantity	Years of Service	Current Book Value

PLEASE PROVIDE A LISTING OF ALL CERTIFICATIONS FOR EXTERIOR COATING SYSTEMS.

END OF SECTION 001153

REQUEST FOR APPROVAL OF SUBSTITUTION

This form must be included as part of the bid Package where substitution has been requested. In Order for a substitution to be considered in the bid, all supporting information and specifications on the subject materials must be presented to the owner no later than ten (10) days prior to the bid opening and approved. Said approval will require an addendum to the bid being transmitted to all other bidders prior to the bid. Any substitution, which adds to the cost of the project budget, will be borne by the contractor requesting the substitution.

Original Item and Specification Substitute Item and Specifications:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Requested by:_____Date:_____

Approved by:_____Date:_____

Disapproved by:_____Date:_____

NON-COLLUSION AFFIDAVIT

By executing this bid, I certify that this bid is submitted to the City of Durham competitively and without collusion. I am authorized to represent the bidder both in submitting this bid and in making this Non-collusion Affidavit. To the best of my knowledge and belief, (1) the bidder has not violated N. C. General Statute section 133-24 in connection with the bid, (2) the bidder has not entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with its bid, and (3) the bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor. In this Non-collusion Affidavit, "bid" includes bids and proposals, and "bidder" includes bidder and proposer. The neuter includes the masculine and the feminine. The bidder to which this Non-Collusion Affidavit refers is:

_____.
(insert name of bidder)

_____
(signature of individual)

State of _____ ACKNOWLEDGMENT

County of _____

I, a notary public in and for the aforesaid county and state, certify that _____

_____ personally appeared before me this day and having been duly sworn, stated that the contents of the foregoing Non-collusion Affidavit are true to the best of his or her knowledge and belief, and he or she acknowledged the execution of the foregoing Non-collusion Affidavit in connection with the bidder named above. This the _____ day of _____, 20_____.

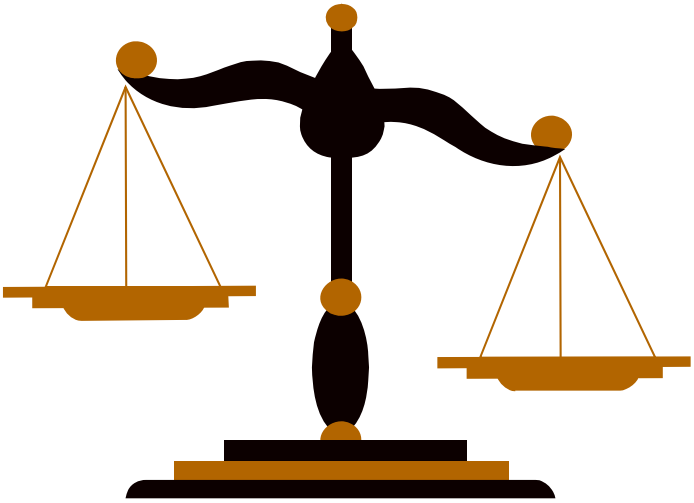
My commission expires: _____
Notary Public

RW7-3-03

CITY OF DURHAM
SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

CONSTRUCTION FORMS

Revised 6/08



Mailing Address:

101 City Hall Plaza
Durham, North Carolina 27701
Phone: 919-560-4180
Facsimile: 919-560-4513

Street Address:

302 East Pettigrew Street, C-180
Durham, North Carolina 27701

The Department of Equal Opportunity/Equity Assurance

Good Things Are Happening In Durham

INSTRUCTIONS ON SDBE REQUIREMENTS

FOR USE IN BIDDING ON CONSTRUCTION PROJECTS WITH THE CITY OF DURHAM

These instructions summarize the provisions of the City of Durham's Equal Business Opportunity Ordinance as it applies to the bid process. Of course, as with any summary, it cannot reflect all of the ordinance.

QUESTIONS AND ANSWERS ON SDBE REQUIREMENTS

1. What is the purpose of the City's Equal Business Opportunity (EBO) program? The Director of the City's EO/EA Department has set SDBE goals for this contract. There will be a goal for SDBEs owned by Blacks and a goal for SDBEs owned by women. For the bid to be fully considered by the City, the bid needs to meet those goals or the bidder needs to have made good-faith efforts to subcontract with SDBEs in order to meet the goals. In order to be given credit for making those good-faith efforts, however, the bidder must provide written documentation of those good-faith efforts. That written documentation must be submitted to the City within 2 days after the bid opening unless a different time is stated by the City. See the instructions below regarding Form E-107.

2. What is an "SDBE"? It means a Small Disadvantaged Business Enterprise. An SDBE is a business, certified by the City of Durham as an SDBE, whose management, policies, major decisions, and daily business operations are independently managed and controlled by one or more socially and economically disadvantaged individuals. Among those considered to be "socially and economically disadvantaged" are individuals found by the City on a case-by-case basis to have been subjected to racial or ethnic prejudice or cultural bias within American society because of his or her identity as a member of a group. The business must not exceed size and gross revenue limits, and it must be majority-owned by one or more socially and economically disadvantaged individuals.

The firm needs to have its certification from the City before the bid opening if it is to count toward meeting the goals. See the next answer on how certification is needed in the good-faith efforts context. Many other units of government, such as counties, departments of transportation, and states, also certify firms and maintain lists of certified firms, but for purposes of complying with the City of Durham's SDBE requirements, the SDBE must be certified by the City of Durham. Certification does not mean that the City has found the firm to be competent.

3. Can other women or minority owned firms that have been certified by other entities be qualified as an SDBE pursuant to City's EBO Program? In accordance with Section 26-6(h) of the Ordinance to Promote Equal Opportunities in City Contracting, the City of Durham may consider a formal certification of another entity to determine whether an applicant meets requirements of the Equal Business Opportunity Program, provided that the City Manager or designee determines that the certification standards of such entity are comparable to those of the City. The City of Durham has determined that the following certifications are comparable to its own and may be used by bidders/proposers: North Carolina Department of Transportation (N.C. DOT), United States Small Business Administration (U.S. SBA) and Raleigh-Durham Airport Authority (RDU).

In lieu of SDBE's listed in its SDBE System, the City of Durham will accept women and minority firms certified by N.C. DOT (www.ncdot.org), U.S. SBA and RDU as meeting its SDBE goal requirements provided the bidder/proposer submits evidence that the firm is currently certified by one of the stated entities

at the time of bid/proposal. Failure to provide evidence of certification may disqualify the firm's participation for the purpose of meeting SDBE goals.

Any firm submitted in this manner will be contacted and urged to complete an abbreviated certification process with the City of Durham. For purposes of this document and associated forms, any reference to a "City Certified SDBE," an "SDBE certified by the City" or similar reference shall include reference to a qualified women or minority owned firm certified and approved in accordance with the above paragraphs, even where specific reference is made to the City SDBE database.

4. What SDBE forms must a bidder or contractor turn in to the City, and when?

Name or description of form	***Necessary to submit this form?***	***When to submit it?***
E-101 (SDBE PARTICIPATION ON BASE BID)	Always	With the bid
E-102 (SDBE PARTICIPATION ON BID ALTERNATE)	Yes, if there are alternates. Use a separate form for each alternate.	With the bid
E-103 reserved for future use)	n/a	n/a
E-104 (EMPLOYEE BREAKDOWN)	Has the bidder prequalified? Has the bidder met the SDBE goals? If the answer to either of these questions is "yes," then the form is not required. If the answer to both of those questions is "no," then the bidder must submit this form as part of its documentation of good-faith efforts.	Within 2 days after bid opening unless a different time is stated by the City
E-105 (STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR)	Yes, if the bidder proposes to count any subcontracts with SDBEs towards the SDBE goals	Within 5 days after bid opening unless a different time is stated by the City
E-106 (REQUEST TO CHANGE SDBE PARTICIPATION AFTER BID OPENING)	Yes, if the bidder or contractor proposes certain changes in its subcontracting	Not with the bid. Once the bidder is identified as the apparent lowest responsible bidder, this form is due before the bidder/contractor can make the proposed change.
E-107 (QUESTIONNAIRE ON BIDDER'S GOOD-FAITH EFFORTS)	No, but it may help the bidder's case if the bidder failed to meet the SDBE goals. Do not turn in if the bidder met the goals.	Within 2 days after bid opening unless a different time is stated by the City
Good-faith documentation	Yes, if the bidder failed to meet the SDBE goals.	Within 2 days after bid opening unless a different time is stated by the City
Equal employment opportunity statement	Always, unless the bidder has prequalified	Within 2 days after bid opening unless a different time is stated by the City

5. If a bidder fails to meet the SDBE goals, can it still be awarded the contract? Bidders that do not meet the goals but demonstrate good-faith efforts are treated equally to those that meet the goals. Awarding a contract is ultimately the decision of the City Council, which considers compliance with the EBO ordinance along with other matters.

6. In making good-faith efforts, what SDBEs should a potential bidder contact? The City provides a list of SDBEs that have been certified by the City of Durham for particular trades, services, goods, etc. Potential bidders should contact SDBEs listed for the work that can be subcontracted.

7. Our firm already has employees who can do the work and does not want to subcontract that work. How does this fit in? The purpose of the EBO ordinance is to change business practices that would otherwise occur, by giving opportunities to under-used segments of the economy. If the bidder does not meet the goals, its good-faith efforts will be examined as with any other bidder that did not meet the goals.

8. If the bidder contacts a small socially and economically disadvantaged firm that could become a certified SDBE, will that count toward good-faith efforts? This contact will not count unless the firm that you contact is able to get its certification from the City of Durham before the bids are opened. In making good-faith efforts, let us suppose that a potential bidder contacts firms that could qualify to be SDBEs. If those firms have their certification from the City at the time of the bid opening, those contacts will count towards good-faith efforts. But there is a risk, because getting certification takes time, and the firm has to provide various documents to the City in order to merit certification.

9. Do all subcontracts with SDBEs count? The City will count as SDBE participation only expenditures to an SDBE that performs a commercially-useful function in the relevant work. An SDBE performs such a function when the socially and economically disadvantaged owners themselves are actually involved in performing, managing, and supervising a distinct element of the work. To determine whether those requirements are met, the City takes into account the amount of work subcontracted, industry practices, the adequacy of the resources of the SDBE for the work, the qualifications, such as possession of licenses, permits, and professional designations of the socially and economically disadvantaged owners, and other relevant factors. For example, if an SDBE lacks substantially all of the resources equipment and personnel to do the work it shall be presumed not to perform a commercially-useful function. The EBO ordinance includes more points to consider on this issue.

10. May an SDBE enter into subcontracts? This question arises in two situations: (1) the bidder is an SDBE and (2) the bidder is subcontracting with an SDBE. Consistent with normal industry practices, an SDBE may enter into subcontracts. If an SDBE subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of normal industry practices, the SDBE shall be presumed <u>not</u> to be performing a commercially-useful function. The SDBE may present evidence to rebut this presumption to the City.

11. What does it mean to say that information must be submitted "with the bid"? Unless bidders are given other written instructions from the City, it means that the information must be in a sealed envelope, delivered to the same place where a bid can be delivered, and before the time set for the bid opening. Unless bidders are given other written instructions from the City, the information can be either in the same envelope as the bid or in a separate envelope. If it is a separate envelope, the outside of the envelope must state the same information that is required on the bid envelope, and that it contains SDBE forms.

12. When the chart in question 3 says that a form can be submitted 2 days or 5 days after the bid opening, exactly when is it due? Where is it to be submitted?

The form must be submitted to the City's EOEA Department, located at 302 East Pettigrew Street, C-180 or faxed to (919) 560-4513, so that it is received within 2 days or 5 days (whichever applies according to the chart) after the bid opening. If the form is faxed, it must be received before midnight on that 2nd or 5th day. If it is delivered by any other means, it must be received before 5:00 PM. In counting these 2 days or 5 days, exclude the following: the day of the bid opening, Saturday, Sunday, and holidays observed by city government of the City of Durham. For instance, for a form due in 2 days, if the bid opening is on a Thursday, the due date for the form would be on the following Monday (midnight if faxed, otherwise 5:00 PM). If the day after the bid opening or that Monday is a City holiday, the form would be due on Tuesday. For a form due in 5 days, if the bid opening were on Tuesday, the due date for the form would be on the following Tuesday (midnight if faxed, otherwise 5:00 PM). If any weekday between those Tuesdays is a City holiday or if the Tuesday on which the form would be due is a City holiday, the form would be due on Wednesday. It is best to place the documents inside an envelope, and to write on the outside of the envelope the same information that is required on the bid envelope, and that it contains SDBE forms. Holidays observed by city government are New Years' Day, Dr. Martin Luther King, Jr., Day; Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving Day, Christmas Day; two days (varying from year to year) during the week of Christmas Day; and other times as may be authorized by City Council.

13. When there are bid alternates how is SDBE participation counted? The total amount of the award actually made by the City is the key. For instance, assume the following made-up example:

- Base bid is $200,000
- Alternate A bid is $50,000
- Alternate B bid is $20,000
- Black-owned SDBE goal is 10%.
- The bidder proposes Black-owned SDBE participation as follows: $20,000 on the base bid, $4,000 on Alternate A, and $10,000 on Alternate B.

In this fictional example, the bidder may or may not meet the goal, depending on the actual award by Council. This chart illustrates:

	Only the base bid	Base bid + Alternate A	Base bid + Alternate B	Base bid + Alternates A & B
Bid total	$200,000	$250,000 (200,000 + 50,000)	$220,000 (200,000 + 20,000)	$270,000 (200,000 + 70,000)
Total SDBE participation	$20,000	$24,000 (20,000 + 4,000)	$30,000 (20,000 + 10,000)	$34,000 (20,000 + 14,000)
Black-owned **SDBE percentage**	10%	9.6%	13.6%	12.6%
Meet 10% Black-owned **SDBE goal?**	Yes	No	Yes	Yes

14. How does the City count participation by an SDBE that is not owned by Blacks or women? An SDBE not owned by Blacks or women may be counted by the bidder towards either goal. The bidder should specify how to count such SDBEs on form E-101.

15. How is the lease of equipment by an SDBE counted? If the SDBE leases equipment for the work of the contract, the value of the lease payments is included as part of the SDBE's participation. However, it is not proper to include such lease payments if they are to be made to the prime contractor or the prime contractor's "Affiliate." To understand what an "Affiliate" is, see section 26-3 of the EBO ordinance.

16. How is the purchase of goods from an SDBE counted? If the bidder is buying goods from an SDBE, the cost of the goods can be considered SDBE participation only if (a) the SDBE operates or maintains a factory that produces the goods, or (b) the SDBE has an establishment where the goods of the general character described by the specifications or required under the Contract are regularly sold or leased to the public in the usual course of business. If (b) applies, the SDBE's *principal* business must be selling or leasing those goods and the SDBE must operate under its own name.

INSTRUCTIONS FOR INDIVIDUAL SDBE BID FORMS FOR CONSTRUCTION

Form E-101 (SDBE PARTICIPATION) On this form, "participation" is the dollar amount of subcontracts for significant goods and services to be used to perform the contract. For instance, if the bidder would enter into subcontract with SDBEs for a total of $30,000, that would be the SDBE participation amount. The sum of SDBE participation and non-SDBE participation should equal the amount of the bid. Form E-101 is required for the base bid

Form E-102 (SDBE PARTICIPATION ON BID ALTERNATE) This form is essentially the same as Form E-101, except that it is used for the alternate bids instead of the base bid. Use a separate Form E-102 for each alternate bid.

Form E-103 reserved for future use

Form E-104 (EMPLOYEE BREAKDOWN) Complete Part A for the primary location where the goods and services that are the subject of the bid are to be made or provided. If the parent company or other locations of the bidder are providing any substantial portion of the goods or services, then the bidder must also complete Part B, for the consolidated company. If the bidder has an EEO-1 Report that provides the

same information as required on the Form E-104, the EEO-1 Report may be used instead. On whether to submit Form E-104, see question 3 above. If you need to submit it, see questions 3 and 11 above on when and where to turn in this form.

Form E-105 (STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR) The bidder must provide a Form E-105 (Statement of Intent) for each SDBE firm that the bidder would subcontract with if the City awards the contract to the bidder. See questions 3 and 11 above on when and where to turn in this form.

On Form E-105, what happens if column 2 (dollar amount) disagrees with column 3 (percentage)? If there is a conflict between the dollar amount in Column 2 and the percentage of base bid in Column 3, the percentage stated in Column 3 will control. For instance, if Column 2 if $10,000, Column 3 is 10%, and the base bid is $200,000, there is an error, because ten percent of $200,000 is $20,000, not $10,000. In that example, the form will be read as a commitment for $20,000. If the SDBE both (i) is doubtful of its arithmetic *and* (ii) wants Column 2 to control in case of disagreement, it may say that Column 2 will control over Column 3, but to do so, it must write that on Form E-105.

E-106 (REQUEST TO CHANGE SDBE PARTICIPATION AFTER BID OPENING) When is this form used? Beginning with the time that the City Manager identifies a bidder as the apparent lowest responsible bidder and continuing as that bidder is awarded the contract and continuing until that bidder/contractor reaches the point of final completion of the work, Form E-106 is to be used when the following occurs: If the bidder/contractor proposes to do any of the following –

to replace a subcontractor,
to perform subcontracted work with the bidder/contractor's own forces,
to increase the quantity of subcontracted work,
to decrease the quantity of subcontracted work, or
to change the allocation of work among subcontractors,

then the bidder/contractor must make good-faith efforts to attain the goals that it has shown on the E-101 and applicable E-102 forms, and the bidder/contractor must fill out Form E-106. Substitutions of subcontractors in these circumstances, both before and after the awarding of a contract, are subject to City approval. Consult the City's EO/EA Department on the procedures to follow in order to comply with City Code 26-10(c).

E-107 (QUESTIONNAIRE ON BIDDER'S GOOD-FAITH EFFORTS) Bidders that do not attain the SDBE goals have the responsibility to make good-faith efforts and to demonstrate to the City that they have made such efforts. In determining a bidder's good-faith efforts to engage SDBEs, the City Manager shall consider the information supplied by the bidder to answer the questions in Form E-107, , along with other criteria that the City Manager deems proper. Form E-107 is an optional tool that bidders may use to show that they have made good-faith efforts. See questions 3 and 11 above on when and where to turn in this form. Even when this form may be submitted after the bid opening, it cannot include information on efforts made after the bid opening. Even if a bidder does not use Form E-107, the City will nevertheless attempt to answer the questions on the E-107 using good-faith documentation supplied by the bidder. Bidders who do not turn in Form E-107 will still find it helpful to know how the City will determine whether good-faith efforts have been made.

For Section 2 of Form E-107 -- To make the best good-faith efforts as described under Section 2 on E-107, your firm should have sent a written letter or fax to all SDBEs on the City's list that perform the kind of work to be subcontracted. Your firm needs to keep a record of all of these attempts to reach SDBEs. That letter would say, in effect, as follows: (Of course, your firm would need to write appropriate words where *italicized instructions* are used below.)

> Our firm is interested in bidding on a contract with the City of Durham for [*describe the project*]. We are interested in subcontracting, to your firm, the following work [*describe specific work, for example, painting of interiors of 5 rooms, including prep work; or supplying 20 circuit breakers of type XJE-R or equivalent*]. You may inspect the applicable plans and specifications and descriptions of items to be purchased at our office located at the address shown above, or at the City of Durham's EO/EA Department, 302 East Pettigrew Street, C-108 , Durham, N.C., 27701 , 919-560-4180[, *or at the AGC plan room in* (*specify the locations)*]. You may obtain a copy [*explain how and from whom (the City, architect, engineer, etc.) the potential subs can obtain a copy*].

If applicable, tell the SDBEs at which offices of the AGC the plans and specifications may be seen, possibly from the following AGC list.

1100 Euclid Avenue Charlotte, NC 28203-1868 Phone: (704)372-1450	Caswell Bldg., Glenwood Place 3700 National Drive, Ste. 201 Raleigh, NC 27612 Phone: (919)781-3270
4000 Piedmont Parkway, Ste. 400 High Point, NC 27265-0941 Phone: (336)812-3127	2527 S. 17th St. Wilmington, NC 28401 (McGee CADD Reprographics Bldg.) Phone: (910)791-5533
2713 Breezewood Avenue Fayetteville, NC 28303 Phone: (910)484-0184	801 Dickenson Blvd. Greenville, NC 27834 (McGee CADD Reprographics Bldg.) Phone: (252)752-4400
404 Executive Park, Bldg. 3 Asheville, NC 28801-2426 Phone: (828)254-6499	Other AGC locations if they have the plans and specifications

GOOD-FAITH DOCUMENTATION. This is not a City form but is documentation to be supplied by the bidder. See the instructions on Form E-107 above. Unless the bidder meets the SDBE goals, the bidder must demonstrate that it made good-faith efforts. To do so, it can use a combination of providing answers to Form E-107 and documentation, such as copies of the notices to SDBEs that are described in question 1(c) on Form E-107. See questions 3 and 11 above on when and where to turn in this form. Even when this documentation may be submitted after the bid opening, it cannot include information on efforts made after the bid opening.

EQUAL EMPLOYMENT OPPORTUNITY (EEO) STATEMENT. This is not a City form but is a statement to be supplied by the bidder. The bidder shall state its nondiscrimination employment policy and business practices as of the time of bid opening. Write "EEO" at the top of the first page of your statement. This is different from the EEO-1, which is referred to in the instructions for Form E-104. See questions 3 and 11 above on when and where to turn in this form.

Form E-101 SDBE PARTICIPATION ON BASE BID

Name of Bidder: _____

Prequalification number: _____ Prequalification expiration date: _____

Total dollar amount of SDBE participation in base bid work: _____

For each row, check one column: E, F, or G.

Column A	Column B	Column C	Column D	Column E	Column F	Column G
Name of proposed subcontractor for base bid work	Goods and services to be provided for base bid work	Subcontract amount, in dollars, for base bid work	Percentage of total base bid (Column C divided by total base bid)	Black-owned SDBE	Women-owned SDBE	Non-SDBE
		$	%			
		$	%			
		$	%			
		$	%			

Attach extra sheets as needed. See question 14 under **QUESTIONS AND ANSWERS ON SDBE REQUIREMENTS**, *which states that the bidder may check column E or column F for an SDBE that is neither Black-owned nor women-owned.*

Do the above participation amounts meet the goals on this contract, assuming only the base bid is counted?

☐ **Yes** ☐ **No.** If the answer is No: (1) the bidder must have made good-faith efforts; (2) the bidder must provide, within 2 business days after bid opening, documentation of good-faith efforts; and (3) the bidder must sign below.

As an authorized representative of the Bidder, I swear or affirm under penalty of fraud that the good-faith efforts documentation submitted with this bid, pertaining to the base bid and all alternates, if any, is correct and not intended to defraud or mislead. After the contract between the City and the Bidder is signed, except to the extent that the City gives prior written approval for changes, the Contractor agrees that it shall engage the subcontractors listed on this E-101 and on all applicable E-102 forms, to perform the work for the dollar amounts or percentages described on this E-101 and applicable E-102s.

_____

Signature of individual authorized to sign for Bidder

Form E-102 SDBE PARTICIPATION ON BID ALTERNATE

This form pertains to the following bid alternate: _____

(*Specify the alternate, in the way that it is designated in the bid documents)*

Name of Bidder: _____

Total dollar amount of SDBE participation in work on this alternate: _____

For each row, check one column: E, F, or G.

Column A	Column B	Column C	Column D	Column E	Column F	Column G
Name of proposed subcontractor for this alternate	Goods and services to be provided for this alternate	Subcontract amount, in dollars, for this alternate	Percentage of total bid for this alternate (Column C divided by total bid for this alternate)	Black-owned SDBE	Women-owned SDBE	Non-SDBE
		$	%			
		$	%			
		$	%			
		$	%			

Attach extra sheets as needed. . See question 14 under **QUESTIONS AND ANSWERS ON SDBE REQUIREMENTS***, which states that the bidder may check column E or column F for an SDBE that is neither Black-owned nor women-owned.*

Do the above participation amounts meet the goals, if you consider only this alternate and not the base bid work? ☐ **Yes** ☐ **No.** If the answer is No: (1) the bidder must have made good-faith efforts; (2) the bidder must provide, together with this bid, documentation of good-faith efforts; and (3) the bidder must sign Form E-101 (SDBE PARTICIPATION ON BASE BID).

E-104 EMPLOYEE BREAKDOWN

Part A – Employee statistics for the primary location.

				M——a——l——e——s					F——e——m——a——l——e——s				
Employment category	Total employees	Total males	Total females	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project manager													
Professional													
Technical													
Clerical													
Labor													
Totals													

Part B – Employee statistics for the consolidated company. (*See instructions for this form on whether this part is required*.)

				M——a——l——e——s					F——e——m——a——l——e——s				
Employment category	Total employees	Total males	Total females	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project manager													
Professional													
Technical													
Clerical													
Labor													
Totals													

Form E-105 STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR

Name of **Bidder**: _____

Name of **Project**: _____

The undersigned firm is certified by the City of Durham as an SDBE.

The undersigned SDBE represents that it will enter into a formal contract with the Bidder to perform the following work in connection with the Project, in the dollar amount or percentage listed below, if the Bidder signs a contract with the City of Durham for the Project.

Describe the work in sufficient detail so that it can be determined whether the SDBE's work is a substantial and necessary part of the Project.

Column 1 - description of work to be done by undersigned SDBE	**Column 2** -dollar amount of the proposed subcontract between the bidder and the undersigned SDBE	**Column 3** - percentage of Bidder's base bid represented by the proposed subcontract between the Bidder and the undersigned SDBE

The undersigned SDBE will be ready to begin work on the subcontract on the following date:

Name of SDBE: _____Telephone No. _____

Address, including Zip Code, of SDBE: _____Fax No. _____

_____

Signature of authorized representative of SDBE

Title of the person who signed above: _____

What person with the SDBE should the City contact with questions about this form or the proposed subcontract? _____

Name of individual: _____Telephone No. _____

Title of individual: _____

Email address: _____

By submitting this form to the City of Durham, the Bidder represents that if the Bidder signs the contract with the City of Durham for the Project, the Bidder will enter into the subcontract described above with this SDBE.

E-106 REQUEST TO CHANGE SDBE PARTICIPATION AFTER BID OPENING

Project: _____
Name of bidder or contractor: _____
Name and title of representative of bidder or contractor: _____
Address (including Zip Code): _____
Telephone number: _____ Fax number: _____
Email address: _____
Total amount of original contract, before any change orders or amendments: _____
Total amount of the contract, <u>including</u> all approved change orders and amendments to date, but <u>not counting</u> the changes proposed in this form: _____
Dollar amount of changes proposed in this form: _____
The proposed change *(check one)* ☐ **increases** ☐ **decreases** the dollar amount of the bidder's/contractor's contract with the City.
Does the proposed change decrease the SDBE participation? *(check one)* ☐ **yes** ☐ **no**
If the answer is **yes**, complete the following:

<u>BOX A.</u> For the subcontract proposed to be changed (increased, reduced, or eliminated):
Name of subcontractor: _____
Goods and services to be provided before this proposed change: _____
_____
Is it proposed to eliminate this subcontract? ☐ yes ☐ no
If the subcontract is to be increased or reduced, describe the nature of the change (*such as adding $5,000 in concrete work and deleting $7,000 in grading):* _____
_____

Dollar amount of this subcontract before this proposed change: _____
Dollar amount of this subcontract after this proposed change: _____
This subcontractor is *(check one):*
☐ 1. City-certified Black-owned SDBE
☐ 2. City-certified women-owned SDBE
3. City-certified SDBE that is neither Black-owned nor women owned, but to be credited as
3(a) ☐ Black-owned SDBE 3(b) ☐ women-owned SDBE
☐ 4. not a City-certified SDBE

<u>BOX B</u>. Proposed subcontracts other than the subcontract described in Box A above
Name of subcontractor for the new work: _____
Goods and services to be provided by this proposed subcontract: _____
_____

Dollar amount proposed of this proposed subcontract: _____
This subcontractor is *(check one):*
☐ 1. City-certified Black-owned SDBE
☐ 2. City-certified women-owned SDBE
3. City-certified SDBE that is neither Black-owned nor women owned, but to be credited as
3(a) ☐ Black-owned SDBE 3(b) ☐ women-owned SDBE
☐ 4. not a City-certified SDBE

Add additional sheets as necessary.

This form is used only if the conditions described in the instructions are present.

E-107 QUESTIONNAIRE ON BIDDER'S GOOD-FAITH EFFORTS

Name of Bidder:

_____

If you find it helpful, feel free to attach pages to explain your answers. **How many pages is your firm attaching to this questionnaire?** _____ *(Don't count the 2 pages of this questionnaire.)*

If a yes or no answer is not appropriate, please explain the facts. All of the answers to these questions relate only to the time <u>before</u> your firm submitted its bid or proposal to the City. In other words, actions that your firm took after it submitted the bid or proposal to the City cannot be mentioned or used in any answers.

1. **SOLICITING SDBEs.**

(a) Did your firm solicit, through all reasonable and available means, the interest of <u>all</u> SDBEs certified (that is, in the City's database) in the scopes of work of the contract? ☐ **yes** ☐ **no**

(b) In such soliciting, did your firm advertise? ☐ **yes** ☐ **no** Are you attaching copies to this questionnaire, indicating the dates and names of newspaper or other publication for each ad if that information is not already on the ads? ☐ **yes** ☐ **no**

(c) In such soliciting, did your firm send written (including electronic) notices or letters? Are you attaching one or more sample notices or letters? ☐ **yes** ☐ **no**

(d) Did your firm attend the pre-bid conference? ☐ **yes** ☐ **no**

(e) Did your firm provide interested SDBEs with timely, adequate information about the plans, specifications, and requirements of the contract? ☐ **yes** ☐ **no**

(f) Did your firm follow up with SDBEs that showed interest? ☐ **yes** ☐ **no**

(g) With reference to the SDBEs that your firm notified of the type of work to be subcontracted -- Did your firm tell them?

(i) the specific work your firm was considering for subcontracting? ☐ **yes** ☐ **no**
(ii) that their interest in the contract is being solicited? ☐ **yes** ☐ **no**
(iii) how to obtain and inspect the applicable plans and specifications and descriptions of items to be purchased? ☐ **yes** ☐ **no**

2. BREAKING DOWN THE WORK.

(a) Did your firm select portions of the work to be performed by SDBEs in order to increase the likelihood that the goals would be reached? ☐ **yes** ☐ **no**

(b) If **yes**, please describe the portions selected. **ANSWER:**

3. NEGOTIATION. In your answers to 3, you may omit information regarding SDBEs for which you are providing Form E-105.

(a) What are the names, addresses, and telephone numbers of SDBEs that you contacted? **ANSWER:**

See next page for remaining questions.

(b) Describe the information that you provided to the SDBEs regarding the plans and specifications for the work selected for potential subcontracting. **ANSWER:**

(c) Why could your firm not reach agreements with the SDBEs that your firm made contact with? Be specific. **ANSWER:**

4. ASSISTANCE TO SDBEs ON BONDING, CREDIT, AND INSURANCE.

(a) Did your firm or the City require any subcontractors to have bonds, lines of credit, or insurance?
☐ **yes** ☐ **no** (Note: In most projects, the City has no such requirement for *subcontractors*.)

(b) If the answer to (a) is **yes**, did your firm make efforts to assist SDBEs to obtain bonds, lines of credit, or insurance? ☐ **yes** ☐ **no** If **yes**, describe your firm's efforts. **ANSWER:**

(c) Did your firm provide alternatives to bonding or insurance for potential subcontractors? ☐ **yes** ☐ **no**
If **yes**, describe. **ANSWER:**

5. GOODS AND SERVICES. What efforts did your firm make to help interested SDBEs to obtain goods or services relevant to the proposed subcontracting work? **ANSWER:**

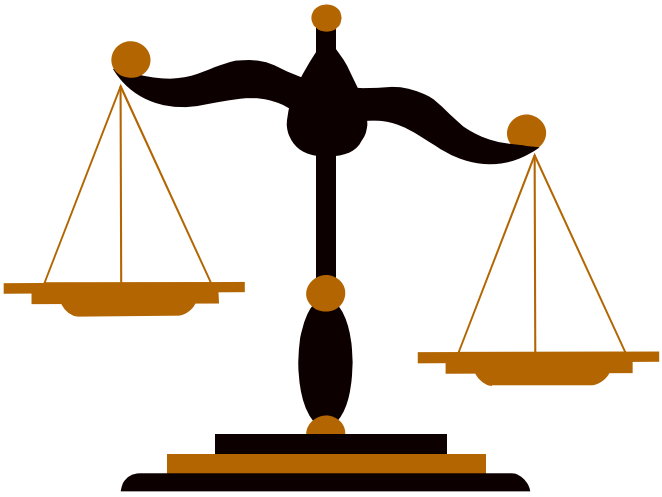
6. USING OTHER SERVICES.
(a) Did your firm use the services of the City to help solicit SDBEs for the work? ☐ **yes** ☐ **no** Please explain. **ANSWER:**

(b) Did your firm use the services of available minority/women community organizations, minority and women contractors' groups, government-sponsored minority/women business assistance agencies, and other appropriate organizations to help solicit SDBEs for the work? ☐ **yes** ☐ **no** Please explain. **ANSWER:**

CITY OF DURHAM
SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

PREQUALIFICATION FORM

Revised 6/08



Mailing Address:

101 City Hall Plaza
Durham, North Carolina 27701
Phone: 919-560-4180
Facsimile: 919-560-4513

Street Address:

302 East Pettigrew Street, C-180
Durham, North Carolina 27701

The Department of Equal Opportunity/Equity Assurance

Good Things Are Happening In Durham

APPLICATION FOR PREQUALIFICATION

The answers to the following questions shall be used to determine the qualifications of my organization to bid upon construction projects undertaken by the City. You may submit an AIA Contractor's Qualification Statement in lieu of questions 1-23. Questions 24-30 must be submitted with the Statement.

1. Name of Firm: _____

2. Business Address: _____

   City: _____ State: _____ Zip: _____ County: _____

3. Telephone Number: ( ) _____ Fax Number: ( ) _____

   Email Address: _____

. 4. Contact Person : _____ Title: _____

5. The organization is requesting prequalification as:

   ☐ Corporation ☐ Limited Partnership ☐ General Partnership

   ☐ Sole-Proprietorship ☐ Limited Liability Company ☐ Other

6. If a corporation, Limited Liability Co., or Limited Partnership, indicate the following:

   Date of Incorporation or other official commencement of status _____

   State of Incorporation or other official commencement of status_____

7. Internal Revenue Service ID No: _____

   (Employer ID/SSN): _____

8. Year business established by current owner: _____

9. Are you authorized to do business in North Carolina as well as locally, including all business licenses?

   Yes ☐ No ☐ (Attach copies)

10. List North Carolina Contractor's License Number, classification and Limitation:

License Type	License No.	Classification	Limitation

11. Indicate the type(s) of work for which the business would like to qualify to perform:

_____

_____

12. How many years has your organization been in business as a contractor under your present name?

_____

13. Has your organization been in business under another business name? Yes ☐ No☐
(If so, please list any former names and addresses. _____

_____

14. List the construction experience of the management personnel including superintendents of your organization.

Name	Present Position	Years of Construction Experience	Type of Work	In What Capacity

15. Has your organization failed to complete any work awarded to you? Yes ☐ No☐
(If so, please explain. Attach additional sheets if necessary.)

_____

_____

16. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction project? Yes ☐ No☐ (If so, please explain)

_____

_____

17. Has your organization ever been denied prequalification in this state or any other state under this name or any other name?

Yes ☐ No☐ (If so, name the state(s), and explain reasons for denial)

_____

_____

18. Has your organization ever been disqualified or removed from a bidding list in this state or any other state?
Yes ☐ No☐ (If so, indicate state(s) and explain reason for disqualification)

_____

_____

19. List major projects which show the various types of work completed by your organization in the past five (5) years and/or presently under construction. (Attach separate sheet if necessary)

Name and Address of Owner	Name and Location of Project	Contract Amount	Was contract completed on time?	Were there any penalties imposed?	Were there any liens, claims or stop notices filed against the job?

20. List major Equipment owned. (Attach separate sheet if necessary)

QUANTITY	ITEM	SIZE OR CAPACITY	CONDITION	YEARS OF SERVICE

21. Name of Bonding Company: _____

22. Maximum Current Bonding Level: _____

23. Attach a current financial statement including a balance sheet showing the following items:

a) Current assets
b) Net fixed assets
c) Other assets
d) Current liabilities
e) Other liabilities

24. Does your organization utilize minority, women or SDBE subcontractors on contracts that are not let by the City of Durham?

Yes ☐ No ☐ (If yes, list three contracts and the minority, women or SDBE firms used by your organization on these contracts)

Name and Location of Project	SDBE Firm Utilized	Dollar Amount of Participation	Contact Person and Telephone No.

25. For the contracts referenced above, did your organization make good faith efforts to assist interested minority, women and SDBEs in obtaining bonding, lines of credit, or insurance if such assistance was necessary?
Yes ☐ No ☐

26 . Does your organization make voluntary efforts to increase the number of minority, female and socially and economically disadvantaged individuals at higher skill and responsibility levels within your own organization? Yes ☐ No ☐

27. Does your organization effectively use the services of available minority, women and socially and economically disadvantaged community organizations; contractor groups; local, state, and Federal minority/women or small disadvantaged business assistance offices; and other organizations which provide assistance in recruitment and placement of SDBEs? Yes ☐ No ☐

28. Does your organization participate in minority/women apprenticeship or on-the-job training programs?
Yes ☐ No ☐ (If yes, attach a copy of your company's program)

29. Attach a written narrative of any voluntary good faith efforts your organization proposes to undertake during the upcoming year to provide equitable participation of minority and women employees and subcontract.

30. The following documents must be submitted with your application: (Forms Enclosed)
(You may submit your organization's EEO Policy in lieu of this statement)

a) Employee Breakdown
b) Equal Employment Opportunity Statement

EMPLOYEE BREAKDOWN

Part A – Employee Statistics for the Primary Location

			M--------a--------l--------e--------s				F-----e-----m-----a-----l-----e-----s						
Employment Category	Total Employees	Total Males	Total Females	White	Black	Hispanic	Asian or Alaskan Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project Manger													
Professional													
Labor													
Clerical													
Totals													

Part B – Employee Statistics for the Consolidated Company (*See instructions for this form on whether this part is required.*)

			M--------a--------l--------e--------s				F-----e-----m-----a-----l-----e-----s						
Employment Category	Total Employees	Total Males	Total Females	White	Black	Hispanic	Asian or Alaskan Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project Manger													
Professional													
Labor													
Clerical													
Totals													

EEO-1 Report may be submitted in lieu of this form

Equal Employment Opportunity Statement

AFFIDAVIT

_____ _____
(signature) *(date)*

_____
(printed name)

State of _____ County of _____

I, a notary public in and for the aforesaid county and state, certify that _____

_____ personally appeared before me this day and, after having been

duly sworn, stated that he or she is _____
(title)
in _____ ; that he or she was
(name of Applicant)
authorized to sign the foregoing application on behalf of said Applicant, and that the statements contained in the foregoing Application for Prequalification are true to the best of his or her knowledge and belief. This the _____ day of _____, 20_____.

My commission expires: _____

_____ Notary Public

CITY OF DURHAM
SUBCONTRACTOR MONTHLY RECORD OF PAYMENT REPORT

THIS DOCUMENT MUST REFLECT ALL SUBCONTRACTORS & MUST BE SUBMITTED WITH MONTHLY INVOICE FOR PAYMENT

PROJECT NAME: CONTRACT#:	**DATE FORM SUBMITTED:** **WORK PERIOD ENDING:**
COMPANY NAME:	**ADDRESS:**
FEDERAL TAX ID#:	**CONTACT PERSON:**

Subcontractor/Vendor ID (Street Address/Zip/Telephone)	Indicate Ownership Status	Description Of Work	Total Sub-Contract Amount	Amount Paid For The Period	Total Amount Paid To-Date	Percentage Of Work Completed	Scheduled Start Date	Scheduled End Date

Total M/SDBE Subcontracts Awarded/%	**$**	**%**	**Total W/SDBE Subcontracts Awarded/%**	**$**	**%**
Total M/SDBE Dollars Paid-To-Date/%	**$**	**%**	**Total W/SDBE Dollars Paid-To-Date/%**	**$**	**%**
Total Non-Minority Subcontracts Awarded/%	**$**	**%**	**Total Non-W/SDBE Subcontracts Awarded/%**	**$**	**%**
Total Non-Minority Dollars Paid-To-Date/%	**$**	**%**	**Total Non W/SDBE Dollars Paid-To-Date/%**	**$**	**%**

The undersigned certifies that the information recorded above is correct, and that each of the representations set forth above is true. The undersigned further acknowledges that any misrepresentation hereon may result in termination of contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

Company Representative_____ **Title:** _____ **Date:** _____

CITY OF DURHAM

Equal Business Opportunity Program

Final Subcontracting Report

THIS FORM MUST BE COMPLETED AND SUBMITTED TO THE PROJECT/CONTRACT ADMINISTRATOR FOR SUBMITTAL TO THE EO/EA DEPARTMENT WITHIN FIFTEEN (15) DAYS AFTER FINAL INSPECTION OF CONTRACT WORK.

Company Name: _____ **Project Name:** _____

Address: _____

Federal Tax ID#:_____ **Date Submitted:**_____

Date of Final Inspection_____ **Total Final Contract Price:**_____

The following subcontractors performed work on the above project:

TYPE OF WORK	COMPANY NAME/ADRESS	FINAL PRICE	% OF TOTAL CONTRACT PRICE

Signature of Company Representative_____

Title: _____ **Date:** _____

Contract Compliance ____Approved ____Denied

Signature:_____

NOTICE ON REIMBURSEMENT FOR SALES AND USE TAXES

For purposes of this section, the phrase "Sales Taxes" means sales and use taxes paid to the State of North Carolina or to local governments in North Carolina.

The City is entitled to refunds from the State of North Carolina of certain Sales Taxes. If the person, firm, or corporation (referred to as the Contractor) that performs under the contract with the City pays Sales Taxes, and those are Sales Taxes for which the State will grant a refund to the City, the Contractor is allowed to obtain reimbursement from the City by following these instructions. The City will reimburse the Contractor, and the City later obtains a refund from the State.

1. What Sales Taxes are to be excluded from dollar amounts of a bid or proposal? Reimbursable Sales Taxes as described below are to be excluded from bids and proposals -- whether in lump sum amounts, units prices, extensions, or otherwise.

2. What Sales Taxes are reimbursable? Sales Taxes are reimbursable if they are paid on purchases of building materials, supplies, fixtures, and equipment that become a part of or annexed to any building or structure that is owned or leased by the City and is being erected, altered, or repaired for use by the City. Examples of taxes that **cannot** be reimbursed are taxes paid for scaffolding, tools, equipment repair parts, equipment rentals, forms for concrete, or fuel to operate machinery or equipment.

3. How is a Contractor to be reimbursed for Sales Taxes? The Contractor must complete and submit the Reimbursable Sales and Use Tax Statement form in the contract documents. The Contractor shall also provide invoices to substantiate the information on that form. If the State refuses to refund any such Sales Tax to the City, or if after a refund is made, the City is told to return a refund to the State (both types referred to as "failed refunds"), the Contractor shall upon demand repay the City for the amount of the failed refunds.

4. When is a Contractor allowed to seek reimbursement? The Contractor may seek reimbursement separately from, but at the same time as, the application for payment is made for the properties that were taxed. The Contractor shall not file for reimbursement for Sales Taxes before the Contractor has the right to file an application for payment for the properties that were taxed.

5. How are Sales Taxes paid by a subcontractor handled? The form titled "Reimbursable Sales and Use Tax Statement by Subcontractor" is used. The subcontractor completes and signs that form for its purchases, and then gives the form to the Contractor. The Contractor submits it along with the Contractor's pay application for the properties listed on that form. The City will make the reimbursement payable to the Contractor.

Except for those differences, the answers to all the questions on this page still apply whether the Subcontractor or the Contractor completes and signs the form.

RW 022304

Reimbursable Sales and Use Tax Statement

Payment Application No. _____ **Estimate No.** _____

Name of Contractor: _____

Project: _____

*1. Type of property purchased **	*2. Date property purchased*	*3. Name of vendor*	*4. Invoice number*	*5. Date of invoice*	*6. N. C. county in which purchased.***	*7. Amount of State sales and use taxes paid*	*8. Amount of local sales and use taxes paid*	*9. Total of columns 7 & 8*

Grand totals of columns 7, 8, & 9 for all pages of this pay application/estimate. //			

Notes: * If the invoice clearly specifies the property for which tax reimbursement is being requested, you need not list the property on this form.
** In column 6, if not purchased in N. C., write *Not in N.C.*

Add extra pages as needed. Total number of pages, including this page, in this request: _____. ***Do not include invoices in that page count.*** **In addition to the pages referred to above, invoices that substantiate this statement are attached.**

CERTIFICATION: The undersigned individual certifies (1) he or she is an employee or principal of the Contractor that is filing this form with the City to request reimbursement for N. C. State and local sales and use taxes that the Contractor has paid, (2) all of the properties listed above, and on all pages, if any, added to this page, and designated on the attached invoices, are building materials, supplies, fixtures, and equipment that have become or will become a part of or annexed to a building or structure that is owned or leased by the City of Durham and is being erected, altered, or repaired for use by the City of Durham in the project named above, (3) no tax on scaffolding, tools, equipment repair parts, equipment rentals, forms for concrete, or fuel to operate machinery or equipment is included, and (4) all of the information on this form, and on all pages, if any, added to this page, is true.

_____ _____

signature of individual typed or printed name of individual

Sworn to and subscribed before me, this _____ day of _____, 20____.

_____ My commission expires:

022304RW Notary Public

Reimbursable Sales and Use Tax Statement, Continuation page

*1. Type of property purchased **	*2. Date property purchased*	*3. Name of vendor*	*4. Invoice number*	*5. Date of invoice*	*6. N. C. county in which purchased.***	*7. Amount of State sales and use taxes paid*	*8. Amount of local sales and use taxes paid*	*9. Total of columns 7 & 8*

Enter totals of columns 7, 8, and 9 ,added to totals from all pages, into page 1. This page is used whether page 1 is signed by the Contractor or the Subcontractor.
022304RW

Reimbursable Sales and Use Tax Statement by Subcontractor

This line is to be completed by the Contractor: **Payment Application No**. _____ **Estimate No.** _____

Name of Contractor: _____ Name of Subcontractor _____
Project: _____

*1. Type of property purchased **	*2. Date property purchased*	*3. Name of vendor*	*4. Invoice number*	*5. Date of invoice*	*6. N. C. county in which purchased.***	*7. Amount of State sales and use taxes paid*	*8. Amount of local sales and use taxes paid*	*9. Total of columns 7 & 8*

Grand totals of columns 7, 8, & 9 for all pages of this pay application/estimate.			

Notes: * If the invoice clearly specifies the property for which tax reimbursement is being requested, you need not list the property on this form.
** In column 6, if not purchased in N. C., write *Not in N.C.*

Add extra pages as needed. Total number of pages, including this page, in this request: **_____. *Do not include invoices in that page count.* In addition to the pages referred to above, invoices that substantiate this statement are attached.**
CERTIFICATION: The undersigned individual certifies (1) he or she is an employee or principal of the Subcontractor that is submitting this form with the Contractor so that the Contractor may request reimbursement for N. C. State and local sales and use taxes that the Subcontractor has paid, (2) all of the properties listed above, and on all pages, if any, added to this page, and designated on the attached invoices, are building materials, supplies, fixtures, and equipment that have become or will become a part of or annexed to a building or structure that is owned or leased by the City of Durham and is being erected, altered, or repaired for use by the City of Durham in the project named above, (3) no tax on scaffolding, tools, equipment repair parts, equipment rentals, forms for concrete, or fuel to operate machinery or equipment is included, and (4) all of the information on this form, and on all pages, if any, added to this page, is true.

_____ _____
signature of individual typed or printed name of individual
Sworn to and subscribed before me, this _____ day of _____, 20____.

_____ My commission expires:
022304RW Notary Public

Name	Mailing Address	City	State	Zipcode	Gender/ Race ID	Contact	Phone	Fax	CellPhone	Email	Services	Licenses
1st Class Trucking, Inc.	4700 Harper Renn Road	Oxford	NC	27565	W	Amy Blackburn	919-693-9461	919-693-9461	919-702-1159	1stclasstrucking@embarqmail.com	Hauling, demolition, clearing	
4J Construction Company,Inc.	333 North Main Street	Dyer	TN	38330	M	Lafayette Johnson	731-692-2526	731-426-2750	731-692-2528	4jinc@bellsouth.net	concrete-placing and finishing, slab, tying steel, sidewalks, foundations, curbs, gutters and mass pour concrete projects	
Abram Construction, Inc.	2828-A Qieen City Drive	Charlotte	NC	28208	M	William Abram	704-392-4002	704-392-4081	704-407-7163	wabram@abramconstruction.com	concrete; curb and gutter; site grading;storm drain; storm drain structures; clearing; erosion control;site concrete; water and sewer; sidewalks and driveways	
Active Construction Services,LLC	P O Box 52620	Durham	NC	27713	M	Shante Stevons	919-206-4440	919-206-4475	919-636-0731	Shante@activeconstructionllc.com	painting; cleaning; demolition;carpentry; general trades; staffing (daily laborers); new construction; renvoations	City of Durham Business
Andre Laws Grading & Backhoe Service, Inc.	1306 Broad Street	Durham	NC	27705-3533	M	Andre Laws	919-641-5641	919-416-1131	919-641-5641	alawsjr1@aol.com	Grading;Clearing; Excavation; Sitework; Storm drain installation; demolition; hauling	City of Durham Business License
Atlantic Contracting Co., Inc.	116 Stage Coach Trail	Greensboro	NC	27419	W	Niveen Kattan	336-931-3109	336-931-3108	336-601-1669	info@atlanticcontractinginc.com	Concrete Masonry	NC General Contractors License
Brikwurx	707 Hancock Street	Durham	NC	27704	M	Everett Clay	919-629-3797		919-248-7992	brikwurx@ymail.com	masonry	City of Durham Privilege
Burton's Services, LLC	P O Box 321	Mocksville	NC	27082	W	Stephanie Burton	336-492-2255	336-492-2255	336-817-2216	Stephanie@burtons-services.com	fire stopping'; waterproofing;damp proofing; caulking; pressure; storm drains; parking lot striping	
Busy Black Trucking, LLC	1111 Snow Hill Road	Durham	NC	27712	M	Anthony Black	919-442-7079	919-471-6232	919-442-7079	busyblacktrucking@nc.rr.com	hauling services-all aggregate materials, rock, sand, dirt, concrete debris, demolition	City of Durham Business
Callis Contractors, Inc.	1306 Broad Street	Durham	NC	27705	M	Jessie Callis	919-416-6191	919-416-1131		projmang@calliscontractorsinc.com	general contractor (Highway and Public Utilities; Demolition	GC License #59167 Unlimited Building
Carolina Quality Home Construction	117 E. Umstead Street	Durham	NC	27707	M	Vance Robertson	919-627-0192		919-627-0192	odblder@yahoo.com	carpentry; framing; door installation; window installation; sheetrock; light fixtures; bathroooms; deck; porches; walkways; fences; hardwood;tile carpet flooring; siding; demolition	City of Durham
Carolina Transport Services, LLC	566 Neodak Road	Apex	NC	27523	H	Elida Greene/Phillip Greene	919-596-5905	919-362-8199		lettie@carolinatransportservices.com	hauling dirt,stone, gravel, asphalt, etc. Hauling heavy equipment	City of Durham Privilege
Carrothers Enterprise	40626 B W Road	New London	NC	28127	M	Crhistoper Carrothers	(704)422-6407	(704)422-6607	(704)984-0145	ccarrothers@windstream.net	Framing, drywall,general trades,demolition, drywall, concrete and masonry.	
Certified Concrete Construction, Inc.	PO Box 91298	Raleigh	NC	27617	W	Joel Sousa	919-781-5575	919-481-9058	919-442-8358	joel@certifiedconcreteconstruction.com	concrete flat work; curb & gutter; sidewalk; concrete paving; dumpster pads; wheelchair ramps; driveways	City of Durham Privilege License
Construction Trade Management, Inc.	6305 Swallow Cove Lane	Raleigh	NC	27614	AS	Barry Kyu	919-341-0688	919-341-4418	919-244-3800	ctm@nc.rr.com	painting; drywall; brick masonry; carpentry; construction	
Coral Home Solutions dba Coral Construction and Design	P.O. Box 628	Carrboro	NC	27510	M	Tiffany Elder	919-627-7843	866-854-4717	919-260-2507	info@coralbuilt.com	general contracting; construction; plumbing; electrical; HVAC; roofing; masonry; drywall; painting; flooring; demolition; concrete	NC General Contractor's License#58672 LImited Building
Core Master, LLC	PO Box 8946	Rocky Mount	NC	27804	M	Lisa Gonzalez	252-451-5661	252-451-5662	252-205-3386	info@coremasterusa.com	concrete core drilling; concrete cutting;floor/wall/hand sawing; controlled demolition	
Cruz Brothers Concrete, Inc.	1572 Payne Road, #75	Graham	NC	27253	H	Maria I. Cruz	336-376-0787	336-376-1115	336-516-5764	ines@cruzbros.com	Concrete-curb & gutter, sidewalks, slabs, driveways	City of Durham Business
D. Washington Group LLC	411 E. Chapel Hill Street, Suite 906	Durham	NC	27587	M	Dewayne Washington	919-794-5948	919-794-5721	919-8167356	dewayne@dwashingtongroup.com	General Contractor; concrete; masonry; demolition; carpentry;gypsum board systems	General Contractor's License#69829
David Hinton Construction Co., Inc.	P.O. Box 471	Middlesex	NC	27557	M	David Hinton	919-868-5874	919-284-9152	919-868-5874	dhconstr@nc.rr.com	curb & gutter; sidewalks; slab work; concrete	
Davidson Construction, LLC	208 Gibson Lane	Clayton	NC	27520	M	Tony Small	919-550-3485	919-550-3485	919-868-7771	davidsonbldg@aol.com	concrete; demolition; sheerock; metal studs; construction	NC General Contracting#63308 Limited Building
DayeCo Construction LLC	4100 Five Oaks Drive, Unit #20	Durham	NC	27727	M	Thomas Daye	919-493-6325	919-493-3266	919-724-8111	trdaye@dayecoconstruction.com	conrete; masonry; demolition; carpentry; drywall; door framing; hardware; specialties; metal studs;	NC General Contractor's License
Done Right the First Time Contractors	5021 Robinwood Road	Durham	NC	27713	M	Troy White	919-544-7963	919-572-6351	919-824-3325	drtftcontractors@gmail.com	construction services-concrete; painting; drywall; plumbing; electrical; framing; finishing	NC General Contractor's License#69797
Double R Concrete Finishing	6917 Windover Drive	Durham	NC	27712	M	Randy Williams	919-477-3009	919-477-3009	919-624-3009	btear4@aol.com	grading; hauling; concrete placement: grading,forming, pouring and finishing	City of Durham Privilege
Dwehli Professional Services, LLC	PO Box 663	Durham	NC	27704	M	Rhonda Dandridge	(919)672-3088			dwehliconstruction@gmail.com	Concrete, landscaping and janitorial	None
HD3 Enterprises	9001 Willington Place	Wake Forest	NC	27587	M	Harry Daniels	919-741-5155		919-741-5155	hdaniels@HD3Enterprises.com	Project Management; pavement markings; fence installation; waste dispos!; landscaping	
Hine Sitework, Inc.	PO Box 1275	Goldsboro, NC	NC	27533	W	Ann Hine	919-736-8990	919-736-8886	919-738-2972	ann@hinesitework.com	demolition; grading; paving; concrete; erosion control;clearing&grubbing; water& sewer curb&gutter;storm drainage	NC General Contracting#52225 Unlimited:Higway, PU (Water & Sewer)
Honducom Concrete, Inc.	P O Box 14968	Raleigh	NC	27620	H	Ramon Suazo	919-662-0388	919-662-0390	919-796-7148	rsuazo@honducomconcrete.net	concrete construction-commercial, residential and industrial	
Hughes Masonry	2524 Hwy 55	Durham	NC	27713	M	Billy Hughes	919-201-2498		919-201-9138	bhughes.masonry@yahoo.com	masonry; brick; stone work; pressure washing;concrete	City of Durham Privilege License
ICORE Service Company, LLC	4216-A Queen Beth Drive	Greensboro	NC	27405	M	Cornelius Lamberth	336-274-2394	336-617-8253	336-362-1646	corneliouslamberth@hotmail.com	Framing, Ceilings, Concrete (Flat), Doors and Hardware	NC General Contractor's License - Building, Limited
IQ Contracting, LLC	PO Box 6069	Raleigh	NC	27608	H	Robert A. Nunez	919-832-5111	919-832-4111	919-616-2618	rnunez@iqcontracting.net	Concrete Construction and Concrete Repair	City of Raleigh Privilege License
JAM Construction, LLC	P O Box 16255	Durham	NC	27704	H	Jesus Alvarez	919-724-8469	919-908-6619	919-724-8469	Jam.cons@yahoo.com	sheetrock; painting; flooring; masonry; concrete	City of Durham Business
Lanier Construction Company, Inc.	1505 Browntown Road	Snow Hill	NC	28580	M	Sherba Lanier	252-747-8124	252-747-4337	252-286-6736	sherba@direcway.com	Curb & Gutter, Concrete, Grading and Excavation, Road Construcion,clearing and grubbing; General construction; Manhole and Valve box,Bridge and Box culverts	NC General Contractor's License Unlimited Classification: Building; Highway; PU (Water Line & Sewer

Martinez Company, Inc.	342 Fleming Drive	Durham	NC	27712	H	Ketih Brown	919-255-8817	919-367-0637	919-724-2611	luis342@bellsouth.net	demolition; concrete cutting/repair/placement/slabs/sidewalks;waterproofing; grouting; caulking; sealers; sandblasting; pressure washing; erection of prsut; natural stone	
Mason Builders, LLC	P O Box 1068	Gaston	NC	27832	M	Bernard Mason	919-237-2377	252-535-2275	252-578-2329	Bernard@masonbuilders.org	building construction; electrical contractor; HVAC construction; masonry; tiling; framing; painting;drywall; flooring; concrete; design/build construction; architectural	NC General Contractor's License#39316 Unlimited Building; VA Class A Contractor's License#2705
Mayo's Masonry, Inc.	4917 Howe Street	Durham	NC	27705	M	Phillip Mayo	919-730-5053	919-237-3105	919-730-5053	mayo_masonryinc@yahoo.com	Concrete/Masonry/Framing/Hauling	City of Durham Business
McClure and Associates Construction, Inc.	6201 Remington Lake Drive	Raleigh	NC	27616	W	Lesle McClure	919-878-8006	919-878-7992	919-868-3649	Lesle@mcclurebuilders.com	new commercial and residential construction; commercial and residential renovation/rehab; painting; grading; demolition; drywall; concrete; framing; roofing; metal roofing;	NC General Contractors License#42632 Unlimited Building
Pro-Site Services, LLC	P O Box 1491	Durham	NC	27702	M	Ronald Williams	919-730-8110		919-730-8110	ron@prositeservices.net	Concrete, Grading	City of Durham Business License
RDU Paving, Inc.	5415 Fayetteville Road	Raleigh	NC	27603	W	Jeanette Lundholm	919-329-7300	919-329-7301	919-625-2832	sales@rdupaving.com	asphalt paving; new pavement construction/repair;seal coating; striping; small concrete repair	City of Raleigh, NC General Contractors License - Highway, Limited: #62537
Reddrick Masonry	701 Felicia Street	Durham	NC	27704	M	Rueben Redrick	919-477-8297	919-620-0721	919-730-0983	reddrickmasonry@aol.com	hardscape brick paving; concrete; curbs; gutters; masonry; walk ways	City of Durham Privilege
RFI Construction	1451 S. Eugene Street, Suite 2011	Greensboro	NC	27406	M	Rupert Burrows	(336)510-0441	(336)510-0442	(336-215-2067	rburrows@rficonstruction.com	General Construction, demolition	None
RTP Grading & Sitework, LLC	PO Box 12537	Durham	NC	27709	M	Blair Peil	919-361-5400	919-361-5432	919-422-7799	rtpgrading@netzero.com	demolition, clearing, erosion control, concrete, grading, asphalt, water&sewer,curb&gutter, sidewalks, retentionponds/walls,stormdrain	City of Durham; Town of Chapel Hill
Sanchez Trucking	922 Riverbark Lane	Durham	NC	2703	H	Marcial Sanchez	919-697-9004	919-596-5402		trucking.sanchez@yahoo.com	hauling;concrete removal; sidewalks; driveways	City of Durham Privilege
Skyrock Construction, LLC	1000-A Old Milburnie Road	Raleigh	NC	27604	M	Nana Manso	919-266-2446	919-266-9096	919-745-7941	nmanso@skyrockconstructionllc.com	concrete; retaining walls; all flat works; concrete construction	NC General Contractor's License#68111
Southern Garden, Inc.	P O Box 808	Apex	NC	27502	W	Todd Laakso	919-362-1050	919-363-9222	919-669-0110	info@southerngardeninc.com	Landscaping: Landscape Installation/ Maintenance; irrigation, seed & mulch; NC Pest Control Applicator; brick & unit pavers, light masonry; water features; playground equipment; parks; site furnishings & amenities; retaining walls; wetland plantings.	City of Durham Privilege License;NC Landscape Contractor #1049;NC Ground Pesticide Application
T.A. Howard & Son	3820 Frazier Drive	Raleigh	NC	27610	M	Travis Howard	919-250-9493	919-2509493	919-369-6294	thoward3@nc.rr.com	trucking services; demolition services	
U & L Contractors,LLC	5621 Departure Drive	Raleigh	NC	27616	H	Donna Aguilar	919-427-4055		919-427-4055	admin@uandlcontractorsllc.com	construction; masonry contractor	City of Raleigh Business
W & W Trucking dba W & W Trucking & Demolition Services, LLC	3221 Carver School Road	Winston-Salem	NC	27105	M	Broderick L. Williams	336-462-7696	336-703-0755	336-462-7276	bwbuckone@aol.com	Demolition of Houses; Debris Removal; Hauling	City of Winston-Salem Privilege License; City of Durham Privilege, GC License #67572-Limited
W. E. Garrison Company, Inc.	5820 Fayetteville Rd.	Raleigh	NC	27603	W	Colleen B. Garrison	919-772-4144	919-772-4860	919-306-6158	colleeng@wegarrison.com	Hauling; Clearing; Grading; Concrete Curb & Gutter & Flatwork; Field Engineering; Demolition; Grubbing; Storm Drainage	NC Professional Engineering License #3503
Walker Hill Inc.	822 Swan Neck Lane	Raleigh	NC	27615	W	Joy Hill Walker	919-946-1122	919-900-8539	919-946-1122	joyhillwalker@gmail.com	water/sewer/storm materials; water/sewer/storm installation; masonry construction and supplies/materials	NC General Contractor's License

AIA Document A101

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a

STIPULATED SUM

1987 EDITION

The 1987 Edition of AIA Document A201, General Conditions of the Contract for Construction, is adopted in this document by reference.

The name of this Agreement is:

Agreement to Provide Repairs to the Church Street Parking Deck.

AGREEMENT

made as of the day of in the year of
~~Nineteen Hundred and~~ two thousand ~~and~~ thirteen (2013)

BETWEEN the Owner, City of Durham:
(~~Name and~~ address)

City of Durham
101 City Hall Plaza
Durham, NC 27701

and the Contractor:
(Name and address)

The Contractor is a corporation organized and existing

The Project is:
(Name and location)

Church St. Garage
109 South Mangum St
Durham, NC 27701

The Architect is:
(Name and address)

Kimley-Horn and Associates, Inc.
333 Fayetteville St., Suite 600
Raleigh, NC 27601

If the Architect is designated as a "landscape architect," General Conditions 4.1.1 is modified to insert "landscape" before "architecture". The term "Architect" shall refer to any design professional which Owner may determine to be appropriate for performing the design services, including structural, mechanical, electrical, or other design services necessary for the Project. The use of "Architect" as a defined term does not require Owner to hire an architect. The Owner may, in its sole discretion, hire design professionals

including, but not limited to, engineers, designers, architects, landscape architects, or other design or service professionals appropriate for the Project. If there is no Architect named in this section, this version of A101 should not be used.

The Owner and Contractor agree as set forth below.

ARTICLE 1
THE CONTRACT DOCUMENTS

The Contract Documents Consist of this Agreement, Conditions of the contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

ARTICLE 2
THE WORK OF THIS CONTRACT

The Contractor shall execute the entire Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others, or as follows:

☒ 2.1 The Contractor is the single prime contractor.

☐ 2.2 This is a multiprime contract project, and the Contractor is:

2.2.1 ☐ the general contractor.
2.2.2 ☐ the plumbing contractor.
2.2.3 ☐ the electrical contractor.
2.2.4 ☐ the HVAC contractor.
2.2.5 ☐ the contractor to perform the Work.

ARTICLE 3
DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

3.1 The date of commencement is the date from which the Contract Time of Paragraph 3.2 is measured~~, and shall be the date of this Agreement, as first written above, unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner~~.

~~*(Insert the date of commencement, if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)*~~

The date of commencement shall be:

☐ the date of this Agreement.
☒ fixed in a notice to proceed.
☐

Unless the date of commencement is established by a notice to proceed issued by the Owner, the Contractor shall notify the Owner in writing not less than five days before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

3.2 The Contractor shall achieve Substantial Completion of the entire Work not later than days after the date of commencement referred to in paragraph 3.1.

(Insert in the preceding sentence *the ~~calendar date or~~ number of calendar days after the date of commencement. Also insert* below *any requirements for earlier Substantial Completion of certain portions of the Work, if not stated elsewhere in the Contract Documents.)*

subject to adjustments of this Contract Time as provided in the Contract Documents.
~~*(Insert provisions, if any, for liquidated damages relating to failure to complete on time.)*~~

ARTICLE 4
CONTRACT SUM

4.1 The Owner shall pay the Contractor in current funds for the Contractor's performance of the Contract the Contract Sum of Dollars ( ), subject to additions and deductions as provided in the Contract Documents.
4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date until which that amount is valid.)

4.3 Unit prices, if any, are as follows: See Subparagraph 9.2.2 of the Supplementary Conditions.

ARTICLE 5
PROGRESS PAYMENTS

5.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.
5.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

5.3 Provided an Application for Payment is received by the Architect not later than the
day of a month, the Owner shall make payment to the Contractor not later than the
day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than days after the Architect receives the Application for Payment.
5.4 Each Application for Payment shall be based upon the schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This Schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.
5.5 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.
5.6 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:
5.6.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of percent (%). Pending final determination of cost to the Owner of changes in the Work, amounts not in the dispute may be included as provided in Subparagraph 7.3.7 of the General Conditions even though the Contract Sum has not yet been adjusted by Change Order;
(There shall be no retainage on periodic or final payments for contracts having a total Project cost less than $100,000.00. For contracts having a total Project costs equal to or greater than $100,000.00, the maximum retainage is FIVE (5%))
5.6.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably

stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the Site at a location agreed upon in writing), less retainage of percent (%);
(There shall be no retainage on periodic or final payments for contracts having a total Project cost less than $100,000.00. For contracts having a total Project cots equal to or greater than $100,000.00, the maximum retainage is FIVE (5%))

5.6.3 Subtract the aggregate of previous payments made by the Owner; and

5.6.4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Paragraph 9.5 of the General Conditions.

5.7 The progress payment amount determined in accordance with Paragraph 5.6 shall be further modified under the following circumstances:

5.7.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to percent (%) of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work and unsettled claims; and

5.7.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Subparagraph 9.10.3 of the General Conditions.

5.8 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Subparagraph 5.6.1 and 5.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

5.8.1 If after the Project is deemed fifty percent (50%) complete based upon the Contractor's gross project invoices, excluding the value of materials stored off-site, except that the value of the materials stored on-site shall not exceed 20% of the Contractor's gross project invoices for the purpose of determining the percent completion of the Project, and the Contractor provides Owner and the Architect the following:

.1 Written verification evidencing 50% completion of the Project; and,

.2 Written consent of the surety named in the project performance and payment bonds agreeing that the Owner shall not retain any further retainage from periodic payments due to the Contractor;

the Owner shall cease holding retainage from future periodic payments if the Owner finds that the Contractor is performing satisfactorily, and any nonconforming work identified in writing by the Architect or owner (prior to the point of 50% project completion) has been corrected by the Contractor and accepted by the Architect or Owner, whoever provided such prior notice of nonconforming work. If, however, the Owner determines the Contractor's performance is unsatisfactory, the Owner may reinstate the specified retainage for each subsequent periodic payment. Notwithstanding anything to the contrary, Owner may assess retainage after 50% project completion, even if the Contractor has complied with Paragraphs 5.8.1.1 and 5.8.1.2 (above) and continues to perform satisfactorily as necessary to retain two and one-half percentage (2.5%) total retainage through the completion of the Project.

5.8.2 If by or before the Project is deemed 50% complete and one hundred percent (100%) performance has been completed for the following "early" finishing trades: (1) structural steel; (2) piling; (3) caisson; or (4) demolition; and after receipt by the Owner of an approval or certificate from the Architect that such early finishing work is acceptable and in accordance with the Contract Documents, and after the Contractor provides Owner and the Architect the following:

.1 The early finishing trade subcontractor's written request for such payment; and,

.2 Written consent of the surety named in the project performance and payment bonds agreeing that the Owner shall make such early finishing trade payment;

the Owner shall make full payment to the Contractor for said 100% completed early finishing trade work less retainage of five-tenths percent (0.5%)(of the early finishing trade contract) upon the later occurrence of (1) 60 days receipt of said early finishing trade subcontractor's written request, or (2) immediately upon receipt of said written consent of the surety.

5.8.3 Within 60 days of receipt by owner of (1) a pay request and (2) written consent of the surety, and after Owner has either (1) received a certificate of substantial completion, or (2) received beneficial occupancy or use of the Project (if applicable), the Owner shall pay an amount sufficient to increase total payment to Contractor to the Contract Price, less such amounts as the Architect shall determine in accordance with the Final Payment provisions of Article 6, including up to 250% of the Architect's estimate of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

5.8.4 Notwithstanding any of the retainage provisions described herein, there shall be no retainage on periodic or final payments for contracts having a total Project cost less than $100,000.00, and, in addition to any retainage amounts allowed to be held by the Owner, the Owner shall also retain all rights allowed under this Agreement to withhold

payment to the Contractor for unsatisfactory job progress, defective or nonconforming construction not remedied, disputed work, or third-party claims filed against the Owner or reasonable evidence that a third-party claim will be filed.

ARTICLE 6
FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when (1) the Contract has been fully performed by the Contractor except for the Contractor's responsibility to correct nonconforming Work as provided in Subparagraph 12.2.2 of the General Conditions and to satisfy other requirements, if any, which necessarily survive final payment; and (2) a final Certificate for Payment has been issued by the Architect; such final payment shall be made by the Owner not more than 30 days after the issuance of the Architect's final Certificate for Payment~~, or as follows~~:

ARTICLE 7
MISCELLANEOUS PROVISIONS

7.1 Where reference is made in this Agreement to a provision of the General Conditions or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

7.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below~~, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located~~.
(Insert rate of interest agreed upon, if any.)

four (4) percent simple interest per year

(Usury laws and requirements under the Federal Truth in Lending Act, similar state and local consumer credit laws and other regulations at the Owner's and Contractor's principal places of business, the location of the Project and elsewhere may affect the validity of this provision. Legal advice should be obtained with respect to deletions or modifications, and also regarding requirements such as written disclosures or waivers.)

7.3 Other provisions (Check one box):

☒ Subparagraph 7.3.1, titled "Liquidated Damages," shall apply to this Agreement. The amount of liquidated damages shall be two hundred dollars ($200) per day.

☐ Subparagraph 7.3.1, titled "Liquidated Damages," shall not apply to this Agreement.

7.3.1 Liquidated Damages. The parties recognize that Owner will suffer financial loss if the Work is not completed within the Contract Time (including adjustments and extensions, if any). They also recognize the delays, expense, and difficulty to both parties involved in proving or contesting the amounts of those losses. Instead of requiring proof of those amounts, it is agreed that Contractor shall be liable for and shall pay Owner the amount specified above in paragraph 7.3 per day as liquidated damages, and not as a penalty, for each day after the Contract Time until Substantial Completion. The amounts stated as liquidated damages are agreed to be reasonable estimates of Owner's losses and expenses for delays, including inspections, architectural and engineering services, and administrative costs. If any part of those delays is caused by Owner or Architect, liquidated damages shall not be charged for the portion of the delay time that was caused by Owner or Architect but shall be charged for the portion not so caused. Owner may collect liquidated damages by retaining moneys otherwise due Contractor in the amount of such damages, and by other legal means. Nothing in this Subparagraph 7.3.1 shall reduce Owner's rights under Article 14 of the General

Conditions or other provisions of the Contract Documents. In its discretion, Owner may waive some or all liquidated damages against the Contractor. Such a waiver is valid only if done by a signed writing that refers specifically to this Subparagraph 7.3.1 and specifically mentions "liquidated damages." Such a waiver shall not constitute an extension of the Contract Time.

7.3.2 **Performance and Payment Bonds** The Contractor ☒ is ☐ is not required to furnish performance and payment bonds.

7.3.3 **Additional Provisions**

ARTICLE 8
TERMINATION OR SUSPENSION

8.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of the General Conditions.
8.2 The Work may be suspended by the Owner as provided in Article 14 of the General Conditions.

ARTICLE 9
ENUMERATION OF CONTRACT DOCUMENTS

9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:
9.1.1 The Agreement is this executed Standard Form of Agreement Between Owner and Contractor, AIA Document, 1987 Edition.
9.1.2 The General Conditions are the General Conditions of the Contract for Construction, AIA Document A201, 1987 Edition.
9.1.3 The Supplementary and other Conditions of the Contract are those contained in the Project Manual, ~~dated and are~~ as follows:

Date of Project Manual:

Document	Title	Pages
	Document 022704W Archit CITY OF DURHAM SUPPLEMENTARY CONDITIONS TO AIA 201 (1987 EDITION) FOR USE WHEN AN ARCHITECT IS TO ADMINISTER THE PROJECT	**17**
	Claim Form For Additional Time On The Basis Of Adverse Weather Conditions	**2**
ST-1 to ST-4	Notice on Reimbursement for Sales and Use Taxes, with implementing forms	**4**

9.1.4 The Specifications are those contained in the Project Manual dated as in Subparagraph 9.1.3, and are as follows:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Section	Title	Pages

9.1.5 The Drawings are as follows~~, and are dated unless a different date is shown below~~:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date

9.1.6 The Addenda, if any, are as follows:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

9.1.7 Other documents, if any, forming part of the Contract Documents are as follows:

(List here any additional documents which are intended to form part of the Contract Documents. The General Conditions provide that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

~~This Agreement is entered into as of the day and year first written above and is executed in at least three original copies of which one is to be delivered to the Contractor, one to the Architect for us in the administration of the Contract, and the remainder to the Owner.~~

IN WITNESS WHEREOF, this Agreement is executed under seal by the duly authorized officers of the City and the Contractor.

CITY OF DURHAM

ATTEST:

_____ By:_____

_____ Clerk _____ City Manager

ATTEST:

_____ By:_____

_____ Secretary _____ President

(Affix corporate seal.)

Note to City staff: If the Performance Bond and Payment Bond form in GBSB Appendix B is used, the acknowledgment form in that Bond is sufficient for the Contractor, so don't also insert an acknowledgment form in the A101. However, if that Bond form is not used, insert an acknowledgment form here, using GBSB Appendix F, and type the Contractor's name into that form.

NORTH CAROLINA ACKNOWLEDGMENT BY CITY OF DURHAM
COUNTY of _____

I, a Notary Public in and for the aforesaid County and State certify that _____ _____ personally appeared before me this day, and acknowledged that he or she is the _____ City Clerk of the City of Durham, a municipal corporation, and that by authority duly given and as the act of the City, the foregoing agreement was signed in its corporate name by its _____ City Manager, sealed with its corporate seal, and attested by its said City Clerk or Deputy City Clerk. This the _____day of _____, 20_____

_____
Notary Public

My commission expires:
_____

AIA Document A201

General Conditions of the Contract for Construction

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS MODIFICATION

1987 EDITION

TABLE OF ARTICLES

1. GENERAL PROVISIONS
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12. UNCOVERING AND CORRECTION OF WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT

This document has been approved and endorsed by the Associated General Contractors of America.

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor or (3) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

1.2.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

1.3.1 The Drawings, Specifications and other documents prepared by the Architect are instruments of the Architect's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyright. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the

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Work without the specific written consent of the Owner and Architect. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's copyright or other reserved rights.

1.4 CAPITALIZATION

1.4.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.5 INTERPRETATION

1.5.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

ARTICLE 2

OWNER

2.1 DEFINITION

2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 The Owner upon reasonable written request shall furnish to the Contractor in writing information which is necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein at the time of execution of the Agreement and, within five days after any change, information of such change in title, recorded or unrecorded.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the request of the Contractor, prior to execution of the Agreement and promptly from time to time thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. *[Note: Unless such reasonable evidence were furnished on request prior to the execution of the Agreement, the prospective contractor would not be required to execute the Agreement or to commence the Work.]*

2.2.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

2.2.3 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.2.6 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion) and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a second seven-day period. If the Contractor within such second seven-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3

CONTRACTOR

3.1 DEFINITION

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency or omission and knowingly failed to report it to the Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

3.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Architect at once.

3.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3.12.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

3.3.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities bearing on performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities against which the Contractor makes reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

- **.1** materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work;
- **.2** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

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.3 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances;

.4 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.2 and (2) changes in Contractor's costs under Clause 3.8.2.3.

3.9 SUPERINTENDENT

3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall conform to the most recent schedules.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7.

3.12.5 The Contractor shall review, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.12.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

3.12.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals.

3.12.10 Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

3.12.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the

Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

3.17 ROYALTIES AND PATENTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 3.18 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

3.18.3 The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Architect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, the Architect's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

4.1.3 In case of termination of employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection and whose status under the Contract Documents shall be that of the former architect.

4.1.4 Disputes arising under Subparagraphs 4.1.2 and 4.1.3 shall be subject to arbitration.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the correction period described in Paragraph 12.2. The Architect will advise and consult with the Owner. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations as an architect, the Architect will keep the Owner informed of progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

4.2.3 The Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.3. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Con-

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tractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.5 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.6 The Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable for implementation of the intent of the Contract Documents, the Architect will have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Decision of Architect. Claims, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for action as provided in Paragraph 4.4. A decision by the Architect, as provided in Subparagraph 4.4.4, shall be required as a condition precedent to arbitration or litigation of a Claim between the Contractor and Owner as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to arbitration or litigation in the event (1) the position of Architect is vacant, (2) the Architect has not received evidence or has failed to render a decision within agreed time limits, (3) the Architect has failed to take action required under Subparagraph 4.4.4 within 30 days after the Claim is made, (4) 45 days have passed after the Claim has been referred to the Architect or (5) the Claim relates to a mechanic's lien.

4.3.3 Time Limits on Claims. Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

4.3.4 Continuing Contract Performance. Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.5 Waiver of Claims: Final Payment. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

- **.1** liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents; or
- **.3** terms of special warranties required by the Contract Documents.

4.3.6 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with the procedure established herein.

4.3.8 Claims for Additional Time

4.3.8.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.8.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.

4.3.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.3.7 or 4.3.8.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 The Architect will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Architect expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.4.2 If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

4.4.3 If a Claim has not been resolved, the party making the Claim shall, within ten days after the Architect's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Architect, (2) modify the initial Claim or (3) notify the Architect that the initial Claim stands.

4.4.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days, which decision shall be final and binding on the parties but subject to arbitration. Upon expiration of such time period, the Architect will render to the parties the Architect's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there is a surety and there appears to be a possibility of a Contractor's default, the Architect may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.5 ARBITRATION

4.5.1 Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect and except those waived as provided for in Subparagraph 4.3.5. Such controversies or Claims upon which the Architect has given notice and rendered a decision as provided in Subparagraph 4.4.4 shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Architect as provided in Paragraph 4.3 and no decision has been rendered.

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4.5.2 Rules and Notices for Arbitration. Claims between the Owner and Contractor not resolved under Paragraph 4.4 shall, if subject to arbitration under Subparagraph 4.5.1, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect, unless the parties mutually agree otherwise. Notice of demand for arbitration shall be filed in writing with the other party to the Agreement between the Owner and Contractor and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.5.3 Contract Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall comply with Subparagraph 4.3.4.

4.5.4 When Arbitration May Be Demanded. Demand for arbitration of any Claim may not be made until the earlier of (1) the date on which the Architect has rendered a final written decision on the Claim, (2) the tenth day after the parties have presented evidence to the Architect or have been given reasonable opportunity to do so, if the Architect has not rendered a final written decision by that date, or (3) any of the five events described in Subparagraph 4.3.2.

4.5.4.1 When a written decision of the Architect states that (1) the decision is final but subject to arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.5.4.2 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.5.1 and 4.5.4 and Clause 4.5.4.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.5.5 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.5.6 Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

4.5.7 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such change.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 If the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted.

ARTICLE 6

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.3 provided the separate contractor has reciprocal obligations.

6.2.6 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3.15, the Owner may clean up and allocate the cost among those responsible as the Architect determines to be just.

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ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

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

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect, stating their agreement upon all of the following:

- **.1** a change in the Work;
- **.2** the amount of the adjustment in the Contract Sum, if any; and
- **.3** the extent of the adjustment in the Contract Time, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

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

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

- **.1** costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' or workmen's compensation insurance;
- **.2** costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- **.3** rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- **.4** costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- **.5** additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Architect for determination.

7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

8.3.3 This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents.

9.3.1.1 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the

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Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss because of:

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims;
- **.3** failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or another contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** persistent failure to carry out the Work in accordance with the Contract Documents.

9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner.

9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or desig-

nated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.8.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims. The making of final payment shall constitute a waiver of claims by the Owner as provided in Subparagraph 4.3.5.

9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. Such waivers shall be in addition to the waiver described in Subparagraph 4.3.5.

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ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which arbitration has not been demanded, or by arbitration under Article 4.

10.1.3 The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

10.1.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Subparagraph 10.1.4.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- **.3** other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 EMERGENCIES

10.3.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

ARTICLE 11

INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- **.1** claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and

.7 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.1.1 Property insurance shall be on an all-risk policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, falsework, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's services and expenses required as a result of such insured loss. Coverage for other perils shall not be required unless otherwise provided in the Contract Documents.

11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

11.3.1.3 If the property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles above the amounts so identified or if the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles. If deductibles are not identified in the Contract Documents, the Owner shall pay costs not covered because of deductibles.

11.3.1.4 Unless otherwise provided in the Contract Documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

11.3.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.3.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

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11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.3.7 for damages caused by fire or other perils covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.

11.3.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Paragraph 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.3.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.5. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection be made, arbitrators shall be chosen as provided in Paragraph 4.5. The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

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

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12

UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's observation and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to observe prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby.

12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date

for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this Subparagraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.4. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so the Architect may observe such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so the Architect may observe such procedures.

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The Owner shall bear such costs except as provided in Subparagraph 13.5.3.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

.1 **Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

.2 **Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

.3 **After Final Certificate for Payment.** As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction;

.2 an act of government, such as a declaration of national emergency, making material unavailable;

.3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;

.4 if repeated suspensions, delays or interruptions by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less; or

.5 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.2.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to jus-

tify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** accept assignment of subcontracts pursuant to Paragraph 5.4; and
- **.3** finish the Work by whatever reasonable method the Owner may deem expedient.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance, caused by suspension, delay or interruption. No adjustment shall be made to the extent:

- **.1** that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of this Contract.

14.3.3 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

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| |
| SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION *WHEN AN ARCHITECT IS TO ADMINISTER THE PROJECT*
| |

The following supplements the "General Conditions of the Contract for Construction," AIA Document A201, Fourteenth Edition, 1987. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

Article 1 GENERAL PROVISIONS

1.1 (*Basic Definitions*)

1.1.2 (*The Contract - Limitation on persons affected*) After the last sentence, insert: "Except as provided by the preceding sentence or by Paragraphs 5.3 and 5.4, the Contract is not intended to benefit, or to create a cause of action in favor of, any person, firm, or corporation, other than the Owner and the Contractor. The recitation of duties of the Architect in the Contract Documents (e.g., Subparagraph 9.42) shall not be construed to reduce the Owner's rights against the Architect or the Architect's duties to the Owner."

Add the following new Subparagraphs:

1.1.8 (*'Approved,' 'satisfactory,' 'proper' or 'as directed'*) When the words 'approved,' 'satisfactory,' 'proper' or 'as directed' are used, this refers to approval, satisfaction, determination, or direction by the Architect, unless the context otherwise requires.

1.1.9 (*Provide*) The word 'provide' and its forms and derivatives means to properly fabricate, complete, transport, deliver, install, erect, construct, test, and furnish all labor, materials, equipment, apparatus, appurtenances, and all items and expenses necessary to properly complete in place, ready for operation or use under the terms of the Specifications.

1.1.10 (*Knowledge, recognize, and discover*) "Knowledge," "recognize," and "discover," their respective forms and derivatives, and similar terms in the Contract Documents, as used in reference to the Contractor, shall mean that which the Contractor knows or should know, recognizes or should recognize and discovers or should discover in exercising the care, skill, and diligence required by the Contract Documents. The expression "reasonably inferable" and similar terms in the Contract Documents shall mean reasonably inferable by a contractor familiar with the Project and exercising the care, skill and diligence required of the Contractor by the Contract Documents.

1.1.11 (*Persistently fails*) The expression "persistently fails" and other similar expressions, as used in reference to the Contractor, shall mean any act or omission which causes the Owner or Architect to reasonably conclude that the Contractor will not complete the Work within the Contract Time, for the Contract Sum, or in substantial compliance with the requirements of the Contract Documents.

1.2 (*Execution, Correlation and Intent*)

1.2.2 (*Contractor to evaluate conditions and to be responsible for safety*) Add to the end: "The Contractor shall evaluate and satisfy itself as to the conditions and limitations under which the Work is to be performed, including (1) the location, condition, layout, and nature of the site and surrounding areas, (2) generally prevailing climatic conditions, (3) anticipated labor supply and costs, (4) availability and cost of materials, tools, and equipment, and (5) other similar issues. To the extent that it may be appropriate for the proper execution of its subcontract, the Contractor shall cause each Subcontractor to do the evaluation described in the preceding sentence. The Owner assumes no responsibility or liability for the physical condition or safety of the site or any improvements located on the site. Except as set forth in Subparagraph 10.1.2, the Contractor, and not the Owner, shall be responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time in connection with any failure by the Contractor to comply with the requirements of this Subparagraph 1.2.2.

1.2.3 (*Parties to effectuate intent of Contract Documents, and Contractor to provide better quality*) Add to the end: "The Owner and the Contractor shall do all acts and shall make, execute, and deliver such written instruments, as shall from time to time be reasonably required to carry out the provisions of the Contract Documents. In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall (1) provide the better quality or greater quantity of Work or (2) comply with the more stringent requirement. This Subparagraph 1.2.3, however, shall not relieve the Contractor of any of the obligations set forth in Paragraphs 3.2 and 3.7."

1.2.3.1 (*Interpreting Drawings*) On the Drawings, given dimensions shall take precedence over scaled measurements, and large scale drawings over small scale drawings.

1.2.3.2 (*Contractor to verify measurements*)

Before ordering any materials or doing any Work, the Contractor shall verify measurements at the site and shall be responsible for the correctness of such measurements. No extra charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the Work.

1.2.3.3 (*Minor changes to be approved*) If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit drawings of such departure for the approval by the Architect before making the change.

1.2.5 Add to the end:

1.2.5.1 (*Compliance with Standards and Specifications*) Whenever a product is specified in accordance with a Federal Specification, an ASTM Standard, an American National Standards Institute Specification, or other Association Standard, the Contractor shall present a statement, in the form reasonably required by the Architect, from the manufacturer when requested by the Architect or required in the Specifications, certifying that the product complies with the particular Standard or Specification. When requested by the Architect or specified, support test data shall be submitted to substantiate compliance.

1.2.5.2 (*Or equals*) Whenever a product is specified or shown by describing proprietary items, model numbers, catalog numbers, manufacturer, trade names, or similar reference, no substitutions may be made unless accepted as a Modification.

1.3 (*Ownership and Use of Architect's Drawings, Specifications and Other Documents*)

"1.3.1 (*Additional use of documents*) At the end of 1.3.1, add: "The contract between the Owner and Architect may permit the Owner some additional uses of the Drawings, Specifications, and other documents prepared by the Architect (hereafter in this Subparagraph 1.3.1 referred to as 'Said Items'). If the Owner, in exercising the Owner's rights and privileges with respect to Said Items, specifically requests the Contractor to use Said Items, such use in carrying out that request will not violate this Subparagraph. This Subparagraph 1.3.1 is not intended to create any rights in the Architect as against the Owner, although this Subparagraph may create rights in the Architect as against the Contractor and others referred to in this Subparagraph."

1.5 (*Interpretation*)

1.5.2 (*Pronouns, titles, "include" and its derivatives*) Create a new Subparagraph: "Unless the context otherwise requires, all personal pronouns used in the Contract Documents shall include all other genders, and the singular shall include the plural and vice versa. Titles and headings of articles, paragraphs, subparagraphs, sections, subsections, parts, subparts, etc., in the Contract Documents are for convenience only, and neither limit nor amplify the provisions. The use in the Agreement, General Conditions, and Supplementary Conditions of "include" in its various forms and derivatives shall mean "without limitation" unless the context otherwise requires."

1.5.3 (*Severing invalid provisions*) Create a new Subparagraph: "Whenever possible, each provision of the Contract Documents shall be interpreted in a manner as to be effective and valid under applicable law. If, however, any provision of the Contract Documents is determined by a court of competent jurisdiction to be invalid or unenforceable, only such provision shall be ineffective, without invalidating the remaining provisions, which are hereby deemed severable."

Article 2 (OWNER)

2.1 (*Definition*)

2.1.1 (*City as Owner*) Delete the last sentence and replace with: "The term 'Owner' refers to City of Durham. The City Manager is hereby designated as the Owner's representative. The City Manager is the only individual authorized to act on the Owner's behalf under or in connection with the Contract, unless the City Manager designates a new representative in writing. The authority of the City Manager and designated representative(s), if any, includes stopping Work under Subparagraph 2.3.1 and executing Modifications."

2.1.2 (*Owner's title to the site*) Delete entirely, and replace with: "The Owner upon reasonable written request made from time to time shall furnish to the Contractor in writing a statement setting forth, to the extent of the Owner's knowledge, the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein."

2.2 (*Information and services required of the Owner)*

2.2.1 (*Owner's financial ability*) Delete entirely.

2.3 (*Owner's Right to Stop the Work*)

2.3.1 (*Owner's Right to Stop the Work*) In line 4, after "Contract Documents," insert: "or

otherwise fails to comply with the Contract Documents,". At the end, delete ", except to the extent required by paragraph 6.1.3.".

2.4 (*Owner's Right to Carry Out the Work*)
2.4.1 (*Use of Modification*) In line 13, delete "Change Order" and replace with "Modification".

Article 3 (CONTRACTOR)
3.2 (*Review of Contract Documents and Field Conditions by Contractor*)
3.2.2 Add the following:
3.2.2.1 (*Exactness not guaranteed*) The exactness of grades, elevations, dimensions, or locations given on any Drawings issued by the Owner or Architect, or the work installed by other contractors, is not guaranteed by the Owner or Architect.
3.2.2.2 (*Contractor to verify*) The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, and locations. In all cases of interconnection of the Work to be done by the Contractor with the rest of the Project, it shall verify at the site all dimensions needed to make proper interconnections. The Contractor shall promptly rectify all errors due to its failure to so verify all such grades, elevations, locations, or dimensions, without any additional cost to the Owner.
3.2.4 (*Sufficiency of Contract Documents*) Create a new Subparagraph: "The Contractor acknowledges: (1) the Contract Documents are sufficient to determine the cost of the Work; (2) it has had sufficient opportunity to visit the site and to examine all conditions affecting the Work; (3) it has had a sufficient opportunity to examine the Contract Documents for errors, inconsistencies, and omissions; and (4) the Contract Documents are complete and unambiguous."

3.3 (*Supervision and Construction Procedures*)
3.3.1 (*Compliance with laws and regulations*) Add to the end: "Except as may be otherwise provided by Paragraph 3.7, the Contractor shall carry out and perform all Work and perform under the Contract Documents in compliance with all applicable laws, statutes, codes, rules, and regulations."
3.3.2 (*Responsibility for Sub-subcontractors*) In the third line, insert: "Sub-subcontractors and their agents and employees," after "employees,".

3.4 (*Labor and Materials*)
3.4.3 (*Request for substitutions*) Create a new Subparagraph: "See Subparagraph 1.2.5.2. By making a request for substitutions, the Contractor:
3.4.3.1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
3.4.3.2 represents and covenants that the Contractor will provide the same warranty for the substitution that the Contractor would have provided for the original product;
3.4.3.3 certifies that the cost data presented are complete and include all related costs under this Contract, as well as include license fees, royalties, and claims of other persons, except the Architect's redesign costs, and the Contractor waives all claims for additional costs related to the substitution which subsequently become apparent; and
3.4.3.4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

3.5 (*Warranty*)
3.5.1 In the 9th line, delete the word "may" and substitute the word "shall". In the 11th line, delete "modifications not executed by the Contractor,".
3.5.2 Create a new Subparagraph: "The Contractor shall perform the Work in such manner so as to preserve all manufacturer's warranties relating to materials and labor used in the Work."

3.7 (*Permits, Fees and Notices*)
3.7.1 (*Providing copies*) Add to the end: "Promptly after obtaining such permits, licenses, certificates, and approvals, the Contractor shall furnish the Owner and Architect photocopies of those documents."
3.7.2 (*Meaning of regulations*) Add to the end: "In this Paragraph 3.7, 'regulations' includes all requirements of public authorities."

3.8 (*Allowances*)
3.8.2.4 In lines 2-3, delete "by Change Order". In line 3, delete "Change Order" and replace with "adjustment".

3.9 (*Superintendent*)
3.9.1 (*Selection of superintendent; confirmation of communications*) In the second line, after "superintendent", insert: "against whom the Owner makes no reasonable objection". Delete the last two sentences, and replace with "Communications will be confirmed in writing on request."

3.10 (*Contractor's construction schedule*)

3.10.1 (*Multi-prime projects*) Insert after the first sentence: "If the multi-prime contracting method is used, the construction schedules submitted by the separate contractors (including the Contractor) pursuant to this Subparagraph 3.10.1 must be approved by the Owner and Architect before such schedules are effective."

3.10.4 (*Avoiding interference with Owner and others*) Create a new Subparagraph: "The Owner shall have the right to direct a postponement or rescheduling of any date or time for the performance of any part of the Work that may interfere with the operation of the Owner's premises or any tenants or invitees thereof. The Contractor shall, upon the Owner's request, reschedule any portion of the Work affecting operation of the premises to hours when the premises are not in operation. Any postponement, rescheduling, or performance of the Work under this Subparagraph 3.10.4 may be grounds for an extension of the Contract Time, if permitted under Subparagraph 8.3.1, and may be grounds for an equitable adjustment in the Contract Sum if: (1) the performance of the Work was properly scheduled by the Contractor in compliance with the requirements of the Contract Documents, and (2) such rescheduling or postponement is required for the convenience of the Owner."

3.11 (*Documents and samples at the site*)

3.11.1 At the end, delete "upon completion of the Work" and replace with "in accordance with Subparagraph 9.10.2."

3.12 (*Shop Drawings, product data and samples*)

3.12.9 (*Revisions not requested by Architect*) Add to the end: "This shall be done in a prominent manner so as to ensure that the Architect will see the revisions that the Architect had not requested."

3.12.11 (*Certification of performance criteria*) Delete entirely and replace with: "When professional certification of performance criteria of materials, systems, or equipment is required by the Contract Documents, the Contractor shall provide the person providing the certification with full information on the relevant performance requirements and on the materials, systems, and equipment that are expected to operate at the site. The certification shall be based on performance under the operating conditions generally prevailing or expected at the site. The Architect shall be entitled to rely upon the accuracy and completeness of such certificates."

3.12.12 (*Shop Drawings*) Create a new Subparagraph: "The Contractor shall see that all shop drawings for any architectural, structural, mechanical, or electrical work have been approved by the Architect. The Contractor represents and warrants that all shop drawings shall be prepared by persons possessing expertise and experience in the trade for which the shop drawing is prepared and, if required by the Architect or applicable law, by a licensed engineer."

3.13 (*Use of Site*)

3.13.2 (*Storage of materials and equipment*) Create a new Subparagraph: "The Contractor shall not store any materials or equipment on the site except those which are to be used directly in the Work. After equipment is no longer required for the Work, the Contractor shall promptly remove it from the site. The Contractor shall provide suitable protection of materials and equipment stored at the site from adversity of the kinds that may be reasonably expected, and from weather, theft, and other damage."

3.13.3 (*Signs*) Create a new Subparagraph: "Neither the Contractor nor the Subcontractors nor the Sub-subcontractors may erect any sign on the site without the prior written consent of the Owner. That consent may be withheld in the sole discretion of the Owner."

3.13.4 (*Access to site; interference with neighbors; interference when partial occupancy occurs*) Create a new Subparagraph: "The Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site. The Contractor shall perform the Work in such a manner that public areas adjacent to the site shall be free from all debris, building materials, and equipment. Without limitation of any other provision of the Contract Documents, the Contractor shall minimize any interference with the occupancy or beneficial use of (1) any areas and buildings adjacent to the site and (2) the portion of the Work in which partial occupancy or use takes place, as more specifically described in Paragraph 9.9."

3.13.5 (*Contractor's use of Owner's facilities; insurance requirements*) Create a new Subparagraph: "The Contractor shall not permit any workers to use any existing facilities at the site, including lavatories, toilets, entrances, and parking areas, other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, if the Owner is using or occupying areas adjacent to the Work, the Contractor shall comply with all regulations promulgated by the Owner in connection with the use and occupancy thereof, as amended from time to time. The Contractor shall immediately give notice to the Owner if

during the performance of the Work, the Contractor finds compliance with any portion of such regulations to be impracticable, setting forth the problems of such compliance. The Owner shall use reasonable efforts to accommodate the Contractor's concerns, if in the Owner's discretion it is reasonably practical to do so. The Contractor shall also comply with all insurance requirements applicable to use and occupancy of the site."

3.15 (*Cleaning up*)
3.15.2 (*Right to cure*) Add to end: "The Owner shall give the Contractor a reasonable opportunity to cure before the Owner exercises its rights under the preceding sentence."

3.17 (*Royalties and patents*)
3.17.1 (*Includes copyrights, trade secrets, and other proprietary information*) In the 3d line, after "patent rights", insert: "or violations with respect to copyrights, trade secrets, or other proprietary information". In the 9th line, after "patent", insert: "copyright, trade secret, or other proprietary right".

3.18 (*Indemnification*)
3.18.1 (*Indemnification*) Delete and replace with:

"(a) To the maximum extent allowed by law, the Contractor shall defend, indemnify, and save harmless Indemnitees from and against all Charges that arise in any manner from, in connection with, or out of, performance of the Work as a result of acts or omissions of the Contractor or Subcontractors or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. In performing its duties under this subsection 'a', the Contractor shall at its sole expense defend Indemnitees with legal counsel reasonably acceptable to the Owner.

"(b) Definitions. As used in subsections 'a' above and 'c' and 'd' below --
'Charges' means claims, judgments, costs, damages, losses, demands, liabilities, obligations, fines, penalties, royalties, settlements, and expenses (included within 'Charges' are (1) interest and reasonable attorneys' fees assessed as part of any such item, and (2) amounts for alleged violations of sedimentation pollution or other environmental or pollution laws and regulations -- including any such alleged violation that arises out of the handling, transportation, deposit, or delivery of the items or materials that are involved in performance of the Work).
'Indemnitees' means the Owner and its officers, officials, independent contractors, agents, and employees, but does not include the Contractor.

"(c) Limitations of the Contractor's Obligation. Neither Subsection 'a' of this Subparagraph 3.18.1 nor any other provision of the Contract shall be construed to require the Contractor to indemnify or hold harmless Indemnitees against liability for damages arising out of bodily injury to persons or damage to property proximately caused by or resulting from the negligence, in whole or in part, of Indemnitees.

"(d) Nothing in subsections 'a', 'b', or 'c' in this Subparagraph 3.18.1 shall affect any warranties in favor of the Owner. This Subparagraph 3.18.1 is in addition to and shall be construed separately from any other indemnification provisions that may be in this Contract.

"(e) Survival. This Subparagraph 3.18.1 shall remain in force despite termination of this contract (whether by expiration of the term or otherwise) and termination of the services of the Contractor under this contract."

3.19 (*Equipment Manuals*)
3.19.1 (*Equipment Manuals*) Create a new Subparagraph: "The Contractor shall assemble for the Architect's approval and transmittal to the Owner two (2) complete copies in loose leaf binders of all operating and maintenance data from all manufacturers and suppliers whose equipment is installed in the Work. Unless the information is contained in the data referred to in the preceding sentence, the Contractor shall also prepare, and include in those binders, a checklist or schedule showing the type of lubricant to be used at each point of application, and the intervals between lubrication for each item of equipment. The Contractor shall comply with Subparagraph 9.10.2."

Article 4 (ADMINISTRATION OF THE CONTRACT)
4.1 (*Architect*)
4.1.2 (*Changes in duties*) Delete entirely.
4.1.4 (*No arbitration*) Delete entirely.

4.2 (*Architect's administration of the Contract*)
4.2.11 (*decisions*) In the final sentence, insert "or decisions" after "interpretations" both times it appears.

4.3 (*Claims and disputes*)
4.3.1 (*Form of Claim*) Add to the end: "Any notice of Claim or reservation of Claim (see Subparagraph 4.3.3 as amended by the Supplementary Conditions) must clearly identify

the alleged cause and the nature of the Claim and include data and information then available to the claimant that will facilitate prompt verification and evaluation of the Claim."

4.3.2 (*Time* limits) In the third sentence, delete "(2) the Architect...time limits," and replace with "(2) the Architect has not rendered, or has stated unequivocally that the Architect will not render, a decision within the time limits that apply either pursuant to the Contract or as specially agreed to by the Owner and the Contractor for the particular claim,".

4.3.3 (*Notice of Claims; mitigation of damages; reservation of Claim*) Add to the end of the first sentence: "Once a party recognizes that it may make a Claim, it shall use its best efforts to furnish the Architect and the other party, as expeditiously as possible, with notice of the potential Claim, including potential Claims in connection with concealed or unknown conditions, or within the period set forth in Subparagraph 4.3.6, whichever period is shorter. The potential claimant shall cooperate with the Architect and the party against whom the potential Claim may be made in an effort to mitigate damages, delay, or other adverse consequences arising out of the condition which is the cause of the potential Claim. This duty to mitigate continues after the Claim is actually made." Add to the end of this Subparagraph 4.3.3: "Before a party has accepted final payment, it may reserve a Claim by written notice within the time limits set forth in this Subparagraph 4.3.3. If a Claim is reserved, the Resolution of Claims and Disputes procedures described in Paragraph 4.4 shall not commence until a written notice from the claimant activating the Claim is received by the Architect."

4.3.4 (*Claims during suspension or termination*) Add to the end: "The requirement of proceeding shall not apply during a period of suspension or termination by the Owner."

4.3.5 (*Waiver*) Delete "constitute a waiver of Claims by the Owner except those arising from" and replace with "not constitute a waiver of Claims by the Owner including those arising from".

4.3.6 *(Concealed or unknown conditions*) Add to the end: "No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition which does not differ materially from those conditions that were disclosed, or which should have been disclosed, by the prior inspections, tests, reviews, or preconstruction services which the Contractor performed, or had a duty to have performed, in connection with the Project."

4.3.7 and 4.3.8.1 (*Limits on Claims*) In the second line of each, delete "written notice" and replace with "a Claim shall be made". Add to the end of each: "NO CLAIM PERMITTED UNDER THIS SUBPARAGRAPH SHALL BE VALID UNLESS MADE AS REQUIRED BY THIS SUBPARAGRAPH AND OTHER PROVISIONS OF PARAGRAPH 4.3. CLAIMS NOT MADE IN ACCORDANCE WITH THESE REQUIREMENT ARE WAIVED. THESE REQUIREMENTS, INCLUDING AS TO TIME, ARE OF THE ESSENCE OF THE CONTRACT DOCUMENTS. Accordingly, no course of conduct or dealings between the parties, no express or implied acceptance of alterations or additions to the Work, and no assertion that the Owner has been unjustly enriched by any alteration or addition to the Work, whether or not there is in fact any such unjust enrichment, shall be the basis for any Claim to an increase in the Contract Sum or in the Contract Time."

4.3.8.2 (*Weather Claims)* Add to the end:

The weather conditions shown in the chart below can be reasonably anticipated and will not be considered abnormal. For example, if the Contractor submits a claim for additional time on the sole basis of adverse weather conditions in January, and the factual records submitted show that the actual January in which the Contractor worked had 9 days on which the precipitation exceeded 0.1 inches, the extension of time will not be granted because the chart says that it is expected that there will be 10 days in January with at least that much rain. If the factual records show that the actual January in which the Contractor worked had 12 days on which the precipitation exceeded 0.1 inches, the Contractor will not need to show that the precipitation was abnormal and could not have been reasonably anticipated, but will still need to show the adverse effect on the scheduled construction. Unless the City agrees in writing otherwise, the weather conditions must be shown by use of data, submitted by the Contractor, from either the National Weather Service (NWS) for Raleigh, N. C. or NWS readings from a location closer to the site than Raleigh, and not by use of weather readings on the site or by the Contractor. For adverse weather claims, the Contractor shall use the claim form ("CLAIM FOR ADDITIONAL TIME ON THE BASIS OF ADVERSE WEATHER CONDITIONS") in the contract documents. The parties are bound by the provisions on that form. In order to make a claim for inclement weather days the form must be submitted by the 10th day of the month after the month as to which the

claim is made. In order to make this claim for Saturdays, Sundays, and City of Durham holidays, the Contractor must have notified the City representative (Project Manager) by 3:30 PM o'clock three days in advance of the day of the Contractor's intent to work on a specific Saturday, Sunday, or holiday. Notwithstanding Supplementary Conditions 8.1.4, if the day on which the 3-days notice is to be given is a Saturday, Sunday, or City of Durham holiday, the notice shall be given by the first day before that Saturday, Sunday, or holiday that is not a Saturday, Sunday, or City of Durham holiday.

	Number of days with 0.1 or more inches precipitation	Number of days on which the temperature is never above 32 degrees F.
Jan.	10	3
Feb.	10	1
March	10	0
April	9	0
May	10	0
June	9	0
July	11	0
August	10	0
Sept.	8	0
Oct.	7	0
Nov.	8	0
Dec.	9	0

4.4 (*Resolution of Claims and disputes*)
4.4.4 (Finality of decision; arbitration) In the first sentence, in lines 5-6, delete ", which decision…arbitration".

4.5 (Arbitration) Delete all Subparagraphs and Sub-Subparagraphs entirely and replace with: "4.5.1 The Contractor and the Owner shall not be obligated to use arbitration to settle any controversy or Claim arising out of or related to the Contract or the breach thereof. Any provision in any place in the Contract Documents to the effect that either of those parties is bound by arbitration, is void. This Subparagraph 4.5.1 does not affect the Architect's authority as allowed by the Contract Documents."
Add the following new Subparagraph:
4.6 (*Dispute resolution process*) Any party allowed to use the dispute resolution process adopted by the State Building Commission pursuant to G. S. 143-135.26(11) (the "DR process") shall participate in mediation pursuant to the DR process as a precondition to initiating litigation concerning the dispute. The amount of $15,000 or more must be at issue before a party may require other parties to participate in the DR process. The costs of the DR process shall be divided between the parties to the dispute with at least one-third of the cost to be paid by the Owner, if the Owner is a party to the dispute.
Article 5 (SUBCONTRACTORS)
5.1 (*Definitions*)
5.1.1 (*Subcontractor; Chapter 44A*) Delete the first sentence and replace with: "A Subcontractor is a person or entity who is a first tier subcontractor as defined in N.C.G.S. 44A-17. Nothing in this Article 5 shall be construed to affect the extent to which Chapter 44A applies to the Contract, the Work, or any acts or transactions."
5.1.2 (*Subcontractor*) After the first sentence, insert: "The term "Sub-subcontractor" includes each person or entity who is a subcontractor of any tier, other than a first tier subcontractor as defined in N.C.G.S. 44A-17."

5.2 (*Award of subcontracts and other contracts for portions of the Work*)
5.2.1 (*Competency*) In the fourth line, before "persons or entities", insert: "competent and reliable".
5.2.3 (*Adjustment of Contract Sum from change of person or entity*) Delete the second sentence and substitute: "The Contract Sum shall be adjusted by the lesser of the following '1' and '2', provided that the subcontract amounts are reached in good faith:
(1) the difference between 'a' and 'b':
(a) the subcontract amount proposed by the person or entity accepted or designated by the Owner and Architect and (b) the subcontract amount proposed by the person or entity recommended by the Contractor;
or (2) the difference between 'a' and 'b';
(a) the subcontract amount proposed by the person or entity accepted or designated by the Owner and Architect and (b) the amount set forth in the schedule of values which is applicable to the Work covered by such subcontract."

5.3 (*Subcontractual Relations*)
5.3.1 (*Subcontractual Relations*) In lines 1-2, delete "agreement, written where required for validity" and substitute "written agreement". In lines 11-16, delete: ", and shall allow to the Subcontractor...has against the Owner". In lines 21-24, delete ", and, upon written request...Contract Documents".
5.3.2 (*Text to be included in subcontracts*) Create a new Subparagraph: "Upon the Owner's request, the Contractor will demonstrate compliance with this Subparagraph 5.3.2. All

subcontracts shall include substantially the following:

A. Paragraph 5.3 of the General Conditions of the Contract for Construction (as modified by the Supplementary Conditions) between the Owner (City of Durham) and the Contractor is incorporated by reference into this subcontract. To the extent of the work to be performed by the subcontractor -- (1) the subcontractor is bound to the Contractor by terms of the Owner-Contractor Contract, and (2) the subcontractor assumes toward the Contractor all of the obligations and responsibilities which the Contractor, by the Owner-Contractor Contract, assumes toward the Owner and Architect. The rights of the Owner and Architect under the Owner-Contractor Contract with respect to the Work to be performed by the subcontractor are preserved and shall be protected so that subcontracting will not prejudice those rights. The Owner, City of Durham, is an intended third party beneficiary of this subcontract.

B. If the Contractor is terminated by the Owner, and even if the Contractor defaults in such a way which would give the subcontractor the right to terminate this subcontract, the subcontractor hereby agrees that, upon written request (by the Owner, or a Contractor substituted in place of the original Contractor, or any surety obligated under bond relating to the Agreement between the Owner and Contractor), the subcontractor will continue to perform its obligations under this subcontract (on the same terms and conditions as apply to this subcontract) for and on account of the Owner, such substitute Contractor, or the surety. If requested by the Owner or surety, the subcontractor will execute a separate document to show its commitment to continue performance pursuant to this subcontract. Assignment is subject to the prior rights of the surety. The Owner shall be responsible to the subcontractor only for those obligations of the Contractor that accrue after the Owner exercises any rights under this section "B".

5.4 (*Contingent assignment of subcontracts*) Delete entirely. Reference is made to Subparagraph 5.3.2.

5.5 (*Furnishing Subcontractor documents)* Create a new Paragraph: "At any time after the Agreement is executed, whether or not notice of termination has been given, Contractor shall upon request of the Owner promptly give the Owner a copy of the entire text of all agreements, (including attachments and exhibits) with Subcontractors, together with all other documents by which any services, materials, equipment, or other goods were ordered by the Contractor, including documents showing the cost, delivery dates, and all terms and conditions (including those relating to ordering and canceling)."

Article 6 (CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS)

6.1 (*Owner's right to perform construction and to award separate contracts*)

6.1.1 (*Reservation of rights*) Delete "and to award...subrogation" from the first sentence. Replace it with: "and to award separate contracts in connection with other portions of the Project, additional work (as contrasted with altered work), or other construction or operations on the site. Nothing herein shall limit or reduce the Owner's right to cause a termination for convenience."

6.1.3 (*Project Expediter; schedules of the Work*) Delete the first, second, and third sentences and replace those three sentences with: "If the multi-prime contracting method is used, the Contractor who is awarded the contract for the general work shall be designated the 'Project Expediter', who shall coordinate (and make a record of) the compliance of the other Contractors with their schedules of the Work which they submitted in accordance with Subparagraph 3.10.1. Each Contractor other than the Project Expediter shall keep the Project Expediter fully informed as to the progress of the Work for which it is responsible. The Project Expediter shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement by the Owner, the Project Expediter, and the affected separate Contractor(s); this last sentence applies whether or not the Owner uses its own forces. Where a Contractor (including the Project Expediter) fails to carry out Work in compliance with the Contractor's schedule, the Contractor shall propose a revised schedule to make up the slippage in the schedule. If such proposed revised schedule is approved by the Owner and the Project Expediter, notice of such revisions shall be given to the Architect, and the proposed revised schedule shall replace the previous schedule. The Owner's approval of a revised schedule shall be without prejudice to the Owner's rights and remedies as a result of such work slippage. Direct communications appropriate to carry out this Subparagraph 6.1.3 may be made notwithstanding Subparagraph 4.2.4."

6.2 (*Mutual Responsibility*)

6.2.5 (*Subjects of Claims*) After "in question",

insert: ", including under Subparagraph 3.14.2,". Delete "provided...obligations".

6.2.6 (*Duties of Owner and separate contractors regarding cutting and patching*) Delete entirely and replace with: "If the Owner (with its own forces) or a separate contractor performs construction or operations related to the Project, each shall have the same responsibilities, with respect to its construction and operations, for cutting and patching as are described for the Contractor in Paragraph 3.14."

6.2.7 (*Coordination between various contractors; Owner not liable*) Create a new Subparagraph: "The Contractor must coordinate its Work with that of separate contractors. The Contractor shall not unreasonably impede, hinder, or delay the Owner or any separate contractor. In case of any disputes or coordination problems with the separate contractors, the Contractor shall not look to the Owner for monetary compensation of any kind or adjustment of the Contract Sum arising therefrom. The Owner makes no warranty as to the conduct of any separate contractor."

6.3 (*Owner's right to clean up*)

Article 7 (*Changes in the Work*)

7.1 (*Changes*)

7.1.1 (*Change Order required*) Add to the end: "Except as permitted in Paragraph 7.3 and Subparagraph 9.7.2, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Accordingly, none of the following shall be grounds for any increase in the Contract Sum or in the Contract Time:

(a) course of conduct or dealings between the parties; (b) express or implied acceptance of alterations or additions to the Work; or (c) any unjust enrichment accruing to the Owner by any alteration or addition to the Work."

7.1.2 (*Owner alone approves Construction Change Directives)* In line 3, delete "and Architect".

7.1.4 *(Unit prices)* Insert at the beginning: "If unit prices are stated in the Contract Documents, the Contractor shall perform the Work referred to or described by the unit price provisions at the price per unit of the specified measurement for materials, equipment, and services, as needed for the Work. Each unit price the dollar amount that the Contractor deemed adequate, at the time of the submission of its bid or execution of the Change Order agreeing on the unit price, to cover the Contractor's costs, including overhead, and profit to supply the materials, equipment, and services represented by the unit price. The Contract Documents may show the multiplication of a unit price by a specified quantity (which was estimated as needed) in order to calculate the extension, or the "product" in dollars. The Owner is not contractually bound to pay for the estimated quantity of those items, and the Owner does not covenant that the estimated quantity will be used. Instead, the Owner will be contractually bound to pay for the actual quantity properly incorporated in the Work, at the unit price stated in the Contract Documents. It is presumed that any change of quantities (of items to be paid on a unit price basis) in a proposed Change Order or Construction Change Directive will not cause substantial inequity, but to the extent that presumption is overcome, the rest of this Subparagraph 7.1.4 shall apply."

7.2 (*Change Orders*)

7.2.3 (*Change Orders are inclusive*) Create a new Subparagraph: "Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule. If a Change Order increases the Contract Sum, the Contractor shall include the Work covered by such Change Orders in Applications for Payment."

7.3 (*Construction Change Directives)*

7.3.1 (*Owner may issue Construction Change Directives without stating Contract Sum)* Delete the first sentence, and replace with: "A Construction Change Directive is a written order signed by the Owner, through its representative, directing a change in the Work."

7.3.3 *(Method of adjustment to Contract Sum)* Add to the end:

> ".5 If the Owner deletes substantially all of the Work contemplated by an alternate before five per cent (5%) of the Work under that alternate has been performed, the Contract Sum shall be adjusted as provided in Subparagraph 7.3.12 and not as provided in the last sentence of Subparagraph 7.3.6.

"The methods provided in Subparagraphs 7.3.3.1 and 7.3.3.3 shall not be used unless the other methods in this Subparagraph 7.3.3 are inapplicable or inequitable."

7.3.6 (*Changes in Contract Sum resulting from Construction Change Directive*) In lines 1-3, delete "If the Contractor . . . shall be determined"). Replace with: " If (a) the Contractor does not respond promptly or disagrees with the adjustment or method for

adjustment in the Contract Sum, or (b) the Construction Change Directive omits an adjustment in the Contract Sum, or (c) the Construction Change Directive omits a method for adjustment in the Contract Sum, the method and the adjustment shall be determined". In line 7, after "overhead and profit" insert: ", provided that the allowance for overhead and profit collectively shall be no greater than 15% of the net increase in the Contract Sum". 7.3.6.1 (*Certain fringes not reimbursable*) Delete "fringe benefits required by agreement or custom".
7.3.6.4 (*Insurance not reimbursable*) Delete "and insurance".
7.3.10 (*Change Order and Construction Change Directive Costs*) For purposes of this Subparagraph 7.3.10, "Subs" means Subcontractors and/or Sub-subcontractors.

.1 (*Application of 7.3.6*) The costs to be paid for under 7.3.6.1 through 7.3.6.5 shall apply when the additional Work is done by the Contractor and/or by Subs.

.2 (*Overhead and profit*) For purposes of Subparagraph 7.3.6, overhead and profit ("O & P") shall be determined as follows:
Let A = the costs of the Work attributable to the change to the extent that Work is performed by Subs. The Owner shall pay to the Contractor, for the Subs' O & P, an amount equal to 15% of A. The Owner shall pay to the Contractor, for the Contractor's O & P, an amount equal to 7-1/2% of the sum of [A + (15% of A)] (i.e., the Owner shall pay an amount equal to 0.08625 times A.). For example, if A = $2000, the Owner shall pay to the Contractor $300 for the Subs' O & P, and $172.50 for the Contractor's O & P.

.3 (*Overtime*) The Owner shall pay for overtime as a cost under Subparagraphs 7.3.6 and 7.3.7 only if it has specifically authorized such overtime. The Owner shall not pay O & P on any overhead costs, unless specifically agreed to otherwise."

7.3.11 (*No payment without documentation*) The Owner shall not pay for any cost for any Work attributable to the change in the Work or any cost under Subparagraph 7.3.6 or 7.3.7 unless documentation required by the Contract Documents is supplied for that cost. Those required documents include:

.1 For costs under Subparagraph 7.3.6.1, for each person who worked on the additional Work: a statement showing his or her job title, hourly rate paid, other amounts described under Subparagraph 7.3.6.1 that were paid, and the net change in the number of hours worked attributable to the change in the Work.

.2 For costs under Subparagraph 7.3.6.2: dated receipts from the Subcontractors and/or Sub-subcontractors. The receipts must acknowledge the Contractor's payment, identify the materials, supplies, equipment and show the name of the Owner's Project.

.3 For costs under Subparagraph 7.3.6.3: dated receipts from the rental the Subcontractors and/or Sub-subcontractors. The receipts must acknowledge the Contractor's payment, identify the machinery and equipment, and show the name of the Owner's Project, the rental rate, and the number of hours, days, miles, or other basis of the charge. If the Contractor supplies the machinery or equipment, the statement must show the rental rate and the number of hours, days, miles, or other basis of the charge, and the rental rate must not exceed the market rental rate.

.4 For costs under Subparagraph 7.3.6.4, written proof of a net change in the amount paid by the Contractor attributable to the change in the Work. For bonds, the proof must include the invoice or statement from the surety or its agent showing that it is attributable to the change in the Work.

.5 For costs under Subparagraph 7.4.6.5, for each person who worked on the additional Work: a statement showing his or her job title, method of his or her compensation, and the net change in the number of hours worked attributable to the change in the Work.

7.3.12 (*Adjustment of Contract Sum when substantially all of an alternate is deleted)* If the Owner deletes substantially all of the Work contemplated by an alternate before five percent (5%) of the Work under that alternate has been performed, the Contract Sum shall be adjusted as provided in this Subparagraph 7.3.12 and not pursuant to the last sentence of Subparagraph 7.3.6. The method and the adjustment shall be determined by the Architect as follows: First, the Contract Sum will be reduced by the full amount of the alternate that is deleted. Next, the Contract Sum will be increased to compensate the Contractor for losses that the Contractor cannot avoid, if the Contractor had acted reasonably in making arrangements to do the Work contemplated by the alternate before it was deleted. For example, the Contract Sum may be adjusted to reflect a restocking fee that a Subcontractor charges for goods, but not if the Contractor did not actually order the goods, or if it was not reasonable for the Contractor to have ordered the goods when it did so, or if the

restocking fee was not customarily charged by the Subcontractor for those goods, or not to the extent the restocking fee was unreasonable in amount, or if other circumstances exist under which it would be inequitable for the restocking fee to be paid by the Owner.

.1 (*Limitations on adjustment*) The Contract Sum will not be increased to reflect profits that the Contractor, a Subcontractor, or any other person would or might have made if the alternate had not been deleted. The Contract Sum will not be increased to reflect overhead that the Contractor, a Subcontractor, or any other person would or might have incurred if the alternate had not been deleted.

To the extent that the Contractor performed up to five percent of the Work contemplated by the deleted alternate, the Contract Price shall be adjusted for the Work performed as if the Work performed had been the subject of an additive Construction Change Directive.

7.4 (*Minor changes in the Work*)

7.4.1 (*Conferring with Owner*) Add to the end: "Except in case of emergency, the Architect shall confer with the Owner before ordering a minor change, but this sentence is not intended to give the Contractor the right to delay executing a minor change in order to inquire whether the Owner has been consulted."

Article 8 (TIME)

8.1 (*Definitions*)

8.1.4 (*Measurement of time*) Add to the end: "The day of the act, event, or default after which a period of time begins to run, is not to be included. The last day of the period is to be included, unless it is a Saturday, Sunday, or a legal holiday, in which event the period runs until the end of the next day that is not a Saturday, Sunday, or such legal holiday. As used in the preceding sentence, a 'legal holiday' is a holiday observed by city government of the City of Durham. See City Code Sections 14-16(a) and 14-16(b) for information on such holidays."

8.2 (*Progress and completion*)

8.2.1 (*No Owner's warranty as to Contract Time*) Add to the end: "The Owner does not warrant that the Contract Time is a reasonable period for performing the Work."

8.3 (*Delays and Extensions of time)*

8.3.1 (*Limits on extension of Contract Time*) Add to the end: "A labor dispute to which the Contractor, a Subcontractor, or a Sub-subcontractor is a party or a contributing factor shall not be a ground for an extension of the Contract Time. If performance is or would have been delayed by another cause for which the Contractor, a Subcontractor, or a Sub-subcontractor is responsible, the Contractor shall not be entitled to an extension of Contract Time or any other remedy, compensation, or recovery of any kind for such delay."

8.3.3 (*Limits on adjustment in Contract Sum and Contract Time*) Delete entirely and replace with: "Notwithstanding anything to the contrary in the Contract Documents other than Paragraph 14.1 and other than the A101 signed by the Owner and Contractor, the Contractor's sole remedy for any (1) delay in the commencement, prosecution, or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity, or (4) other similar delays and losses (said 1, 2, 3, and 4 being collectively referred to in this Subparagraph 8.3.3 as 'Such Delays'), whether or not Such Delays are foreseeable, shall be an extension of the Contract Time if permitted and granted under Subparagraph 8.3.1 and, to the extent permitted under this Subparagraph 8.3.3, an adjustment in the Contract Sum. In no event shall the Contractor be entitled to any other compensation or recovery of any damages under or pursuant to this Subparagraph 8.3.3 in connection with any Such Delays, including consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Contractor shall be permitted an adjustment in the Contract Sum if any of Such Delays, either individually or taken in the aggregate, cause the Contract Time to be increased by more than the Elimination Period. If the length of the Elimination Period is stated elsewhere in the Contract Documents, that length shall apply; if not, the Elimination Period shall be eighty (80) days. The 'Compensable Delay Time' equals the period of Such Delays minus the Elimination Period. Any adjustment in the Contract Sum pursuant to this Subparagraph 8.3.3 shall be limited to the increase, if any, of direct costs incurred by the Contractor in performing the Work as a result of the fact that the Compensable Delay Time exceeded the Elimination Period. Direct costs for purposes of this Subparagraph 8.3.3 do not include profit or overhead. To the extent of conflict, the A101 signed by the Owner and Contractor shall control this Subparagraph 8.3.3."

8.3.4 (*Delay damages*) Create a new Subparagraph: "Nothing in Subparagraph 8.3.3 or any other provision of the Contract Documents (including the Owner-Contractor Agreement) is intended to forbid or limit

compensable damages for delays caused solely by the Owner or its agent. For purposes of the preceding sentence, 'Owner or its agent' does not include prime contractors or their subcontractors."

Article 9 (PAYMENTS AND COMPLETION)
9.2 (*Schedule of Values*) Change the title to read: (*Schedule of Values; Unit Prices)*
9.2.1 In the first line delete "Before the first Application for Payment" and replace with "Within twenty (20) days after both parties have executed the Agreement".
Add a new Subparagraph:
"9.2.2 (*Unit prices)*

9.2.2.1 Unit prices, if any, shall apply to Change Order Work.

9.2.2.2 In addition to Sub-subparagraph 9.2.2.1, it is agreed:

(a) If unit prices are included in the Contract Documents for Work other than Change Order Work, it is also agreed that the Contract Sum was calculated on the assumption that certain estimated quantities of unit price items will be used in the Work. Those estimated quantities are stated in the Contract Documents. The unit price multiplied by the quantity is referred to as the 'extension.'

(b) If the actual extension of a unit price item is less than the estimated extension, the Contract Sum shall be reduced accordingly. (c) The actual extension of each unit price item shall not exceed the estimated extension for that item unless the Contractor has received advance written approval from the City's Project Manager to exceed the estimated quantity for that item. That approval may be limited in the Project Manager's discretion. If that approval is given, the Contract Sum shall be adjusted as follows: If the actual quantity of a unit price item is more than the estimated quantity, the Contract Sum shall be increased to reflect the difference between the actual and the estimated quantities. If approval is not given, the Contractor shall not be obligated to use the quantity of that unit price item that exceeds the approved quantity, and a Change Order or Construction Change Directive shall be executed to reflect the changes in the Work resulting from the actual quantity of the item that is used. If the Contract Documents explicitly and clearly state that no further approval from the Project Manager or the City is required for the Contractor to exceed the estimated quantity of specified unit price items, then it is agreed that the Contract Sum shall be adjusted to reflect the actual quantities of those items without the necessity of further approval."

9.3 (*Applications for payment*)
9.3.1 In line 2, after "payment" insert: "unless another deadline is provided elsewhere in the Contract Documents,".
9.3.1.2 Delete entirely.

9.4 (*Certificates for payment*)

9.5 (*Decisions to withhold certification*) 9.5.1.3 (*Failure to pay Subcontractors or Suppliers*) Delete entirely.

9.6 (*Progress payments*) 9.6.2 (*Payments to Subcontractors*) Delete entirely, and replace with: 9.6.2 (*Prompt Payments to Subcontractors*)
9.6.2.1 Within 7 days of receipt by the Contractor of each payment from the Owner under this contract, the Contractor shall pay all Subcontractors based on work completed or service provided under the subcontract. Should any payment to the Subcontractor be delayed by more than 7 days after receipt of payment by the Contractor from the Owner under this contract, the Contractor shall pay the Subcontractor interest, beginning on the 8th day, at the rate of 1% per month or fraction thereof on such unpaid balance as may be due. By appropriate litigation, Subcontractors shall have the right to enforce this Sub-subparagraph 9.6.2.1 directly against the Contractor, but not against the Owner. If the Owner's Project Manager determines that it is appropriate, in order to enforce this Sub-subparagraph 9.6.2.1, the Owner may withhold the sums estimated by the Project Manager to be sufficient to pay this interest from progress or final payments to the Contractor.
9.6.2.2 Nothing in Subparagraph 9.6.2 shall prevent the Contractor at the time of invoicing, application, and certification to the Owner from withholding invoicing, application, and certification to the Owner for payment to the Subcontractor for unsatisfactory job progress; defective goods, services, or construction not remedied; disputed work; third-party claims filed or reasonable evidence that such a claim will be filed; failure of the Subcontractor to make timely payments for labor, equipment, and materials; damage to the Contractor or another Subcontractor; reasonable evidence that the subcontract cannot be completed for the unpaid

balance of the subcontract sum; or a reasonable amount for retainage consistent with same terms as those between the Contractor and the Owner.
9.6.2.3 The Owner's Project Manager may require, as a prerequisite to making progress or final payments, that the Contractor provide statements from any Subcontractors designated by the Project Manager regarding the status of their accounts with the Contractor. The statements shall be in such format as the Project Manager reasonably requires, including notarization if so specified.

9.6.5 Delete "9.6.2,".

9.7 (*Failure of Payment*)
9.7.1 In line 6, delete "or awarded by arbitration".
9.7.2 (*Payments to Owner*) Create a new Subparagraph: "If the Owner is entitled to payment from the Contractor, the Contractor shall make such payment promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due to the Owner, or if the Owner incurs any cost or expense to cure any default of the Contractor or to correct defective Work, the Owner may offset such amounts against the Contract Sum and may deduct the amount to which the Owner is entitled from any payment due from the Owner to the Contractor. Failure to exercise the rights set forth in this Subparagraph 9.7.2 shall not affect the Owner's right such to payments."
9.8 (*Substantial Completion*)
9.8.1 (*Lawfulness of occupation or use*) In line 4, after "can", insert "lawfully".
9.8.1 (*Certificates to be received*) Add to the end: "However, before Substantial Completion can occur, the Owner must receive all certificates of occupancy and other permits, approvals, licenses, and other documents from all governmental authorities that are necessary for the beneficial occupancy and use of the portion to be occupied or utilized."

9.9 (*Partial occupancy or use*)
9.10 (*Final Completion and Final Payment*)
9.10.2 At the end of the first sentence, insert: ", (6) the items required to be delivered to the Architect under Paragraph 3.11.1, (7) the items required under Paragraph 3.19.1, (8) all warranties and guarantees required under the Contract Documents, (9) an assignment of all manufacturer's warranties relating to materials and labor used in the Work, (10) a statement that the Contractor has complied with Subparagraph 9.10.2.1, and (11) all certificates not previously delivered pursuant to Subparagraph 13.5.4".
9.10.2.1 Create a new Sub-Subparagraph: "Before it is entitled to receive final payment, the Contractor shall submit to the Owner the originals of the permits, licenses, certificates, and approvals that the Contractor received pursuant to Subparagraph 3.7.1."
9.10.3 Delete the last sentence.
9.10.4 (*Waiver of Claims*) Add to the end of the first sentence: "A Claim that such a payee has reserved pursuant to Subparagraph 4.3.3 will be waived by acceptance of final payment if not identified as unsettled in the final Application for Payment. Unless the party against whom a Claim is to be made otherwise consents, a Claim that has been reserved before acceptance of final payment is waived unless that Claim is made within sixty days after the claimant has accepted final payment."

ARTICLE 10 (PROTECTION OF PERSONS AND PROPERTY)
10.1 (*Safety precautions and programs*)
10.1.2 (*Asbestos and PCBs; placement of hazardous or toxic materials; duty to prosecute Work*) In the third sentence, delete ", by written agreement...Article 4". Replace with: "As used in this Article 10, the expressions 'rendered harmless' and 'harmless' shall mean that levels of asbestos and polychlorinated biphenyls are less than any applicable exposure standards in all applicable laws, statutes, ordinances, codes, orders, rules, and regulations. Without limiting the preceding sentence, asbestos that is in an encapsulated or non-friable condition when the notice of proceed is issued shall be considered 'harmless'. Unless the Contract Documents specifically require otherwise, the Contractor shall not place at or on the site, or incorporate into the site or the Work, any material which is made partly or wholly of any hazardous or toxic material. If the Contractor has reasonable grounds to believe that the Contract Documents contain such a requirement, the Contractor shall send a written notice to the Owner to that effect before the Contractor places any of such material at or on the site or incorporates into the site or the Work. Notwithstanding all of the preceding sentences of this Subparagraph 10.1.2 or any other part of this Article 10, after the Contractor and the Owner have made appropriate investigation into the materials, if applicable federal and state statutes and regulations permit the Work in the affected area to resume and the Contractor fails or refuses to commence that Work promptly after demand by the Owner, such failure or refusal shall constitute a failure or

refusal to do the Work and to supply enough properly skilled workers and proper materials."
In the last sentence, delete “, or in accordance ... arbitration under Article 4.”
10.1.3 (*Duty to perform Work with asbestos and PCBs*) Add to the end: "unless it is harmless".
10.1.4 (*Indemnification*) Delete entirely.

10.2 (*Safety of Persons and Property*)
10.2.3 (*Safeguards*) Add to the end: "The preceding sentence includes the duty to provide, at the Contractor's sole cost and expense, for all measures necessary to protect all property outside the site against all hazards arising out of the Work."
10.2.4 (*Notice of hazardous materials*) Add to the end: "The Contractor shall give the Owner and Architect reasonable advance notice before using or placing explosives or other hazardous materials or equipment on the site."
10.2.5 (*Owner not responsible for acts of Contractor and others*) Insert after the first sentence: "In lines 10 - 12 of this Subparagraph 10.2.5, the words 'anyone directly or indirectly employed by either of them,' and 'anyone for whose acts either of them may be liable' shall not be construed to include the Contractor, Subcontractors, or Sub-subcontractors or anyone directly or indirectly employed by the Contractor, Subcontractors, or Sub-subcontractors, or anyone for whose acts the Contractor, Subcontractors, or Sub-subcontractors may be liable."
10.2.8 (*Securing Work*) Create a new Subparagraph: "When all or a portion of the Work is suspended or stopped for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury or damage by any cause."
10.2.9 (*Reports of incidents*) Create a new Subparagraph: "The Contractor shall promptly report in writing to the Owner and Architect all accidents or incidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injury, or serious property damage is caused, the Contractor shall report the accident or incident immediately by telephone or messenger to the Owner and Architect."

10.3 (*Emergencies*)
10.3.1 After the first sentence, insert: "This Subparagraph 10.3.1 shall not be construed to reduce the Contractor's responsibilities, including those required by the rest of Article 10 and the remainder of the Contract Documents."

Article 11 INSURANCE AND BONDS
11.4.1 *(Bond forms)* Add: The bond forms shall be those provided by the Owner or other forms that the Owner, in its discretion, approves.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK
12.1 (*Uncovering of Work*)12.1.2 In the last sentence, delete "or a separate contractor". Add to the end: "This Subparagraph 12.1.2 does not apply to the extent that Subparagraph 12.1.1 applies."

12.2 (*Correction of Work*)
12.2.1 Add to the end: "If prior to the date of Substantial Completion, the Contractor, a Subcontractor, or a Sub-subcontractor uses or damages any portion of the Work, including mechanical, electrical, plumbing, or other building systems, machinery, equipment, or other mechanical device, the Contractor, at no expense to the Owner, shall cause such portion, system, device, or item to be restored (whether by replacement, repair, or otherwise) to the condition the item was required to be in, if such use or damage had not occurred. Nothing herein shall reduce the duty of the Contractor with respect to such item in order to obtain a final Certificate for Payment."
12.2.2 In line 8 of the first sentence: after "to do so", insert: "(but in any event, commencing such corrective action within 30 days after receipt of said notice and proceeding promptly to completion)". After the first sentence, insert: "Such a written acceptance is not effective as an acceptance unless it specifically describes the condition that is not in accordance with the Contract Documents and contains substantially the following statement: 'The Owner accepts [such condition] despite its not being in accordance with the Contract Documents.' "
12.2.4 In the second sentence, delete "from the Architect" and replace with "from the Owner". Add to the end: "The Owner's rights under this Subparagraph 12.2.4 are in addition to, and not in limitation of, the Owner's rights provided elsewhere in the Contract Documents."

ARTICLE 13 MISCELLANEOUS PROVISIONS
13.1 (*Governing law*)
13.1.1 Delete entirely and replace with: “(*Choice of law and venue*) The place of the Project is North Carolina. This Contract shall be deemed made in Durham County, North Carolina. This Contract shall be governed by and construed in accordance with the laws of

North Carolina. The exclusive forum and venue for all actions arising out of this Contract shall be the North Carolina General Court of Justice, in Durham County. Such actions shall neither be commenced in nor removed to federal court. This section shall not apply to subsequent actions to enforce a judgment entered in actions heard pursuant to this section."

13.3 (*Written notice*)
13.3.1 Delete entirely and replace with: "(*Replacement recipient of notices; methods of sending notice; faxing; notice includes request*) If a party is notified of a replacement person for purpose of getting notice, then notices afterwards shall be directed to the replacement person. Written notices shall be deemed to have been duly served, made, and received, and receipt thereof completed, if (a) delivered in person to the individual or to that individual's receptionist, or (b) mailed by registered or certified mail to the last business address known to the party giving notice, or (c) faxed to the last fax number known to the party giving notice, provided that the fax transmission must be completed. In addition, written notices to the Owner must be directed to the Owner's representative, provided that if no individual is designated as the Owner's representative, then written notices must be directed to the City Manager. As used in this Paragraph 13.3, the word 'notice' includes 'request'."

13.3.2 (*When notice made*) Create a new Subparagraph: "The notice will be deemed served, made, and received, and receipt thereof completed, on the earlier of: (a) the date delivered in person, or (b) three days after placing in the custody of the U. S. Postal Service, or (c) the date the fax transmission was completed.

13.3.3 *(Address of surety*) Unless the surety provides a different address as provided in Paragraph 13.3, notice to a surety may be sent to the address shown on the performance bond; if no address for the surety is shown on the performance bond, the surety's address provided by the N. C. Department of Insurance shall suffice; and if the Department of Insurance lacks an address, the last-known address of the attorney-in-fact who signed the performance bond shall suffice.

13.4 (*Rights and remedies)*
13.4.2 (*Waiver of liquidated damages)* If liquidated damages are assessable against the Contractor, the Owner may, in its discretion, waive the imposition of some or all of the liquidated damages against the Contractor. That waiver shall be valid only if done by a writing signed by the City Manager or an Assistant City Manager, and the waiver must refer specifically to "liquidated damages." That waiver shall not constitute an extension of the Contract Time.

13.5 (*Tests and inspections*)
13.5.1 (*Costs of new requirements*) In the last sentence, delete "after bids...concluded" and replace with "after the Agreement has been executed by both parties".
13.5.3 (*Allocation of costs of testing, inspection, and approval*) Add the following to the end: "It shall also bear a portion of the costs of the tests that revealed such failure in an amount determined by the Architect to be reasonably related to the significance of the failure and the reasonableness of ordering the tests, with the Owner bearing the rest of the costs of these tests that revealed such failure. The Contractor shall bear the portion of the cost of testing services required for the Contractor's convenience (e.g., the premium charged for services that are required on short notice) in the Contractor's scheduling and/or performance of the Work, and the cost of testing services related to remedial operations performed to correct deficiencies in the Work that are not the fault of the Owner or Architect."

13.7 (*Commencement of Statutory Limitation Period*) Delete entirely.

13.8 (*EEO Provisions, Equal Opportunity,* SDBE) Create Subparagraphs 13.8.1 and 13.8.2:

"13.8.1 (*EEO Provisions*) During the performance of this Contract the Contractor agrees as follows: (i) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, political affiliation or belief, age, or handicap. The Contractor shall take affirmative action to insure that applicants are employed and that employees are treated equally during employment, without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or handicap. Such action shall include but not be limited to the following: employment, upgrading, demotion, transfer, recruitment or advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth these EEO provisions. (ii) The

Contractor shall in all solicitations or advertisement for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or handicap. (iii) The Contractor shall send a copy of the EEO provisions to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding. (iv) In the event of the Contractor's noncompliance with these EEO provisions, the City may cancel, terminate, or suspend this contract, in whole or in part, and the City may declare the Contractor ineligible for further City contracts. (v) Unless exempted by the City Council of the City of Durham, the Contractor shall include these EEO provisions in every purchase order for goods to be used in performing this contract and in every subcontract related to this contract so that these EEO provisions will be binding upon such subcontractors and vendors.

13.8.2 *(EBOP and Equal Opportunity)* The Contractor shall comply with all applicable provisions of Article III of Chapter 18 of the Durham City Code (Equal Business Opportunity Program), as amended from time to time. The failure of the Contractor to comply with Article III of Chapter 18 shall be a material breach of contract which may result in the rescission or termination of this contract and/or other appropriate remedies in accordance with the provisions of Article III of Chapter 18, this contract, and State law. The Participation Plan submitted in accordance with Article III of Chapter 18 is binding on the Contractor. Section 18-59(f) of that chapter provides, in part, "If the City Manager determines that the Contractor has failed to comply with the provisions of the Contract, the City Manager shall notify the Contractor in writing of the deficiencies. The Contractor shall have 14 days, or such time as specified in the Contract, to cure the deficiencies or establish that there are no deficiencies." It is stipulated and agreed that those two quoted sentences apply only to the Contractor's alleged violations of its obligations under Article III of Chapter 18 and not to the Contractor's alleged violations of other obligations. **THE CITY OPPOSES DISCRIMINATION ON THE BASIS OF RACE AND SEX AND URGES ALL OF ITS CONTRACTORS TO PROVIDE A FAIR OPPORTUNITY FOR MINORITIES AND WOMEN TO PARTICIPATE IN THEIR WORK FORCE AND AS SUBCONTRACTORS AND VENDORS UNDER CITY CONTRACTS."**

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 (Termination by the Contractor)

14.1.1 In the 2d line, change "30" to "90".

14.1.1.4 In the 4th line, after "for completion," insert: "including adjustments to the schedule allowed by the Contract Documents".

14.1.2 After "for proven loss" insert: "for Work executed or performed".

14.1.3 Delete entirely.

14.1.4 Create a new Subparagraph: "The notices referred to in this Article 14 shall state the reasons and grounds for the termination. The reasons and grounds for termination by the Contractor set forth in Article 14 are exclusive. Those reasons and grounds shall not constitute reasons or grounds for termination by the Contractor if a substantial cure occurs within seven days after the Owner receives notice of proposed termination."

14.1.5 Create a new Subparagraph: "If an extension of Contract Time has been granted because of a circumstance set forth in Subparagraph 14.1.1, the period of that extension shall be not be counted towards (a) the 90-day period created in the first clause of Subparagraph 14.1.1 or (b) the days described in Sub-subparagraph 14.1.1.4."

14.2 (*Termination by the Owner for cause*)

14.2.1.2 (*Failure to pay Subcontractors*) Delete entirely.

14.2.2 Delete ", upon certification by the Architect that sufficient cause exists to justify such action,".

14.2.2 Add to the end: "Non-exercise of the Owner's rights under this Subparagraph 14.2.2 shall not be considered a failure to mitigate damages, nor shall it be the grounds for any claim against the Owner. In the notice, the Owner may specify when the termination is effective or it may state that the termination shall be effective upon additional notice as specified in the notice. "

14.3 (*Suspension by the Owner for Convenience*)14.3.2 and 14.3.3 Delete entirely. Attention is directed to 8.3.3.

14.4 (*Termination for Convenience*) Create a new Paragraph:

14.4.1 (*Method of termination*) The Owner may terminate this Contract without cause upon at least seven (7) days' written notice to the Contractor and the Contractor's surety, if any. In that notice (the "First Notice"), the Owner may specify when the termination is effective or it may state that the termination shall be effective upon additional notice as specified in the First

Notice.

14.4.2 (*Adjustment of Contract Sum)* If the Owner exercises its right to terminate pursuant to this Paragraph 14.4, the Contract Sum shall be adjusted so that the Owner shall be obligated to pay only for the Work performed before the effective date of termination. Subparagraph 14.2.4 shall also apply. .

Add the following new Subparagraph:

14.4.3 (*Goods Intended for the Work)* With respect to goods that the Contractor has ordered that are demonstrably intended for the Work --

.1 Contractor shall, as soon as practicable after receiving a notice from Owner pursuant to Paragraph 14.4.1, give the Owner written notice of the entire text of the contracts and other documents by which the goods were ordered, showing the cost, delivery dates, and all terms and conditions (including those relating to ordering and canceling).

.2 The Owner shall have the following options:

(a) to direct the Contractor to cancel any one or more orders, in which case the Owner shall be liable for cancellation and restocking charges and other charges properly attributable to the cancellation; or

(b) to direct the Contractor to keep any one or more orders in effect and/or to assign any one or more orders to the Owner, in which case the Owner shall be responsible for bearing the costs of the order.

3. Within 10 days of the Owner's receiving notice under **.**1 above, the Owner shall give the Contractor notice of which options it exercises under **.**2. The Owner shall bear the losses suffered by the Contractor with respect to orders for which the Owner fails to give that notice within that 10-day period as if the Contractor had taken whatever action as is appropriate to keep the costs to the Owner at a minimum.

.4 The Contractor and the Owner shall cooperate in good faith to carry out the provisions of this Subparagraph 14.4.1 efficiently and without imposing unnecessary costs on either party.

.5 Notices given under this Subparagraph 14.4.1 shall comply with Subparagraph 13.3.1 and shall be given by fax (pursuant to 13.3.1(c)) and also by either 13.3(a) or (b).

----- end of Supplementary Conditions -----

City of Durham North Carolina
Contract Change Order

Project Data

Change Order Number _____

Project Name _____

City of Durham Contract Number _____

Org-Object-Project Code _____

Contract Description _____

Contractor _____

Project Manager _____

Cause Code

____ OR-City Request

____ CR-Contractor Request

____ CC-Concealed Condition

____ DE-Design Error/Omission

____ SC-Schedule Change

____ OT-Other

Description of Change

Under the terms of the contract and without invalidating the original provisions thereof, the following change(s) in work is (are) authorized for the change in Contract Sum herein set forth (include detailed cost breakdown of labor and materials, including sales and use tax breakouts, and a detailed analysis supporting requirements for a change in Contract Time):

	Description	

Contract Cost Summary

Original Contract Sum _____ $

Net change by previously authorized Change Orders _____

The Contract Sum prior to the Change Order was _____ $

The Contract Sum will be (increased) (decreased) (unchanged) by this Change Order in the amount of _____ $

The new Contract Sum including this Change Order will be _____ $

The new Contract Time will be (increased) (decreased) (unchanged) by _____ days

The date of Substantial Completion as of this Change Order therefore is _____

Authorization and Certification

I hereby certify that my bonding company will be notified forthwith that my contract has been (increased) (decreased) by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety.

Contractor _____ By _____

Address _____ Date _____

I hereby certify that I have reviewed all aspects of this change order and have determined that it is in the best interest of the Owner to have the Work accomplished. I have also determined that the cost and time allotment are fair and equitable, and I recommend acceptance by the Owner.

Architect _____ By _____

Address _____ Date _____

Approval

Project Manager _____ Date _____

Department Head _____ Date _____

City Manager _____ Date _____

City Council Mtg. Date _____ Agenda Item # _____

Finance Director _____ Date _____

City Clerk _____ Date _____

Contract Cost Summary (FYI):

Original Contract Sum	_____
Net change by previous Change Orders	_____
The Contract Sum prior to the Change Orders was	_____
The Contract Sum will be (increased) (decreased) (unchanged) by this Amendment in the amount of	_____
The new Contract Sum including this Change Order will be	_____
Contingency Amount prior to this change order	_____
Contingency (increased)(decreased) by this amount for this change order	_____
Contingency after this change order	_____

Organization, Object and Project Number:

Move funds from		**Move funds to**	
Org-Object-Project	**Amount**	**Org-Object-Project**	**Amount**
	$		$
TOTAL	$		$

CLAIM FOR ADDITIONAL TIME ON THE BASIS OF ADVERSE WEATHER CONDITIONS

Project Name _____

Contractor _____

Claim for the week beginning Monday, _____, 20____

The Contractor hereby requests that the Contract Time be increased by _____ days because of weather conditions during the week specified above. The Contractor makes a claim that weather conditions had an adverse effect on the scheduled construction during that week, that the weather conditions were abnormal for that week, and that the weather conditions could not have been reasonably anticipated. If the claim is on the basis of precipitation and/or temperature, the Contractor must attach records from the National Weather Service showing that the precipitation and/or temperature qualifies under the chart in Subparagraph 4.3.8.2 of the Supplementary Conditions, in addition to filling out this page. In addition, the Contractor must provide support for its assertion that the weather conditions had an adverse effect on the scheduled construction. For example, the Contractor may need to address whether scheduled outside work could have been postponed, with effort shifted to inside work.

In order to make a claim for inclement weather days, this form must be submitted by the 10th day of the month after the month as to which the claim is made. For instance, if the delays occurred in January, this form is due by February 10.

In order to make this claim for Saturdays, Sundays, and City of Durham holidays, the Contractor must have notified the City representative (Project Manager) by 3:30 PM o'clock three days in advance of the day of the Contractor's intent to work on a specific Saturday, Sunday, or holiday. For example, to make the claim for Saturday, the Contractor must have notified the City representative (Project Manager) by 3:30 PM on the preceding Wednesday of the Contractor's intent to work on Saturday. Notwithstanding Supplementary Conditions Subparagraph 8.1.4, if the day on which notice is to be given under this paragraph is a Saturday, Sunday, or City of Durham holiday, the notice shall be given by the first day before that day that is not a Saturday, Sunday, or City of Durham holiday. For example, if the Contractor intends to work on Saturday but the Wednesday before that Saturday is a holiday, the notice must be given by Tuesday at 3:30 PM (assuming Tuesday is not a holiday).

	If this is a precipitation claim, what was the total precipitation this day according to the National Weather Service?	If this is a temperature claim, what was the maximum temperature reached this day according to the National Weather Service?
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		

_____, 20_____
Date of this claim

_____
Signature of Contractor

_____
Title

In response to this claim, the consultant/Architect recommends that the Contract Time be extended by _____ days.

_____ _____, 20____
consultant/Architect

In response to this claim, the City of Durham extends the Contract Time by _____ days.

_____ _____, 20____
City of Durham representative (Project Manager)

If the Contract Time is extended by the time requested by the Contractor, this document is a change order. If the Contract Time is extended by less than the time requested by the Contractor, the signature of the Contractor below signifies that this document is a change order.

_____ _____, 20____
Signature of Contractor

_____
Title

If this form does not become a change order, see General Conditions Subparagraph 7.3.8.

Project Schedule

The project shall be substantially complete one hundred eighty (180) days from the issuance of the Notice to Proceed to the Contractor. The Contractor shall coordinate the Work with the Owner as to minimize interruptions of the Church St. Garage operations.

Subsequent to City Manager approval of the contract with the successful bidder, the Owner and Contractor will meet to plan the schedule of activities and prioritize the work.

The Contractor will provide written documentation of the agreed upon schedule as outlined in the General Conditions and specifications and will be expected to perform to that schedule.

SECTION 010107 – SEALS PAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Professional responsibility for content of drawings and specifications.

1.3 PROFESSIONAL RESPONSIBILITY

A. Unless noted otherwise, all technical specification sections and drawings were prepared under the direction of Kimley-Horn and Associates, Inc. Matthew Sumpter, P.E.:

END OF SECTION 011000

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Preconstruction Conferences
4. Access to site.
5. Coordination with occupants.
6. Work restrictions.

1.3 PROJECT INFORMATION

A. Project Identification: Church Street Parking Deck Structural Rehabilitation

1. Project Location: 109 South Mangum Street, Durham, NC, 27701

B. Owner: City of Durham

1. Owner's Representative: Mr. John Paces-Wiles, (919) 560-4197 ext. 21252; John.Paces-Wiles@durhamnc.gov
   a. Address: 2011 Fay Street, Durham, NC, 27704

C. Engineer: Kimley-Horn and Associates, Inc.

1. Engineer’s Representative: Matt Sumpter, P.E.; (919) 653-6649; Matt.Sumpter@kimley-horn.com
   a. Address: 333 Fayetteville St, Suite 600, Raleigh, NC, 27601

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work consists of furnishing all the labor, materials, equipment, services, and permits necessary to complete the structural and waterproofing repairs and rehabilitation defined within the Contract Documents and as identified during a Pre-Construction conference by the Engineer and Contractor and as summarized herein.

B. Contractor is responsible for completion of a visual survey and surface sounding of the parking garage to identify and clearly mark repair locations. Repair locations must be marked prior to the pre-construction conference. Contractor is responsible for determining actual extent and locations of repair areas in accordance with the bid documents and in coordination with the Engineer. Areas shown on the plans only represent typical types and approximate locations of repairs or deterioration.

C. Work shall be substantially complete and ready for occupancy within the date set forth in the Instructions to Bidders. Substantial completion will be provided for the project as a whole, not by repair type or installation dates.

D. The Work of Project is defined by the Contract Documents and generally consists of the following:

1. **3.1 Elevated Ramp Slab Replacement**: Existing elevated concrete ramp slab will have concrete and metal decking demolished and a new concrete slab poured in place. Masonry wall demolition and replacement will also occur as a part of this repair. Supporting steel beams will be cleaned and repainted.

2. **3.2 Shallow Depth Concrete Spall Repair**: Repair concrete spalls and delaminations in the parking floors which include removal of the damaged concrete down to sound substrate and replacement with concrete repair materials.

3. **3.3 Repair Exposed Rebar**: Repair areas of exposed parking floor slab steel reinforcement. Repairs include cleaning the existing steel and adding new concrete material to provide adequate cover as well as potentially replacing steel if section loss is extensive.

4. **3.4 Repair Concrete Cracks/Joints**: Repair significant concrete parking floor cracks with widths greater than or equal to 0.75-mm and construction joints by routing and sealing floor cracks.

5. **3.5 Two-Way Crossover Removal**: Place new concrete curbs and install striping to eliminate the two-way crossover condition between Level 1 and 2.

6. **3.6 Stair 1 Concrete Curb Repair**: Demolish existing areas of concrete curb as indicated and replace with new concrete curb and ramp. Re-route existing roof downspout to trench drain.

7. **3.7 ADA Curb Cut/Ramps**: Demolish existing areas of concrete curb and replace with a new concrete curb ramp in compliance with ADA requirements. For new ADA curbs and existing curbs as indicated, install detectable warning mats.

8. **3.8 Vehicular Exit Curb**: Existing vehicular exit curbs will be shifted approximated 1-ft to the north of their existing configuration at the South Mangum Street exit, resulting in some new curbs being added and other existing curbs to be demolished. Where new curb is being poured, the height will match that of the existing curb.

9. **3.9 Slab on Grade Shaving**: Designated areas of slab on grade will be shaved down to new spot elevations in order to provide a minimum 8’-2” vertical clearance. Provide a roughened, medium broom finish.

10. **3.10 Deep Depth Concrete Spall Repair**: Repair deep concrete spalls and delaminations in the parking floors which include removal of the damaged concrete down to sound substrate and replacement with concrete repair materials.

11. **4.1 Repair Brick Masonry Isolation Joint**: Repair isolation joint at the steel beam penetration of the existing elevator equipment room wall.

12. **4.2 Replace Masonry Wall Joints:** Joint sealant repairs include removing existing deteriorated joint sealants, cleaning joints, and replacing with new sealant.

13. **4.3 Rotated Brick Repair**: Pin designated sections of brick masonry back to existing CMU using helical anchors.

14. **5.1 Extensive Moment Connection Repairs**: Selected steel moment connections will be repaired by abrasively cleaning steel to remove corrosion, removing and replacing select connection steel components, and painting the steel with a high performance coating. Concrete demolition and replacement will also occur over the connection in order to provide access to the top flange areas.

15. **5.2 Stair 1 Repairs**: Selected areas of metal pan stair landings will be abrasively cleaned to remove corrosion and repainted using a high performance coating.

16. **5.3 Stair 2 Repairs**: All selected areas of metal pan stair risers and landings will be cut out and replaced. Existing channel stringers will be maintained in place. All steel will be abrasively cleaned to remove corrosion and repainted using a high performance coating.

17. **5.4 Stair 3 Repairs**: All steel will be abrasively cleaned to remove corrosion and repainted using a high performance coating. Selected areas of metal pan stair risers and landings will be cut out and replaced at the Engineer's direction. The base bid only includes cleaning and painting.

18. **5.5 Perimeter Steel Beam Repairs**: Repairs on perimeter beams, connections, metal decking, and stair beams will be repaired by abrasively cleaning the steel to remove corrosion, then repainted using a high performance coating.

19. **5.6 Metal Decking Repairs**: Selected areas of metal decking will be repaired by abrasively cleaning the steel to remove corrosion. Where excessive section loss has occurred, the edge will be anchored back to the concrete.

20. **5.7 Beam Repairs Adjacent to Stair 1**: One selected beam and connection will be removed and replaced with a new beam spliced to the existing beam with a new connection. Other beams around the stair tower will be abrasively cleaned to remove corrosion and repainted using a high performance coating.

21. **5.8 Typical Moment Connection Repairs**: Selected moment connections will be repaired by abrasively cleaning the steel to remove corrosion and then repainted using a high performance coating.

22. **5.9 Filler Beam Connection Repair**: Selected filler beam to girder connections bridging the expansion joint will be repaired by abrasively cleaning the steel to remove corrosion,

and repainted using a high performance coating. Along Column Line E, the connection bolts will be removed and replaced with new bolts.

23. **5.10 Steel Plate Installation**: A new steel plate will be installed on the ground level to close the gap between the edge of slab and barrier rail.

24. **5.11 Trench Drain Repair**: A missing trench drain cover will be installed at Level 3 and a new trench drain grating cover will be installed at Level 1.

25. **5.12 Stair 1 Railing Repair**: Install metal mesh infill within stair railings in Stair 1.

26. **5.13 Steel Bar Repair**: When directed by the Engineer, install 1.5" diameter steel bar as part of repair types 5.5 and 5.7 and as specified in detail 5/S205.

27. **5.14 Stair Pan Remove/Replace**: When directed by the Engineer, remove existing steel pan and replace with new diamond plated pan as part of repair type 5.3.

28. **5.15 Steel Cleaning/Repainting**: Abrasively clean steel areas as directed by the Engineer and repaint using a high performance coating.

29. **5.16 Web Repair Plates**: When directed by the Engineer, install web repair plates as specified in detail 4/S203.

30. **5.17 Column Line E Steel Beam Repairs**: Repairs on Column Line E beams, connections, and metal decking will be repaired by abrasively cleaning the steel to remove corrosion, then repainted using a high performance coating. Repairs are also performed in conjunction with repair type 5.13.

31. **7.1 Remove/Replace Expansion Joints**: Expansion joint repairs include removing existing deteriorated expansion joint materials, preparing the joint and concrete header, and installing a new winged expansion joint.

32. **7.2 Remove/Replace Joint Sealant**: Joint sealant repairs include removing existing deteriorated joint sealants, cleaning joints, and replacing with new sealant.

33. **7.3 Apply Silane Sealer**: Apply a penetrating silane sealer and corrosion inhibitor to all elevated concrete floor surfaces.

34. **9.1 Restripe Pavement Markings**: Traffic striping and other pavement markings damaged or removed during the scope of this project will be re-applied. New striping and markings shall match existing locations, colors, and patterns.

35. **9.2 Stripe Pavement Markings**: Apply new pavement markings as indicated.

36. **10.1 Signage**: Install signage as indicated for ADA spaces and wayfinding.

37. **26.1 Relocate Light Fixture**: Relocate selected light fixtures to maintain 8'-2" vertical clearance in locations of van accessible parking. Match all materials, connection to beam, and electrical components to the existing conditions.

38. **Allowance No. 1 – Retaining Wall Repair**: When directed by the Engineer and in association with the elevated ramp slab replacement, repair areas of the concrete retaining wall, masonry wall, steel beams, and connection members.

39. **Alternate No. 1 - Stair 2 Removal**: All steel in Stair 2 will be disconnected and removed from the surrounding structure. The existing openings in the masonry will be infilled.

40. **Alternate No. 2 – Garage Repainting**: In addition to those areas designated to be painted in the base bid package, all other steel members within the garage will be cleaned and repainted.

41. **Alternate No. 3 – High-Solids Fluoropolymer Coating**: Provide a high performance coating based on a zinc/urethane/fluoropolymer system.

42. **Alternate No. 4 – Power Wash Cleaning**: On areas designated by the Engineer, provide surface preparation SSPC-SP 1 using a power wash tool with rotating head.

E. Type of Contract:

1. Project will be constructed under a single prime contract between Owner and Contractor.

1.5 PRECONSTRUCTION CONFERENCE

A. The Contractor will conduct required pre-construction conference. Based on the phasing plan prepared by the Contractor, there may be more than one pre-installation conference.

B. Following the Contractor's completion of a visual survey and surface sounding of the parking garage to identify and mark repair locations, a Pre-Construction Conference will be held on site. At this conference, the extent, types, locations, and quantities of repairs will be confirmed. The Owner, Engineer, and the Contractor's Superintendent will participate in this on-site meeting. This meeting will be scheduled by the Contractor and coordinated with the Owner and Engineer. The conference will coincide with any pre-installation conferences that are required for specified repair products.

C. The Contractor's project manager and superintendent for this project must attend.

D. At a minimum, the Contractor should discuss the following items:

1. Construction schedule
2. Phasing Plan
3. Critical work sequencing and long-lead items.
4. Designation of key personnel and their duties.
5. Extent, types, locations, and quantities of repairs.
6. Lines of communications.
7. Procedures for processing field decisions and Change Orders.
8. Procedures for RFIs.
9. Procedures for testing and inspecting.
10. Procedures for preparing and submitting daily Contractor reports.
11. Procedures for processing Applications for Payment.
12. Submittal procedures.

13. Preparation of record documents.
14. Use of the premises.
15. Work restrictions.
16. Working hours.
17. Owner's occupancy requirements.
18. Construction waste management and recycling.
19. Parking availability.
20. Office, work, and storage areas.
21. Equipment deliveries and priorities.
22. First aid.
23. Progress cleaning.

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Keep parking garage drive aisles and entrances serving premises clear and available to Owner, Owner's employees, tenants, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

   a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
   c. Notify Owner not less than 2-weeks in advance or proposed deliveries or activities which require closures of driveways, walkways, and/or entrances.

2. Contractor shall not be allowed to use the elevators without prior approval from the Owner.

C. Condition of Existing Buildings: The Contractor shall protect from damage the existing structure, adjacent structures, walls, curbs to remain, elevator lobby, storefronts, vehicles, storm drain lines, equipment, stairs, etc. during construction activities. Repair of damage caused by construction operations is Contractors responsibility and should be repaired to a condition equal to or superior than the existing condition.

D. The Contractor shall provide for its own parking and shall minimize the occupation of parking spaces in areas that are otherwise open to the public for parking during the construction. The Contractor shall provide for its own storage, containment, and protection and shall limit areas of storage to those shown on the Drawings to minimize use of garage open to the public during construction. Coordinate needs for additional storage space with the Owner.

1.7 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner and Owner's tenants will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing vehicular and pedestrian exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
2. Provide not less than 2-week notice to Owner of activities that will affect Owner's operations.
3. Contractor shall provide adequate protection to ensure public safety.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Contractor shall coordinate permitted working hours with Owner. Normal business working hours are indicated below. Contractor shall utilize, when possible, any nights, weekends, and/or approved holidays for the completion of work as authorized by the Owner.

1. Monday-Saturday: 7am to 8pm

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than 2 weeks in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner. Contractor shall develop dust and noise control measures, such as erecting and maintaining dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise, and submit to Owner and Engineer for approval.

1. Notify Owner not less than 2 weeks in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.
3. Contractor shall avoid any high noise operations, such as drilling, hammering, chipping etc., directly above any tenant space during the hours of operation of that tenant. Coordinate hours of such operation with the Owner.

E. Contractor shall minimize the disturbance to the traffic flow, parking stalls, and stair tower use during repair process.

F. Contractor shall install and maintain traffic and pedestrian barricades to separate and protect public from construction activities throughout the garage.

1. Contractor shall install temporary signs to direct traffic and pedestrians safely around construction activities.
2. Traffic flagger, as required to maintain traffic flow, is Contractor's responsibility.

G. Contractor shall coordinate with the Owner the sequence of all work and any specific work restrictions related to the number of parking spaces, drive aisle, or levels that can be occupied by the Contractor at any given time, as well as the shutdown of any stair tower access for use by the public.

H. Contractor shall submit construction phasing plans to the Engineer and Owner for review and approval. For each phase of work, the plan shall include construction activity, number of parking spaces closed, locations of barricades, pedestrian routes to stair towers, signage, and traffic routes for vehicular access to the remaining parking areas. At a minimum, the following should be maintained:

1. Pedestrian access at two functional stair towers shall be maintained at all times.
2. Vehicular access to all floors shall be maintained.
3. No more than 100 parking spaces may be closed to public use due to repairs by the Contractor at any given time, including material storage and Contractor's vehicles
4. During normal workdays, Monday-Saturday between the hours of 7am and 8pm Contractor shall provide full vehicular access on the single bay ramp of at least 30 feet. Access to garage entrances and exits should be maintained at all times, unless otherwise approved by the Owner.
5. Contractor is responsible for construction phasing and signage plans. Construction phasing and signage plans shall be submitted to Owner and Engineer for review and approval within 14 days following Notice to Proceed.

I. The Contractor shall be aware that the City or other Contractor(s) may be working at the project site concurrent to the execution of the scope of this work. Contractor shall cooperate fully with separate contractors so work on those contracts may be carried out smoothly without interfering with or delaying work under this contract.

J. The Contractor shall provide adequate measures to prevent site discharges from entering the storm drainage system including, but not limited to, containing, capturing, and properly disposing of the wastewater generated. Measures should be in compliance with the City of Durham document titled "Proper Containment, Collection, and Disposal of Wastewater from Surface Washing, February 2011." A copy of this document has been included in Appendix C.

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.

C. Related Requirements:

1. Division 01 Section "Unit Prices" for procedures for using unit prices.
2. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
3. Divisions 02 through 33 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Engineer of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Engineer’s request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM AND QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Engineer under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Engineer under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Engineer, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Lump-Sum Allowance: Include the sum of $10,000 for repairs to the concrete retaining wall, masonry wall, steel beams, and connection members associated with Detail 1/S206. Repairs in accordance to Division 3 Section “Maintenance of Cast In Place Concrete,” Division 4 “Maintenance of Unit Masonry,”, and Division 5 “Structural Steel Framing.”

1. Keyed Notes references: 3.1

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit. Unit price includes the cost of preparing existing construction to receive the work indicated and costs of field quality-control testing required by the Work for which the unit price applies.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent representative acceptable to Contractor.

D. Contractor shall prepare a daily construction report which includes a log of repair quantities, both for the current day and all quantities up to the current date. These reports shall be submitted to the Engineer daily. A daily log form document will be provided by the Engineer.

E. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price. Items that are to be paid as a lump sum are not listed, only items with a unit price are listed.

F. Contractor shall provide a unit price for all items listed, based on estimated quantities shown on the Bid Pricing Page. Engineer may then determine the maximum units for each repair quantity more precisely based on available funds and repair priority. Contractor will be paid based on actual in-place repair quantities approved by the Engineer.
   1. If the approved repair quantities do not differ by more than 20% over or under the estimated quantities shown on the Bid Form, Contractor will be paid for the actual in-place repair quantities at the unit price provided in the bid. Otherwise, if the actual repair quantities are adjusted up or down by more than 20%, unit prices may be renegotiated upon mutual consent with the Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 0.1: Mobilization

   1. Description: Preparatory work and operations including, but not limited to, movement, establishment, removal, and disbandment of personnel, equipment, facilities, supplies, and incidentals.
   2. Unit of Measurement: Lump Sum.

B. Unit Price No. 3.1: Elevated ramp slab replacement.

   1. Description: Remove and replace existing elevated concrete slab according to Division 3 “Cast-In-Place Concrete”, Division 4 “Maintenance of Unit Masonry”, Division 5 “Structural Steel Framing”, Division 7 “Joint Sealants”, and Division 9 “High Performance Coatings”.
   2. Unit of Measurement: Lump Sum.

C. Unit Price No. 3.2: Shallow depth concrete spall repair

   1. Description: Repair shallow depth areas of spalled or delaminated concrete with or without exposed reinforcing steel according to Division 3 “Maintenance of Cast-In-Place Concrete”.
   2. Unit of Measurement: Square foot of area repaired.

D. Unit Price No. 3.3: Exposed rebar repair

   1. Description: Repair exposed reinforcing steel according to Division 3 “Maintenance of Cast-In-Place Concrete”.
   2. Unit of Measurement: Square foot of area repaired.

E. Unit Price No. 3.4: Repair concrete cracks/joints

1. Description: Rout and seal cracks according to Division 3 “Maintenance of Cast-In-Place Concrete”.
2. Unit of Measurement: Linear foot of crack routed and sealed.

F. Unit Price No. 3.5: Two-way crossover removal

1. Description: Install new curb according to Division 3 “Cast-In-Place Concrete” and Division 9 “Traffic Striping Paint”.
2. Unit of Measurement: Lump sum.

G. Unit Price No. 3.6: Stair 1 concrete curb repair

1. Description: Remove and replace existing raised curb according to Division 3 “Cast-In-Place Concrete”.
2. Unit of Measurement: Lump sum.

H. Unit Price No. 3.7: ADA curb cut / ramps

1. Description: Remove and replace existing raised curb to create an ADA accessible curb cut / ramp according to Division 3 “Cast-In-Place Concrete”.
2. Unit of Measurement: Lump sum.

I. Unit Price No. 3.8: Vehicular exit curb

1. Description: Remove and repair existing curb where indicated according to Division 3 “Maintenance of Cast-In-Place Concrete” and “Cast-In-Place Concrete”. Add new curb where indicated according to Division 3 “Cast-In-Place Concrete”.
2. Unit of Measurement: Lump sum.

J. Unit Price No. 3.9: Slab on grade shaving

1. Description: Shave existing slab on grade to specified spot elevations according to Division 3 “Maintenance of Cast-In-Place Concrete”.
2. Unit of Measurement: Lump sum.

K. Unit Price No. 3.10: Deep depth concrete spall repair

1. Description: Repair shallow depth areas of spalled or delaminated concrete with or without exposed reinforcing steel according to Division 3 “Maintenance of Cast-In-Place Concrete”.
2. Unit of Measurement: Square foot of area repaired.

L. Unit Price No. 4.1: Repair brick masonry isolation joint

1. Description: Repair isolation joint at steel beam penetration of existing elevator equipment room wall according to Division 4 “Maintenance of Unit Masonry”.
2. Unit of Measurement: Lump sum.

M. Unit Price No. 4.2: Replace masonry wall joints

1. Description: Replace existing sealants according to Division 4 “Maintenance of Unit Masonry” and Division 7 “Joint Sealants”.

2. Unit of Measurement: Linear foot of joint replaced.

N. Unit Price No. 4.3: Rotated brick repair

1. Description: Install helical pin anchors to masonry according to Division 4 “Maintenance of Unit Masonry”.
2. Unit of Measurement: Lump Sum.

O. Unit Price No. 5.1: Extensive moment connection repairs

1. Description: Repair moment connections according to Division 3 “Cast-In-Place Concrete”, Division 5 “Structural Steel Framing”, Division 7 “Joint Sealants”, and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Each connection location repaired.

P. Unit Price No. 5.2: Stair 1 repairs

1. Description: Clean and repaint metal decking according to Division 5 “Steel Decking” and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Square foot of area repaired.

Q. Unit Price No. 5.3: Stair 2 repairs

1. Description: Remove existing riser and landing pans, clean steel, replace pans, and paint according to Division 5 “Metal Stairs” and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Lump sum.

R. Unit Price No. 5.4: Stair 3 repairs

1. Description: Clean steel and metal decking, replace damaged metal pans, and paint according to Division 5 “Metal Stairs” and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Lump sum.

S. Unit Price No. 5.5: Perimeter steel beam repairs

1. Description: Clean steel and metal decking, and paint according to Division 5 “Structural Steel Framing”, Division 5 “Steel Decking”, and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Linear foot of perimeter beam repaired.

T. Unit Price No. 5.6: Metal decking repairs

1. Description: Clean metal decking according to Division 5 Division 5 “Steel Decking”.
2. Unit of Measurement: Square foot of area repaired.

U. Unit Price No. 5.7: Beam repairs adjacent to Stair 1

1. Description: Repair beams around Stair 1 according to Division 5 “Structural Steel Framing”, Division 5 “Steel Decking”, and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Lump sum.

V. Unit Price No. 5.8: Typical moment connection repairs

1. Description: Clean steel at moment connection and paint according to Division 5 “Structural Steel Framing”, Division 5 “Steel Decking”, and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Each connection location repaired.

W. Unit Price No. 5.9: Filler beam connection repair

1. Description: Clean steel, replace bolts, and paint filler beam to girder connection according to Division 5 “Structural Steel Framing” and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Each location repaired.

X. Unit Price No. 5.10: Steel plate installation

1. Description: Install new steel plate according to Division 5 “Structural Steel Framing”.
2. Unit of Measurement: Linear foot of plate installed.

Y. Unit Price No. 5.11: Trench drain repair

1. Description: Replace missing trench drain according to Division 5 “Metal Fabrications”.
2. Unit of Measurement: Lump sum.

Z. Unit Price No. 5.12: Stair 1 railing repair

1. Description: Install infill mesh at Stair 1 railings according to Division 5 “Pipe and Tube Railings”.
2. Unit of Measurement: Lump sum.

AA. Unit Price No. 5.13: Steel bar repair

1. Description: Install 1.5” diameter steel bar according to Division 5 “Structural Steel Framing”.
2. Unit of Measurement: Linear foot repaired.

BB. Unit Price No. 5.14: Stair pan remove/replace

1. Description: Remove existing steel pan and replace with new diamond plated steel pan according to Division 5 “Metal Fabrications” and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Square foot repaired.

CC. Unit Price No. 5.15: Steel cleaning/repainting

1. Description: Clean and repaint existing steel according to Division 9 “High Performance Coatings”.
2. Unit of Measurement: Square foot repaired.

DD. Unit Price No. 5.16: Web repair plates

1. Description: Install web repair plates according to Division 5 “Structural Steel Framing”.
2. Unit of Measurement: Each plate installed.

EE. Unit Price No. 5.17: Column Line E steel beam repairs

1. Description: Clean steel and metal decking, and paint according to Division 5 “Structural Steel Framing”, Division 5 “Steel Decking”, and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Linear foot of Column Line E beam repaired.

FF. Unit Price No. 7.1: Remove/replace expansion joint

1. Description: Replace existing expansion joints according to Division 7 “Expansion Control” with a winged expansion joint.
2. Unit of Measurement: Linear foot of joint replaced.

GG. Unit Price No. 7.2: Remove/replace joint sealant

1. Description: Replace existing sealants according to Division 7 “Joint Sealants” with a polyurethane sealant.
2. Unit of Measurement: Linear foot of joint replaced.

HH. Unit Price No. 7.3: Apply silane sealer

1. Description: Prepare surface and apply a penetrating silane sealer according to Division 7 “Water Repellants”.
2. Unit of Measurement: Square foot of surface.

II. Unit Price No. 9.1: Restripe pavement markings

1. Description: Restripe traffic striping and pavement markings according to Division 9 “Traffic Striping Paint”.
2. Unit of Measurement: Lump sum.
3. Restriping efforts include tops and faces of curbs currently painted, cross hatching, pavement markings such as arrows and stop bars, and stall striping. Complete removal of existing striping is not required. Only what is removed during surface prep for the silane sealer or required for preparing the existing paint surface is to be removed.

JJ. Unit Price No. 9.2: Stripe pavement markings

1. Description: Install traffic striping and pavement markings according to Division 9 “Traffic Striping Paint”.
2. Unit of Measurement: Lump sum.
3. Striping efforts include tops and faces of curbs, cross hatching, pavement markings such as arrows and stop bars, and stall striping. Preparation of surface is required.

KK. Unit Price No. 10.1: Signage

1. Description: Install new signage according to Division 10 “Signage”.
2. Unit of Measurement: Lump sum.

LL. Unit Price No. 26.1: Relocate light fixture

1. Description: Relocate existing light fixture according to Division 26 “Electrical”.

2. Unit of Measurement: Lump sum.

MM. Allowance 1 Unit Price: Retaining wall repair
1. Description: When directed by the Engineer and in association with the elevated ramp slab replacement, repair areas of the concrete retaining wall, masonry wall, steel beams, and connection members according to Division 3 “Maintenance of Cast-In-Place Concrete”, of Division 4 “Maintenance of Unit Masonry”, and Division 5 “Structural Steel Framing”.
2. Unit of Measurement: Lump sum.

NN. Alternate 1 Unit Price: Stair 2 removal

1. Description: Remove existing stairs and enclose masonry walls according to Division 4 “Maintenance of Unit Masonry” and Division 5 “Metal Stairs”.
2. Unit of Measurement: Lump sum.

OO. Alternate 2 Unit Price: Garage repainting

1. Description: In addition to those work areas already designated, all steel members in the garage will be cleaned and repainted according to Division 5 “Structural Steel Framing” and Division 9 “High Performance Coatings”.
2. Unit of Measurement: Lump sum.

PP. Alternate 3 Unit Price: High-solids fluoropolymer coating

1. Description: Provide a high performance coating based on a zinc/urethane/fluoropolymer system according to Division 1 “Alternates”.
2. Unit of Measurement: Square foot of area painted.

QQ. Alternate 4 Unit Price: Power wash cleaning

1. Description: On areas approved by the Engineer, provide surface preparation SSPC-SP 1 using a power wash tool with rotating head according to Division 1 “Alternates.”
2. Unit of Measurement: Square foot of area cleaned.

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Stair 2 Removal.
   1. Base Bid: Repair Stair 2 by removing existing riser and landing pans, cleaning steel, replacing pans, and painting according to Division 5 “Metal Stairs” and Division 9 “High Performance Coatings.”
   2. Alternate: In lieu of repairing Stair 2, entirely remove existing stairs and infill openings in masonry walls according to Division 4 “Maintenance of Unit Masonry” and Division 5 “Metal Stairs.”

B. Alternate No. 2: Garage Repainting.
   1. Base Bid: Clean and repaint steel as identified in the scope of work according to Division 5 “Structural Steel Framing” and Division 9 “High Performance Coatings.”
   2. Alternate: In addition to those areas designated to be cleaned and repainted in the base bid package, all other structural steel members and non-structural steel members in the garage will be cleaned and repainted according to Division 5 “Structural Steel Framing” and Division 9 “High Performance Coatings.”

C. Alternate No. 3: High-Solids Fluoropolymer Coating

   1. Base Bid: High performance coating is based on an epoxy/urethane system according to Division 9 “High Performance Coatings.”
   2. Alternate: Provide a high performance coating based on a zinc/urethane/fluoropolymer system as indicated below (Tnemec shown as Basis of Design):
      a. System Type: Zinc/urethane/fluoropolymer.
      b. Surface Preparation: SSPC-SP 6 / NACE 3.
      c. Primer: 94H2O Hydro-Zinc. DFT 2.5 to 3.5 mils.
      d. Intermediate Coat: Series 73 Endura-Shield. DFT 2.0 to 3.0 mils.
      e. Finish Coat: Series 1070 Fluoronar. DFT 2.0 to 3.0 mils.
      f. Total DFT: 6.5 to 9.5 mils.
      g. Color and Gloss Warranty: 15 years.
      h. All other provisions of Division 9 “High Performance Coatings” apply.

D. Alternate No. 4: Power Wash Cleaning
   1. Base Bid: Surface preparation according to SSPC-SP 6 as indicated in Division 9 “High Performance Coatings.”
   2. Alternate: Provide surface preparation using a power wash tool with rotating head, 3,500-psi minimum water pressure. Cleaning to only be used on non-highly corroded areas as designated and approved by the Engineer. It is anticipated that this cleaning would be used in conjunction with Alternate No. 2.
      a. Surface Preparation: SSPC-SP 1
      b. Surface adhesion testing: Contractor to coordinate with paint Manufacturer to conduct surface adhesion testing prior to work.

END OF SECTION 012300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:
1. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.

C. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.5 SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

C. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
3. Owner-performed tests and inspections indicated in the Contract Documents.

D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

E. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Engineer has indicated as nonconforming or

defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Contractor Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

1. Bidder must provide detailed project information and valid contact information for all completed building structural restoration projects in the last ten years and which include structural concrete repair, concrete waterproofing, and structural steel repair services as described. The listed projects should include the following minimum criteria:

   a. A minimum of two parking deck structure restoration projects. Each parking deck structure should exceed 250 parking spaces and restoration work should have 500 square feet or more of concrete restoration work.
   b. A building restoration project with structural steel repair work that exceeds 500 square feet.
   c. A parking deck restoration project with expansion joint and waterproofing repairs.
   d. A minimum of one project with a construction contract value of at least $500,000.
   e. A minimum of one project where lead paint abatement was required.

2. Bidder shall provide resumes of the Project Manager and Site Superintendent demonstrating experience within the last five (5) years in services of similar scope and magnitude. Two (2) references must be included on each resume.
3. Bidder shall provide a concise description of their work experiences as related to the scope of work outlined herein. Said description should include, but not be limited to, the number of years the Bidder has been providing these types of services, the number and types of customers the Bidder presently services, types of systems provided, references, and other documentation to verify the Bidder's experience.
4. For all repair products outlined in the scope of work which require factory trained and certified installers as noted in the specifications, the Bidder shall have and demonstrate this certification from the Manufacturer prior to the bid.

D. Testing Agency Qualifications: Contractor will engage an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

E. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of

manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.8 QUALITY CONTROL

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

C. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to Engineer, testing agencies, and authorities having jurisdiction.

1.4 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Dust- Control Plan: Submit coordination drawing and narrative that indicates the dust control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. Waste handling procedures.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.

B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary" and as coordinated with the Engineer and Owner.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
2. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

D. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

F. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

2. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. An on-site dumpster should be provided by the Contractor and use of any Owner’s dumpsters is not allowed. Coordinate the location to place dumpster with the Owner. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Division 01 Section "Execution."

I. Temporary Elevator Use: Use of elevators is not permitted.

J. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.2 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

B. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

C. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
1. Construct dustproof partitions with two layers of 6-mil (0.14-mm) polyethylene sheet on each side.

D. Lead Paint Removal Partitions: Based on the materials testing conducted, the Contractor should assume that all paint in the deck contains lead. Contractor to take all necessary precautions

above and beyond that indicated in this Section to limit lead paint dust exposure to workers and to prevent any lead dust particles from escaping into the environment. Lead paint removal, abatement, and disposal shall follow all applicable state and/or federal requirements.

1. Refer to Appendix B for a copy of the materials testing report.

3.3 OPERATION, TERMINATION, AND REMOVAL

A. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

1.4 ACTION SUBMITTALS

A. General:
1. Engineer shall have 14 days for initial review of each submittal.
2. Place a permanent label or title block on each submittal for identification.
3. Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

B. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later. Use product specified if Engineer does not issue a decision on use of comparable product request within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
5. Protect stored products from damage and liquids from freezing.
6. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.
   a. Maximum weight of all equipment and materials shall not exceed 40-psf.

1.7 PRODUCT WARRANTIES

A. The Contractor shall act as a single source point of contact for all defects and necessary repairs during the specified warranty periods for all products and associated labor. As such, the Owner will only contact the Contractor in the event of problems associated with repairs made per this scope of work. It shall be the Contractor's sole responsibility to coordinate with manufacturers as needed and provide labor as required to conduct any and all warranty repairs.

B. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

C. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

D. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience may be considered, unless otherwise indicated.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

3. Products:

a. Comparable products or substitutions for Contractor's convenience will be considered.

4. Manufacturers:

a. Comparable products or substitutions for Contractor's convenience will be considered.

C. Visual Matching Specification: Where Specifications require "match Engineer's sample", provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Engineer will consider requests for substitution if received within 7 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Engineer.

B. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Project Documents.

3. Requested substitution is consistent with the Project Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

A. Conditions for Consideration: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Installation of the Work.
2. Cutting and patching.
3. Progress cleaning.
4. Protection of installed construction.
5. Correction of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to the following requirements:

1. Notify Owner not less than one week in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permissions.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of the problem encountered, together with recommendations for changing the Project Documents.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located, and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
2. Allow for building movement, including thermal expansion and contraction.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place 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.

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

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place 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.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place 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.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

H. 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 practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
b. Restore damaged pipe covering to its original condition.

3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

a. Use containers intended for holding waste materials of type to be stored.
b. Lead Paint: Based on the materials testing data conducted, the Contractor should assume that all paint in the deck contains lead. During lead paint removal, abatement, and disposal, Contractor shall follow all applicable state and/or federal requirements.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Contractor to provide on-site dumpsters for waste disposal.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Based on the materials testing data conducted, the Contractor should assume that all paint in the deck contains lead. Contractor to take all necessary precautions above and beyond that indicated in this Section to limit lead paint dust exposure to workers and the general public, and to prevent any lead dust particles from escaping into the environment. Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Division 01 Section "Execution" for progress cleaning of Project site.
2. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Activities Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, and similar final record information.
2. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Construction Manager. Label with manufacturer's name and model number where applicable.

4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
5. Complete final cleaning requirements, including touchup painting.
6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

C. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment
2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use Standard AIA form.

1. Organize list of spaces in sequential order, proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit three typed copies on 8.5x11 paper.

1.6 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

B. Record Drawings: Maintain and submit one set of black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Product Data: Submit one copy of each Product Data submittal.
1. Note related Change Orders, Record Drawings, and Record Specifications, where applicable.

D. Daily Construction Reports: Submit a final copy to the Engineer of all Daily Construction Reports.

E. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Note related Change Orders and Record Drawings, where applicable.

F. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual

performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Maintenance Data: Include manufacturer's information, list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind one copy of warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

B. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
   a. Remove tools, construction equipment, machinery, and surplus material from Project site.
   b. Sweep concrete floors broom clean in unoccupied spaces.
   c. Leave Project clean and ready for occupancy.

B. Construction Waste Disposal: Comply with waste disposal requirements.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
   1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

      a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

   2. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous Record Submittals.
5. Daily Construction Report Submittal.
6. Construction Photographs.

B. Related Requirements:
1. Division 01 Section "Closeout Procedures" for general closeout procedures.
2. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of record Drawings as follows:

a. Final Submittal:

1) Submit one paper-copy set of marked-up record prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy of each submittal.

E. Daily Construction Reports: Submit one paper copy of all Daily Construction Reports.

F. Construction Photographs: Submit an electronic copy of all construction photographs to a web-based FTP site as provided by the Engineer.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Changes made by Change Order or Change Directive.
    d. Changes made following Engineer's written orders.
    e. Details not on the original Contract Drawings.
    f. Field records for variable and concealed conditions.
    g. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Engineer determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Engineer for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Engineer and Owner.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as paper copy.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as paper copy.

1. Include record Product Data directory organized by Specification Section number and title.

C. Submit a tabular list showing specific products used in the Work. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as paper copy.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

2.5 DAILY CONSTRUCTION REPORT SUBMITTAL

A. Prepare a daily construction report recording the following information concerning events at the Project site. The Contractor shall submit daily reports to the Owner and Engineer on a weekly basis. The Engineer will provide a form document to use as an Appendix to the technical specifications.

1. List of contractors at Project site.
2. Approximate count of personnel at Project site.
3. High and lower temperatures and general weather conditions.
4. Meetings and significant decisions occurring during the day.
5. Stoppages, delays, shortages, and losses.
6. Substantial completions authorized.
7. Daily log of repair quantities.

2.6 CONSTRUCTION PHOTOGRAPHS

A. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Flag construction limits before taking construction photographs.
2. Take photographs to show existing conditions adjacent to property before starting the Work.

3. Take photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

B. Periodic Construction Photographs: Take photographs monthly, coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

C. Photographic Media:

1. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Engineer's reference during normal working hours.

C. All of the documents required at the Project site under this article shall be available for use by the Engineer or his representative at all times.

D. Upon completion of this project, the documents required under this article shall be turned over to the Engineer in good order.

END OF SECTION 017839

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

B. Related Requirements:

1. Division 01 Section "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Division 01 Section "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

C. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 INFORMATIONAL SUBMITTALS

A. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: Based on the materials testing data conducted, the Contractor should assume that all paint in the deck contains lead. Contractor to take all necessary precautions above and beyond that indicated in this Section to limit lead paint dust exposure to workers and to prevent any lead dust particles from escaping into the environment. Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Lead paint removal, abatement, and disposal shall follow all applicable state and/or federal requirements.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Engineer.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."

B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.

1. Provide at least one week notice to Owner if shutdown of service is required.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section “Summary” and Division 01 Section "Temporary Facilities and Controls.”
2. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
3. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
4. Protect existing site improvements, appurtenances, and landscaping to remain.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section “Summary” and Division 01 Section "Temporary Facilities and Controls.”

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Maintain adequate ventilation when using cutting torches.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
8. Dispose of demolished items and materials promptly.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 1/2 inch (13 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Steel: Demolish in small sections. Cut steel at junctures with construction to remain, using power-driven saw, then remove steel between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 030130 - MAINTENANCE OF CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Removal of deteriorated concrete and subsequent replacement and patching.
2. Repairs to exposed reinforcing steel.
3. Rout and seal cracks and construction joints.

B. Related Sections include the following::

1. Division 01 Section “Unit Prices”
2. Division 07 Section “Joint Sealants”
3. Division 07 Section “Water Repellents”

1.3 UNIT PRICES

A. General: Unit prices include the cost of preparing existing construction to receive the work indicated and costs of field quality control required for units of work completed.

B. Shallow Depth Concrete Removal and Replacement or Patching: Work will be paid for by the square foot computed on the basis of rectangular solid shapes approximating the actual shape of concrete removed and replaced with average widths and lengths, measured to the nearest inch. Unit price also includes joint sealant around the perimeter of the patch and any paint necessary to match the existing concrete surface. Depth of repair = 1/2” to 2”.

C. Overhead Concrete Removal and Replacement: Work will be paid for by the square foot computed on the basis of rectangular solid shapes approximating the actual shape of concrete removed and replaced with average widths and lengths, measured to the nearest inch. Unit price also includes any paint necessary to match the existing concrete surface. Depth of repair = 1/2” to 4”.

D. Deep Concrete Removal and Replacement: Work will be paid for by the cubic foot computed on the basis of rectangular solid shapes approximating the actual shape of concrete removed and replaced with average depths, widths, and lengths, measured to the nearest inch. Unit price also includes joint sealant around the perimeter of the patch and any paint necessary to match the existing concrete surface. Depth of repair = 2” to 4”.

1. Reinforcing bar replacement will be included in the unit cost of patching.

E. Exposed Rebar: Work will be paid for by the square foot computed on the basis of rectangular solid shapes approximating the actual shape of concrete removed and replaced with average widths and lengths, measured to the nearest inch. Concrete depth = 1/2" to 2".

F. Rout and Seal Cracks and Construction Joints: Work includes repair of concrete cracks with an average width equal to or greater than 0.75 mm, removal of existing joint sealants, surface preparation, joint preparation, repair to adjacent concrete surfaces, and installation of new joint sealants. Unit of measure will be paid for by the linear foot of crack or joint repaired.

G. Slab on Grade Shaving: Work will be paid for by the square foot computed on the basis of rectangular solid shapes approximating the actual shape of concrete shaved. Unit price also includes any paint necessary to match the existing concrete surface. Depth of repair = As indicated on drawings.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer and Owner of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. The Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written recommendations.
   n. Warranty requirements.
   o. Compatibility of materials.
   p. Acceptability of substrates.
   q. Temporary facilities and controls.
   r. Space and access limitations.
   s. Regulations of authorities having jurisdiction.
   t. Testing and inspecting requirements.
   u. Installation procedures.
   v. Coordination with other work.
   w. Required performance results.
   x. Protection of adjacent work.
   y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

1.5 SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

B. Qualification Data: For installers and manufacturers.

C. Material Certificates: For each type of material supplied for mixing or adding to products at Project site.

D. Product Test Reports: For each product, for tests performed by manufacturer and witnessed by a qualified testing agency.

E. Field quality-control reports.

F. Maintenance Program: Submit before work begins.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall employ factory-trained technical representatives who are available for consultation and Project-site inspection and assistance at no additional cost.

B. Installer Qualifications: Installer that employs workers trained and approved by manufacturer to apply.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer’s original and unopened containers, labeled with type and name of products and manufacturers.

B. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

C. Store cementitious materials off the ground, under cover, and in a dry location.

D. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.8 FIELD CONDITIONS

A. Refer to Manufacturer's recommendations for additional condition limitations and restrictions other than listed below.

B. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.

1. Use only Class A epoxies when substrate temperatures are below or are expected to go below 40 deg F (5 deg C) within 8 hours.
2. Use only Class A or B epoxies when substrate temperatures are below or are expected to go below 60 deg F (16 deg C) within 8 hours.
3. Use only Class C epoxies when substrate temperatures are above and are expected to stay above 60 deg F (16 deg C) for 8 hours.

C. Cold-Weather Requirements for Cementitious Materials: Do not apply unless concrete-surface and air temperatures are above 40 deg F (5 deg C) and will remain so for at least 48 hours after completion of Work.

D. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F (32 deg C) and above.

E. Mask off adjoining surfaces to prevent damage to any surface outside work area.

F. Protect repaired surfaces from traffic, damage, and contamination during curing time period.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain each color, grade, finish, type, and variety of product from single source with resources to provide products of consistent quality in appearance and physical properties.

B. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

2.2 BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, portland cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Euclid Chemical Company (The), an RPM company; Corr-Bond.
b. Sika Corporation, Construction Product Division; Armatec 110 EpoCem.
c. Sto Corp., Concrete Restoration Division; Sto Bonding and Anti-Corrosion Agent.
d. Sonneborn, Div. of ChemRex; Sonoprep.
e. Five Star; AC Coat.
f. Tamms Industries, Inc.; Duralprep A.C.
g. Any manufacturer approved by the Engineer as a provider of an equal product and equal or better service.

B. Mortar Scrub Coat: Mix consisting of 1 part portland cement complying with ASTM C 150 Type I, II, or III and 1 part fine aggregate complying with ASTM C 144 except 100 percent passing a No. 16 (1.18-mm) sieve.

2.3 PATCHING MORTAR

A. Patching Mortar, General:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
2. Color and Aggregate Texture: Provide patching mortar and aggregates of colors and sizes necessary to produce patching mortar that matches existing, adjacent, exposed concrete. Blend several aggregates if necessary to achieve suitable matches.
3. Coarse Aggregate for Patching Mortar: ASTM C 33, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.

B. Polymer-Modified, Cementitious Patching Mortar: Packaged, dry mix for repair of concrete and that contains a non-redispersible latex additive as either a dry powder or a separate liquid that is added during mixing. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following

1. Compressive Strength: Not less than 5500 psi at 28 days when tested according to ASTM C 928.
2. Overhead/Vertical Application for repair depths ½ inch to 4 inches:
   a. Sika Corporation; SikaTop 123 Plus,.
   b. Euclid Chemical Company; Euclid Verticoat Supreme
   c. Sto Corp;, Sto Overhead Mortar.
   d. BASF; S88 CI Repair Mortar
   e. Five Star; Structural Concrete ES
   f. Tamms Industries, Inc.; Duraltop Fast Set, or Speed Crete PM.
   g. Any manufacturer approved by the Owner as a provider of an equal product and equal or better service.
3. Horizontal Application for repair depths ½ inch to 2 inches:
   a. Sika Corporation; SikaTop 122 Plus
   b. Euclid Chemical Company; Verticoat Supreme, Concrete Top Supreme

c. Sto Corp; Sto Full Depth Repair Mortar with CI

d. BASF; EMACO T430

e. Five Star; Structural Concrete ES

f. Any manufacturer approved by the Owner as a provider of an equal product and equal or better service.

4. Horizontal application for repair depths 2 inches to 4 inches:

a. Sika Corporation; Sikacrete 211; Sikacrete 211 SCC Plus

b. Euclid Chemical Company; Verticoat Supreme extended with 3/8-inch pea gravel meeting ASTM C 33, Concrete Top Supreme extended with 3/8-inch pea gravel meeting ASTM C 33

c. Sto Corp; Sto Full Depth Repair Mortar with CI

d. BASF; EMACO T430 extended with 3/8-inch pea gravel meeting ASTM C 33

e. Five Star; Structural Concrete ES extended with 3/8-inch pea gravel meeting ASTM C 33

f. Any manufacturer approved by the Owner as a provider of an equal product and equal or better service.

5. Full Depth application for repair depths 4 inches to 8 inches:

a. Formwork and shoring may be required.

b. Sika Corporation; Sikacrete 211 Plus

c. Euclid Chemical Company; Eucocrete Supreme extended with 3/8-inch pea gravel meeting ASTM C 33

d. Sto Corp; Sto Extended Full-Depth Repair Mortar with CI.

e. BASF; EMACO T430 extended with 3/8-inch pea gravel meeting ASTM C 33

f. Five Star; Structural Concrete ES extended with 3/8-inch pea gravel meeting ASTM C 33

g. Any manufacturer approved by the Owner as a provider of an equal product and equal or better service.

6. For repair depths greater than 8 inches place concrete mix as approved by the Engineer.

2.4 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Add clean silica sand and course aggregates only as recommended by manufacturer.
2. Do not add water, thinners, or additives unless recommended by manufacturer.
3. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.

4. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream.

C. Dry-Pack Mortar: Mix patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Standard Specifications and Repair Methods:
1. ICRI 03731 – Guide for Selecting Application Methods for the Repair of Concrete Surfaces
2. ACI 503.4 – Standard Specification for Repairing Concrete with Epoxy Mortars
3. ACI 503R – Use of Epoxy Compounds with Concrete
4. ACI 546 – Concrete Repair Guide

B. Notify Engineer seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.

C. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries as directed by Engineer. At columns and walls make boundaries level and plumb unless otherwise indicated.

D. Pachometer Testing: Locate at least three reinforcing bars using a pachometer, and drill test holes to determine depth of cover. Calibrate pachometer using depth of cover measurements, and verify depth of cover in removal areas using pachometer.

3.2 PREPARATION

A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.

B. Preparation for Removal of Deteriorated Concrete: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.

1. Verify that affected utilities have been disconnected and capped.
2. Inventory and record the condition of items to be removed for reinstallation or salvage.
3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain.

C. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.

1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
2. Use only proven protection methods appropriate to each area and surface being protected.
3. Provide barricades, barriers, and temporary directional signage to exclude public from areas where concrete maintenance work is being performed.
4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete maintenance work.
5. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.

D. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Engineer immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is in working order.

1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete maintenance work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

E. Concrete Removal:

1. Provide shoring, bracing, and supports as necessary. Strengthen or add new supports when required during progress of removal work. Do not overload structural elements with debris.
2. Saw-cut perimeter of areas indicated for removal to a depth of at least 1/2 inch (12.7 mm). Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement. Care shall be taken not to damage existing reinforcing steel or sheathing.
3. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.
4. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least a 3/4-inch clearance around bar.
5. Test areas where concrete has been removed by tapping with hammer, and remove additional concrete until unsound and disbonded concrete is completely removed.
6. Provide surfaces with a fractured profile of at least 1/8 inch that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.
7. Detail the edge of the patch to a 90 degree angle to eliminate feather edging.
8. Thoroughly clean removal areas of loose concrete, dust, and debris.

F. Reinforcing-Bar Preparation: Remove loose and flaking rust from reinforcing bars by high-pressure, water cleaning, abrasive blast cleaning, needle scaling, or wire brushing until only tightly adhered light rust remains. All exposed surfaces of reinforcing steel shall be coated

within 30 minutes after cleaning. An epoxy-based and anti-corrosion agent shall be used in accordance with the manufacturer recommendations.

1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in two or more adjacent bars, cut bars and remove and replace as directed by Engineer. Remove additional concrete as necessary to provide at least 3/4-inch clearance at existing and replacement bars. Splice replacement bars to existing bars according to ACI 318 by lapping, welding, or using mechanical couplings.

G. Preparation of Floor Joints for Repair: Saw-cut joints full width to edges and depth of spalls, but not less than 5/16 inch deep. Clean out debris and loose concrete; vacuum or blow clear with compressed air.

H. Slab on Grade Shaving: Provide concrete floor grinding equipment to level and clean the top surface of the concrete slab on grade to meet the spot elevations as indicated. Provide a medium broom abraded finish to the concrete surface.

3.3 APPLICATION

A. General: Comply with manufacturer's written instructions and recommendations for application of products, including surface preparation.

B. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Apply to reinforcing bars and concrete by stiff brush or hopper spray according to manufacturer's written instructions. Apply to reinforcing bars in two coats, allowing first coat to dry two to three hours before applying second coat. Allow to dry before placing patching mortar or concrete.

C. Mortar Scrub Coat for Job-Mixed Patching Mortar and Concrete: Dampen repair area and surrounding concrete 6 inches (150 mm) beyond repair area. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.

D. Placing Patching Mortar: Place as follows unless otherwise recommended in writing by manufacturer: Mortar shall be applied 24 hours after applying the epoxy bonding/corrosion inhibiting agent.

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water.
3. Pretreatment: Apply specified bonding agent.
4. General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
5. Vertical Patching: Place material in lifts of not more than 1-1/2 inches (38 mm) nor less than 1/4 inch (6 mm). Do not feather edge.
6. Overhead Patching: Place material in lifts of not more than 1-1/2 inches (38 mm) nor less than 1/4 inch (6 mm). Do not feather edge.
7. Consolidation: After each lift is placed, consolidate material and screed surface.

8. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
9. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a smooth surface matching adjacent concrete.
10. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

E. Dry-Pack Mortar: Use for deep cavities. Place as follows unless otherwise recommended in writing by manufacturer:

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water.
3. Pretreatment: Apply specified bonding agent.
4. Place dry-pack mortar into cavity by hand, and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.
5. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete. A thin coat of patching mortar may be troweled into the surface of patch to help obtain required finish.
6. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:

1. Packaged, Cementitious Patching Mortar: 5 randomly selected sets of samples for each type of mortar required, tested according to ASTM C 928.

C. Product will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 030130

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
   1. Suspended slabs.
   2. Interior curbs.

B. Related Sections:

   1. Division 01 Section “Unit Prices”
   2. Division 07 Section “Joint Sealants”
   3. Division 07 Section “Water Repellents”

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

   1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.

E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Architect.

F. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Curing compounds.
6. Bonding agents.
7. Aggregates.

G. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

G. Preinstallation Conference: Conduct conference at Owner’s Representative address noted in Division 1 “Summary”.

1. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures,

curing procedures, construction contraction and isolation joints, forms and form removal limitations, shoring and reshoring procedures, and concrete protection.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
   a. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

C. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I/II. Supplement with the following:

   a. Fly Ash: ASTM C 618, Class F.
   b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

2. Non-shrink cement or shrinkage compensating cement: ASTM C 845, Type K.

B. Silica Fume: ASTM C 1240, amorphous silica.

C. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Water: ASTM C 94/C 94M[**and potable**].

2.5 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride. Admixtures shall be approved by the Engineer.

B. Air-Entraining Admixture: ASTM C 260.

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

D. Retarding Admixture: ASTM C 494/C 494M, Type B.

E. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

F. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

G. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

H. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

I. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. 30 +/- 2% Calcium Nitrite corrosion inhibitors. Manufacturer(s) dosage rate (2 gals/cu. yd. minimum) for required chloride protection levels should be strictly followed based on the following requirements.

a. Structure site shall be classified as, Durability Zone II in accordance with ACI 362.1R-97 (Reapproved 2002).
b. Structure is considered Severe Exposure in accordance with the Building Code.
c. Concrete shall be considered exposed to weather.
d. Structure is to have a minimum of a 50-year design service life.
e. A Life-365 analysis shall be submitted by the Contractor for approval of the mix designs which include corrosion inhibitor.

2. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. DCIT / DCI-S; W.R. Grace
b. Eucon CIA; Euclid Chemical
c. Rheocrete CNI; Master Builders

2.6 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals - Building Systems; Confilm.
b. Dayton Superior Corporation; Sure Film (J-74).
c. Euclid Chemical Company (The), an RPM company; Eucobar.
d. Kaufman Products, Inc.; Vapor-Aid.
e. Lambert Corporation; LAMBCO Skin.
f. Meadows, W. R., Inc.; EVAPRE.
g. Sika Corporation; SikaFilm.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals - Building Systems; Kure 200.
b. Conspec by Dayton Superior; W.B. Resin Cure.
c. Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).
d. Euclid Chemical Company (The), an RPM company; Kurez W VOX; TAMMSCURE WB 30C.
e. Meadows, W. R., Inc.; 1100-CLEAR.

2.7 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Reglets: Fabricate reglets of not less than 0.0217-inch thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

F. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.8 REPAIR MATERIALS

A. Patching Material: One component, polymer-modified, premixed patching material containing selected silica aggregates and portland cement, suitable for vertical and overhead application.

Do not use material containing chlorides or other chemicals known to be deleterious to prestressing steel or material that is reactive with prestressing steel, anchorage device material, or concrete.

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

   a. Euclid Chemical Company (The); Verticoat Supreme.
   b. Master Builders, Inc.; Emaco R350 CI.
   c. Sika Corporation, Inc.; SikaMonoTop 612.

B. Epoxy Crack Injection Adhesive: ASTM C 881/C 881M, Type I or IV, to be selected by Contractor in coordination with other products, and submitted to the Engineer for approval.

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

   a. Euclid Chemical Company (The); Euco #352 Epoxy System, Euco #452 Epoxy System, Euco #620 Epoxy System, Euco #452 LV, Euco #620 LV, or Eucopoxy Injection Resin.
   b. Meadows, W. R., Inc.; Sealtight Rezi-Weld LV.
   c. Sika Corporation; Sikadur 35, Hi-Mod LV; Sikadur 35, Hi-Mod LV LPL; Sikadur 52; or Sikadur Injection Gel.
   d. Sonneborn, Div. of ChemRex; Epofil or Epofil SLV.
   e. Tamms Industries, Inc.; Duralcrete LV.

2.9 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent maximum, 10 percent minimum.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Ground Granulated Blast-Furnace Slag: 50 percent.
4. Silica Fume: 10 percent.
5. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Alkali Content of Cement and Reactivity with Aggregates: Alkali content of cement shall not exceed 0.6% when tested in accordance with ASTM C114, except that alkali content may exceed 0.6% when either one of the following requirements is satisfied.

1. Furnish certification and test reports showing that no alkali reactivity is produced with the proposed combination of cement and aggregates when tested in accordance with ASTM C227.
2. A pozzolan complying with ASTM C618, proven by testing in accordance with ASTM C441 to be effective in preventing excessive expansion due to alkali-aggregate reaction, is included in the concrete mix. Furnish test reports.

E. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Admixtures: Calcium chloride and thiocyanates are not permitted. Provide only those admixtures which produce no detrimental effect on metal components such as form deck, reinforcing, embedments and conduit. Admixtures which when combined with other ingredients used to produce the concrete shall result in concrete having not more than the specified limits for soluble chloride ion content.
2. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
3. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
4. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
5. Use corrosion-inhibiting admixture in concrete mixtures.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Suspended Slabs: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch.
   a. 8 inches, plus or minus 1 inch, after adding high-range water-reducing admixture or plasticizing admixture.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of placement, with no disruption to concrete flow, for 3/4-inch nominal maximum aggregate size.

B. Interior curbs: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Minimum Cementitious Materials Content: 540 lb/cu. yd.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of placement for 3/4-inch nominal maximum aggregate size.

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

B. Detail steel reinforcement in accordance with ACI 318 and ACI 315 unless otherwise noted.

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd, increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads. Maintain concrete lines and levels within tolerances specified. Formwork types are labeled according to concrete surface finishes. Provide formwork types and construction to obtain the class of surface indicated and as required by ACI 347. Design forms to permit easy removal. Make the forms completely rigid and strong enough to withstand, without leakage, the high hydraulic pressures which result from rapid filling and heavy high-frequency vibration. Deflection of each formwork component shall be limited to 1/360 of the component span due to hydraulic pressure of concrete.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
1. Class B, 1/4 inch for smooth-formed finished surfaces with the exception of fins and other projections. Fins and other projections of Class B surface class shall be limited to 1/8 inch in height.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

F. 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.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

F. Concrete clear cover shall be as follows or based on more stringent plan detail requirements:

1. Concrete exposed to earth or weather:
   a. #6 or larger: 2” minimum.
   b. #5 or smaller and welded wire fabric: 1 ½” minimum.

2. Concrete not exposed to earth or weather:
   a. Slabs and walls: 1" minimum.

G. Clear distance between reinforcing bars: Per North Carolina State Building Code, 2009 Edition.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/4-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. Saw cuts must be completed within 24 hours of completion of the slab pour, or prior to any shrinkage cracking in the slab.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to all concrete surfaces.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated.

C. Non-Slip Medium Broom Finish: Apply a broom finish to all concrete.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-

place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least [**one**] [**six**] month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

A. General: Remove and replace concrete that is not in conformance with the contract documents, if repairs cannot be accomplished to the Engineer’s satisfaction. Use methods which maintain the long term strength, elasticity, and continuity characteristics of the entire structural element or frame if repair is attempted.

1. Submit a procedural outline of proposed repair work including a description of materials, preparation, shoring and protection for Engineer’s review.
2. Do not proceed with repairs until repair procedures have been reviewed by Engineer.
3. The Owner, Contractor, and Engineer will jointly identify and mark all locations to be repaired prior to beginning repairs.
4. Use materials to produce a repair with strength, elasticity, and durability characteristics compatible with the parent material being repaired.

B. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding

color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
5. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Epoxy Crack Injection: Comply with manufacturer’s written instructions and the following:

1. Clean areas to receive capping adhesive of oil, dirt, and other substances that would interfere with bond, and clean cracks with oil-free compressed air or low-pressure water to remove loose particles.
2. Place injection ports as recommended by epoxy manufacturer, spacing no farther apart than thickness of member being injected. Seal injection ports in place with capping adhesive.
3. Seal cracks at exposed surfaces with a ribbon of capping adhesive at least ¼ inch thick by 1 inch wider than crack.
4. Inject cracks wider than 0.003 inch to a depth of 8 inches or to width of less than 0.003 inch, whichever is less.
5. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled.
6. After epoxy has set, remove injection ports and grind surfaces smooth.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and to submit reports.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure a minimum of (6) standard 6 inch x 12 inch specimens obtained at point of discharge for each composite sample.
    b. Cast and field cure a minimum of (2) standard 6 inch x 12 inch specimens obtained at point of discharge for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
        1) Two laboratory cured specimens shall be held in reserve for use, as directed by Engineer.
    b. Test one set of two field-cured specimens at 28 days.
    c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Engineer and Owner, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting

agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033000

SECTION 040120 - MAINTENANCE OF UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes maintenance of unit masonry consisting of brick clay masonry restoration and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Reanchoring veneers.
3. Repointing joints.
4. Cleaning exposed unit masonry surfaces.

B. Related Sections include the following:

1. Division 01 Section “Unit Prices”
2. Division 07 Section “Joint Sealants”

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.

B. Samples for Verification: For the following:

1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.

   a. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.

2. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches (150 mm) long by 1/4 inch (6 mm) wide, set in aluminum or plastic channels.

   a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching the cleaned masonry when cured and dry.
   b. Submit with precise measurements on ingredients, proportions, gradations, and sources of colored sands from which each Sample was made.

C. Qualification Data: For restoration specialists including field supervisors and restoration workers.

1.4 QUALITY ASSURANCE

A. Restoration Specialist Qualifications: Engage an experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. **Experience installing standard unit masonry is not sufficient experience for masonry restoration work.**

B. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.

C. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by Engineer. Perform additional paint and stain removal, general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.

D. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to masonry restoration and cleaning including, but not limited to, the following:

a. Construction schedule. Verify availability of materials, Restoration Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry units to Project site strapped together in suitable packs or pallets or in heavy-duty cartons.

B. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

E. Store lime putty covered with water in sealed containers.

F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.

B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.

C. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.

D. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

E. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least 7 days after completion of cleaning.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

A. Brick, General:

1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
2. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.

B. Face Brick: Provide face brick, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.

1. Provide units with colors, color variation within units, surface texture, size, and shape to match existing brickwork and with physical properties within 10 percent of those determined from verification samples.

2. Tolerances as Fabricated: Comply with tolerance requirements in ASTM C 216, Grade SW, Type FBS.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II

1. Type III may be used for cold-weather construction

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Cement: ASTM C 1329

D. Masonry Cement: ASTM C 91 UBC Standard 21-11

E. Pigmented Mortar: Colored cement or cement-lime formulation as required to produce the color matching existing mortar in adjacent brickwork.

F. Aggregate for Mortar: ASTM C 144; except for joints less than ¼ inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18 mm) sieve.

G. Aggregate for Grout: ASTM C 404.

H. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for sue in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.

1. Matched mortar color used in existing masonry walls shall be Flamingo #C-60 to be verified in field.

I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by the manufacturer for use in masonry mortar of composition indicated.

J. Water: Potable.

2.3 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).

C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.

D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.

E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Price Research, Ltd.; Price Marble Cleaner-Gel.
b. PROSOCO; Sure Klean 942 Limestone and Marble Cleaner.

F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Diedrich Technologies Inc.; Diedrich 910PM Polished Marble Cleaner.
b. Dominion Restoration Products, Inc.; Bio-Cleanse.
c. Dumond Chemicals, Inc.; Safe n' Easy Engineerural Cleaner/Restorer.
d. Price Research, Ltd.; Price Non-Acid Masonry Cleaner.
e. PROSOCO; Enviro Klean 2010 All Surface Cleaner.

2.4 ACCESSORY MATERIALS

A. Masonry Repair Anchors, Spiral Type: Type 304 stainless-steel spiral rods designed to anchor to backing and veneer. Anchors are flexible in plane of veneer but rigid perpendicular to it.

1. Provide driven-in anchors designed to be installed in drilled holes and relying on screw effect rather than adhesive to secure them to backup and veneer.
2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Simpson Strong Tie; Heli-Tie.
b. Hohmann & Barnard, Inc.; Spira-Lok.

B. Sealant Materials:

1. Provide manufacturer's standard chemically curing, elastomeric sealant(s) of base polymer and characteristics indicated below that comply with applicable requirements in Division 07 Section "Joint Sealants."

2. Colors: Provide colors of exposed sealants to match colors of masonry adjoining installed sealant unless otherwise indicated.

C. Joint-Sealant Backing:

1. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
2. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where acceptable.

2.5 MORTAR MIXES

A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.

B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Engineer's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.

D. Do not use admixtures in mortar unless otherwise indicated.

2.6 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.

1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.

B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Keep wall wet below area being cleaned to prevent streaking from runoff.

3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

C. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and projections to protect from mortar droppings.
2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
3. Immediately remove mortar in contact with exposed masonry and other surfaces.
4. Clean mortar splatters from scaffolding at end of each day.

3.2 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.

B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

C. Notify Engineer of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

D. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
3. Store brick for reuse. Store off ground, on skids, and protected from weather.
4. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.

E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

F. Replace removed damaged brick with other removed brick in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.

G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.

H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. (30 g/194 sq. cm per min.). Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.3 CLEANING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.

B. Use only those cleaning methods indicated for each masonry material and location.

C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

D. Water Application Methods:

1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.

E. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush application. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.

F. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

G. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.4 REPOINTING MASONRY

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of joint width plus 1/8 inch (3 mm), but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Engineer.
   a. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.

D. Notify Engineer of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.

   a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
   b. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.

6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.5 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Wash adjacent woodwork and other nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

END OF SECTION 040120

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Structural steel.
2. Bolts, connectors, and anchors.

B. Related Sections:
1. Division 09 Section "High-Performance Coatings" for surface-preparation and priming requirements.

1.3 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.

C. Heavy Sections: Rolled and built-up sections as follows:

1. Shapes included in ASTM A 6/A 6M with flanges thicker than 1-1/2 inches.
2. Welded built-up members with plates thicker than 2 inches.
3. Column base plates thicker than 2 inches.

D. Protected Zone: Structural members or portions of structural members indicated as "Protected Zone" on Drawings. Connections of structural and nonstructural elements to protected zones are limited.

E. Demand Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the Seismic-Load-Resisting System and which are indicated as "Demand Critical" or "Seismic Critical" on Drawings.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.

C. Qualification Data: For qualified fabricator.

D. Welding certificates.

E. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

F. Mill test reports for structural steel, including chemical and physical properties.

G. Product Test Reports: For the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

H. Source quality-control reports.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the Work. Must be a qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant as follows

1. Category: Category I, conventional steel structures.
2. Fabricator shall be registered with and approved by authorities having jurisdiction.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

D. Comply with applicable provisions of the following specifications and documents:
   1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
   2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
   3. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design"
   4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
   5. AISC's "Specification for Allowable Stress Design of Single-Angle Members."
   6. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

   1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

   1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
   2. Clean and relubricate bolts and nuts that become dry or rusty before use.
   3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.7 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 992/A 992M.

B. Channels, Angles: ASTM A 572/A 572M, Grade 50.

C. Plate and Bar: ASTM A 36/A 36M.

D. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts.

1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.

B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hexhead assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.

2.3 PRIMER

A. Primer: Fast-curing, lead-and chromate-free, universal modified-alkyd primer with good resistance to normal atmospheric corrosion, complying with performance requirements of FS TT-P-664.

B. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds and repair painting galvanized steel, with dry film containing not less than 93 percent zinc dust by weight, and complying with DOD-P-21035A or SSPC-Paint 20.

2.4 GROUT

A. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404, Size No. 2. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning."

2.6 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened unless indicated otherwise.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. New steel members: SSPC-SP 2, "Hand Tool Cleaning."
2. Existing steel members: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils.

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Contractor will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened or Pretensioned, as indicated.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using High-Strength Bolts."
1. Where Pretensioned bolts are required, testing agency to inspect that minimum required pretension force is achieved.

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

3.7 HAZARDOUS LEAD PAINT REMOVAL

A. Pollution Control: During field painting operations, use all necessary precaution to prevent dispersion of surface preparation debris, paint, or any other material outside the work area due to wind or any other reason.

B. Hazardous Paint Removal

1. All painted surfaces have lead based paint so furnish a containment and spill control plan for surface preparation and painting operations and await review of approval of said plan before beginning work. This plan shall meet Class 2A in accordance with SSPC Guide 6. This work shall be performed by a SSPC QP-2 certified contractor.
2. Monitor air quality. Any visible emissions outside the containment structure or air quality monitoring results exceeding the permissible OSHA action level are justification for suspension of the work. Monitor air quality at random locations within one foot to 5 feet from the enclosure in accordance with National Institute of Occupational Safety and Health (NIOSH) Method 7082.
3. Immediately collect and retain any spilled dust or paint debris in approved containers. If a spill results in soil or water contamination, take all necessary actions to remediate the site to its original state.

C. Waste Handling: Clean and dispose of any incidental material or equipment that is contaminated as the result of work performed.

D. Health and Safety Responsibility: Before beginning work, certify to the Engineer that all personnel involved with lead paint removal operations (including rigging and material handling personnel) are properly trained and understand the applicable pars of EPA, 40 CFR Part 745, OSHA Standards, 29 CFR Part 1910 and CFR Part 1926 including any amendments in force at the time of this contract.

END OF SECTION 051200

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Roof deck.

B. Related Requirements:

1. Division 03 Section "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Division 09 Section “High Performance Coatings” for repair painting of primed deck and finish painting of deck.

1.3 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

C. Welding certificates.

D. Product Certificates: For each type of steel deck.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.

F. Evaluation Reports: For steel deck.

G. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.2 ROOF DECK

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. ASC Profiles, Inc.; a Blue Scope Steel company.
2. Canam United States; Canam Group Inc.
3. CMC Joist & Deck.
4. Consolidated Systems, Inc.; Metal Dek Group.
5. Cordeck.
6. DACS, Inc.
7. Epic Metals Corporation.
8. Marlyn Steel Decks, Inc.
9. New Millennium Building Systems, LLC.
10. Nucor Corp.; Vulcraft Group.
11. Roof Deck, Inc.
12. Valley Joist; Subsidiary of EBSCO Industries, Inc.
13. Verco Manufacturing Co.
14. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade G60 zinc coating.
2. Deck Profile: Contractor to field measure and match profile of existing deck.
3. Profile Depth: Contractor to field measure and match profile of existing deck.
4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: Simple span.
6. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.3 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter.

I. Galvanizing Repair Paint: ASTM A 780.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

1. Weld Diameter: 5/8 inch, nominal.
2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 18 inches apart, maximum.
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum.

D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

E. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Repair Painting: Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Division 09 Section "High Performance Coatings."

C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 053100

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Metal floor plate.
2. Trench drain grating.

B. Related Sections:
1. Division 05 Section "Structural Steel Framing."

1.3 SUBMITTALS

A. Product Data: For the following:

1. Metal nosings and treads.
2. Trench drain grating.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1.4 SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

D. Abrasive-Surface Floor Plate: Steel plate with diamond tread pattern.
   1. Size: As indicated on drawings

E. Plate Stair Treads
   1. Thickness and size as indicated on drawings.

2.3 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Division 09 Section "High-Performance Coatings."

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

2.5 METAL FLOOR PLATE

A. Fabricate from abrasive-surface floor diamond plate of thickness indicated below:

1. Thickness: As indicated on drawings.

B. Provide steel angle supports as indicated.

2.6 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.7 TRENCH DRAIN GRATING

A. Material: Grate to match existing cast iron material.

B. Contractor to field verify existing trench width and fabricate grating to match. Grates shall have openings no larger than ½”.

C. Grating shall be H-20 vehicular rated.

D. Grating shall be mechanically fastened to existing trench. Contractor to submit plans on how to mechanically fasten trench for Engineer’s approval.

2.8 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.9 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with primers specified in Division 09 Section "High-Performance Coatings".

C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Items Indicated to Receive Primers Specified in Division 09 Section "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
4. Other Items: SSPC-SP 3, "Power Tool Cleaning."

D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.2 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 painting Sections.

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Steel railings.
2. Aluminum railings.
3. Metal infill mesh.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
b. Infill load and other loads need not be assumed to act concurrently.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of mechanically connected railings.
2. Railing brackets.
3. Grout, anchoring cement, and paint products.
4. Stair 1 infill mesh.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: For products involving selection of color, texture, or design.

D. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

E. Qualification Data: For qualified professional engineer.

F. Welding certificates.

G. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6, "Structural Welding Code - Stainless Steel."

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.7 COORDINATION AND SCHEDULING

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Steel Pipe and Tube Railings:

a. Pisor Industries, Inc.
b. Wagner, R & B, Inc.; a division of the Wagner Companies.

2. Aluminum Pipe and Tube Railings:

a. ATR Technologies, Inc.
b. Blum, Julius & Co., Inc.
c. Braun, J. G., Company; a division of the Wagner Companies.
d. CraneVeyor Corp.
e. Hollaender Manufacturing Company.
f. Kee Industrial Products, Inc.
g. Moultrie Manufacturing Company.
h. Pisor Industries, Inc.
i. Sterling Dula Architectural Products, Inc.; Div. of Kane Manufacturing.
j. Superior Aluminum Products, Inc.
k. Thompson Fabricating, LLC.
l. Tri Tech, Inc.
m. Tubular Specialties Manufacturing, Inc.
n. Tuttle Railing Systems; Div. of Tuttle Aluminum & Bronze, Inc.
o. Wagner, R & B, Inc.; a division of the Wagner Companies.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.3 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.

B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

1. Provide galvanized finish for exterior installations and where indicated.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. Woven-Wire Mesh: Intermediate-crimp, square pattern, 2-inch woven-wire mesh, made from 0.135-inch nominal diameter wire complying with ASTM A 510.

2.4 ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

B. Extruded Bars and Tubing: ASTM B 221 (ASTM B 221M), Alloy 6063-T5/T52.

C. Extruded Structural Pipe and Round Tubing: ASTM B 429/B 429M, Alloy 6063-T6.

1. Provide Standard Weight (Schedule 40) pipe, unless otherwise indicated.

2.5 FASTENERS

A. General: Provide the following:
1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
2. Aluminum Railings: Type 304 stainless-steel fasteners.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:

1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.

2.6 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

1. For aluminum railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

F. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.7 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with either welded or nonwelded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.

3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.

J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.

K. Form changes in direction as follows:

1. As detailed.

L. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

M. Close exposed ends of railing members with prefabricated end fittings.

N. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

O. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

P. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

Q. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

R. Woven-Wire Mesh Infill Panels: Fabricate infill panels from woven-wire mesh crimped into 1-by-3/8-by-1/8-inch frames. Make wire mesh and frames from same metal as railings in which they are installed.

1. Orient wire mesh with wires horizontal and vertical.

2.8 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.9 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize steel and iron railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
5. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

D. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

E. Shop-Painted Finish: Comply with Division 09 Section "High-Performance Coatings."

1. Color: As selected by Owner from manufacturer's full range.

2.10 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.
1. Color: As selected by Owner from full range of industry colors and color densities.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.3 ANCHORING POSTS

A. Use metal sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Form or core-drill holes not less than 4 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

C. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.

D. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:

1. For aluminum pipe railings, attach posts using fittings designed and engineered for this purpose.
2. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

E. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.4 ADJUSTING AND CLEANING

A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 Section "High-Performance Coatings."

D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.5 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055213

SECTION 071900 - WATER REPELLENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes penetrating water-repellent for the following horizontal and vertical surfaces:

1. Exposed cast-in-place concrete parking floors

B. Related Sections:

1. Division 01 Section “Unit Prices”
2. Division 03 Section "Maintenance of Cast-in-Place Concrete"

1.3 UNIT PRICES

A. Unit price includes cleaning of the concrete surface to remove any substance that might interfere with the sealer application, testing the surface to see if it is sufficiently dry according to the manufacturer’s written instructions, testing for pH level according to the manufacturer’s written instructions, and application of penetrating silane sealer. Unit of measure will be paid for by the square foot of area repaired.

B. General Performance: Water repellents shall meet performance requirements indicated without failure due to defective manufacture, fabrication, or installation.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.
3. Include manufacturer's specifications, surface preparation and application instructions, recommendations for water repellents for each surface to be treated, and protection and cleaning instructions. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with requirements.

B. Qualification Data: Signed by Manufacturer certifying that the Applicator complies with requirements.

C. Certification by water repellent manufacturer that products supplied complies with local regulations controlling use of VOCs.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who employs only persons trained and approved by water repellent manufacturer for application of manufacturer's products.

B. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:

1. Concrete surfaces and mortar have cured for not less than 28 days.
2. Ambient temperature is above 40 deg F (4.4 deg C) and below 100 deg F (37.8 deg C) and will remain so for 24 hours.
3. Substrate is not frozen and substrate-surface temperature is above 40 deg F (4.4 deg C) and below 100 deg F (37.8 deg C).
4. Rain or snow is not predicted within 24 hours.
5. Not less than 24 hours have passed since surfaces were last wet.
6. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.7 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Project Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Project Documents.

B. Special Penetrating Water Repellent Warranty: Submit a written warranty, executed by the applicator and water repellent manufacturer, covering materials and labor, agreeing to repair or replace materials that fail to provide water repellency within the specified warranty period. Warranty does not include deterioration or failure of sealer due to unusual weather phenomena, failure of prepared and treated substrate outside Contractor’s control, formation of new joints and cracks in excess of 1/16 inch (1.5 mm) wide, fire, vandalism, or abuse by maintenance equipment.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

A. Material Requirements:

1. Absorption: Minimum 90% reduction of absorption after 24 hours in comparison of treated and untreated specimens

   a. Concrete Unit Masonry: ASTM C 140
   b. Hardened Concrete: ASTM C 642

2. Water-Vapor Transmission: Maximum 10% reduction in rate of vapor transmission in comparison of treated and untreated specimens, per ASTM E 96.
3. Water Penetration and Leakage through Masonry: Maximum 90% reduction in leakage rat in comparison of treated and untreated specimens, per ASTM E 514.
4. Durability: Maximum 5% loss of water repellency after 2500 hours of weathering in comparison to specimens before weathers, per ASTM G 53
5. Chloride-Ion Intrusion in Concrete: Transportation Research Board, National Research Council's NCHRP Report 244, Series II tests.

   a. Reduction of Water Absorption: 80%
   b. Reduction in Chloride Content: 85%

B. Silane, Penetrating Water Repellent: Clear, containing 100 percent solids of alkyltrialkoxysilanes; with no solvent carrier; and with 400 g/L or less of VOCs.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Protectosil BHN or CIT; Evonik Industries (previously used on roof level)
   b. Euclid Baracade Silane 100; The Euclid Chemical Company.
   c. Klereseal 9100-S; Pecora Corporation.
   d. Iso-Flex 618-100 CRS; LymTal International, Inc.
   e. Any manufacturer approved by the Engineer as a provider of an equal product and equal or better service.
2. Specified products should be applied at a rate not to exceed 125 sq. ft/gal.

C. VOC-Complying Water Repellents: Products complying with local regulations controlling use of VOCs, as certified by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.

1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements.
2. Inspect for previously applied treatments that may inhibit penetration or performance of water repellents.
3. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
4. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

C. Test Application: Before performing water-repellent work, including bulk purchase and delivery of products, prepare a small application in an unobtrusive location and in a manner approved by Engineer to demonstrate the final effect (visual, physical, and chemical) of planned application. Proceed with work only after Engineer approves test application or as otherwise directed.

1. Revisions of planned application, if any, as requested by Engineer, will be by Change Order if they constitute a departure from requirements of Project Documents at the time of contracting.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions.

1. Cast-in-Place Concrete: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents according to ASTM E 1857.

2. Use shot blasting or as required per manufacturer’s recommendations.

B. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.

C. Coordination with Sealants: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

3.3 APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Apply a heavy-saturation coating of water repellent, on surfaces indicated for treatment, using 15 psi- (103 kPa-) pressure spray with a fan-type spray nozzle to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Testing of Water-Repellent Material: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when water repellent is being applied:

1. Owner will engage the services of a qualified testing agency to sample water-repellent material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of water-repellent material with product requirements.

3.5 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Engineer.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071900

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Exterior urethane joint sealants in the vertical surfaces and horizontal non-traffic surfaces, including removal / replacement of existing joint sealant.

2. Exterior urethane joint sealants in horizontal traffic surfaces, including removal / replacement of existing joint sealant.

B. Related Sections:

1. Division 01 Section “Unit Prices”
2. Division 03 Section “Maintenance of Cast-In-Place Concrete”
3. Division 04 Section "Maintenance of Unit Masonry"

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Engineer.
2. Conduct field tests for each application indicated below:

   a. Each kind of sealant and joint substrate indicated.

3. Notify Engineer seven days in advance of dates and times when test joints will be erected.

4. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
5. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Qualification Data: For qualified Installer.

D. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

F. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

G. Field-Adhesion Test Reports: For each sealant application tested.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original, unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer’s written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

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

2.2 URETHANE JOINT SEALANTS

A. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Pecora Corporation; Dynatrol II.
   b. Sika Corporation, Construction Products Division; Sikaflex - 2c NS.
   c. Tremco Incorporated; Dymeric 511.
   d. LymTal International; Iso-Flex 881

2. Applications:
   a. Joints in masonry.
   b. Other exterior, non-traffic joints for which no other sealant is indicated.

B. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920. Type M, Grade P, Class 25, for Use T and I.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Pecora Corporation; Dynatroll II-SG
   b. Sika Corporation, Construction Products Division; Sikaflex – 2c SL.
   c. Tremco Incorporated; THC-900.
   d. LymTal International, Inc.; Iso-Flex 880 GB.

2. Applications:
   a. Joints between and/or in concrete members.
   b. Routed and sealed concrete joints in floors.
   c. Other exterior, traffic joints for which no other sealant is indicated.

2.3 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; 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.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Standard Specifications and Repair Methods:
   1. ACI 504R – Guide to Sealing Joints in Concrete Structures
   2. ASTM C 1193 – Standard Guide for Use of Joint Sealants

B. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint 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 after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. The final surface shall be clean, dry, and free from oil, dirt, and other contaminants. Porous joint substrates include the following:
      a. Concrete
      b. Precast-Prestressed concrete.
   3. Remove laitance and form-release agents from concrete.

4. Clean nonporous surfaces with chemical cleaners or other means that do no stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
   a. Metal.

B. Joint Repair and Saw-Cutting: Any joint edges that are damaged shall be repaired using an approved rapid strength repair mortar installed in accordance with the manufacturer's instructions. If the sides of the joint are damaged, uneven, or has other irregularities that will adversely affect adhesion of the sealant, new joint edges shall be saw-cut. If the joint is too shallow or 'V' shaped, the existing joint shall be saw-cut to the proper depth and form square cut sides. For rout and seal repairs, joint shall be routed or cut into concrete along the centerline of the crack to the required width and depth.

C. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

D. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

   a. Perform five tests for the first 500 feet of joint length for each kind of sealant and joint substrate.
   b. Perform 1 test for each 500 feet of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

   a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

   a. Whether sealants filled joint cavities and are free of voids.
   b. Whether sealant dimensions and configurations comply with specified requirements.
   c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory.

Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

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

3.6 PROTECTION

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

END OF SECTION 079200

SECTION 079500 - EXPANSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Parking and open-air structure expansion control systems.

B. Related Requirements:
   1. Division 01 Section “Unit Prices”

1.3 DEFINITIONS

A. Maximum Joint Width: Widest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

B. Minimum Joint Width: Narrowest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

C. Movement Capability: Value obtained from the difference between widest and narrowest widths of a joint opening typically expressed in numerical values (mm or inches) or a percentage (plus or minus) of nominal value of joint width.

D. Nominal Joint Width: The width of the linear opening specified in practice and in which the joint system is installed.

1.4 PERFORMANCE REQUIREMENTS

A. Design Consultation: The system Manufacturer shall review and approve all joint layouts, methods of providing joints, concrete finishing and curing methods, and related details prior to construction. A site inspection shall be made by personnel authorized by the system Manufacturer prior to commencing installation of the expansion joint system for purposes of reviewing and approving related conditions affecting performance requirements of this specification. A pre-construction conference shall be held at the site prior to installation of the first joint system. The purpose of this conference is for the Manufacturer to review the installation process and site conditions with the Contractor, Installer, Owner, and Engineer.

1.5 SUBMITTALS

A. Shop Drawings: For each expansion control system specified. Include plans, elevations, sections, details, splices, blockout requirement, attachments to other work, and line diagrams showing entire route of each expansion control system. Where expansion control systems change planes, provide isometric or clearly detailed drawing depicting how components interconnect.

B. Samples: For each exposed expansion control system and for each color and texture specified, full width by 6 inches long in size.

C. Product Test Reports: For tests performed by a qualified testing agency.

D. Warranty: Include sample warranty.

E. Manufacturer’s pre-installation site inspection form.

1.6 QUALITY ASSURANCE

A. Contractor’s Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

B. Installer Qualifications: In addition to other requirements in Division 1 Section “Quality Requirements”, retain an experienced, licensed installer who has specialized in installing expansion joint seal systems similar in material, design, and extent to those indicated for this Project and whose work has resulted in expansion joint installations with a record of successful in-service performance.

C. Manufacturer Qualifications: In addition to other requirements in Division 1 Section "Quality Requirements," Manufacturers shall have factory-trained representatives who are available for consultation and Project site inspection at no additional cost.

D. Source Limitations: Obtain expansion joint seal systems through one source from a single manufacturer.

E. Product Options: Drawings indicate size, profiles, and dimensional requirements of expansion joint seal systems and are based on the specific systems indicated. Refer to Division 01 Section "Product Requirements."

F. Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)" and ICC A117.1.

G. Maintenance: The Manufacturer shall provide the Owner a preventative maintenance guideline for parking structure expansion joints.

H. Preconstruction Conference: Conduct conference at Project site to comply with requirements in Division 01.

I. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

1.7 PROJECT CONDITIONS

A. Coordinate the installation of the joint system with related work. Protect installed units until accepted by Owner.

B. Ambient temperature shall not be lower than 40 degrees F during installation. Note that gap size will change with cold and hot temperature extremes. Gap measurement should optimally be carried out at the mid-point of the average temperature range for the area of installation.

C. The environment should be free of dust, oil, grease, wax, moisture, and frost. The gap wall surfaces must be thoroughly cleaned.

D. No installation may be performed in rainy weather, or when rain is expected for one hour before installation. All surfaces must be completely dry prior to applying any adhesive.

E. Personnel shall read the Material Safety Data Sheet for all components before beginning the installation.

F. Upon completion of this work, remove trash and debris on the site caused by work under this section.

1.8 WARRANTY

A. The system Manufacturer and Installer shall jointly furnish a written single-source material and installation warranty that the expansion joint seal system will be free of defects related to workmanship or material deficiency for a five (5) year period from the date of substantial completion. The following problems shall be specifically covered under the warranty:

1. Cohesive and adhesive failure of the seal.
2. Weathering deficiencies resulting in failure of the seal.
3. Leakage of the seal resulting from deficiencies in the workmanship or material of the seal or its installation.
4. Abrasion or tear failure from normal use and leakage at the joint.

B. The materials involved in this application shall be produced by the Manufacturer and installed by the Certified Installer. The warranty shall insure the performance of the expansion joint systems when installed in accordance with Manufacturer's directions.

C. The system Manufacturer shall submit a detailed warranty statement consistent with the terms of this specification prior to construction for approval. The approved warranty shall be made part of the contractual agreement and shall represent the sole warranty statement for the expansion joint seal systems.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. General: Provide expansion control systems of design, basic profile, materials, and operation indicated. Provide units with capability to accommodate variations in adjacent surfaces.

1. Furnish units in longest practicable lengths to minimize field splicing. Install with hairline mitered corners where expansion control systems change direction or abut other materials.
2. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion control systems.

2.2 PARKING AND OPEN-AIR STRUCTURE EXPANSION CONTROL SYSTEMS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. MM Systems Corporation. (BASIS OF DESIGN)
2. EMSEAL Corporation.
3. Erie Metal Specialties, Inc.
4. LymTal International, Inc.
5. Tremco Incorporated.
6. Any Manufacturer approved by the Engineer as a provider of an equal product and equal or better quality service.

B. Source Limitations: Obtain expansion control systems from single source from single manufacturer.

C. Slab-to-Slab:

1. Basis-of-Design Product: MM Systems, Model LMS-350.
2. Design Criteria:

a. Nominal Joint Width: 2.75 inches.
b. Minimum Joint Width: 1.75 inches.
c. Maximum Joint Width: 3.5 inches.

3. Type: Winged seal
4. Color: Black.

2.3 MATERIALS

A. Elastomeric Concrete: Modified epoxy or polyurethane extended into a prepackaged aggregate blend, specifically designed for bonding to concrete substrates.

B. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces where expansion control systems will be installed for installation tolerances and other conditions affecting performance of work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to expansion control system manufacturer's written instructions.

B. Repair concrete slabs and blockouts using manufacturer's recommended repair grout of compressive strength adequate for anticipated structural loadings.

C. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion control systems. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion control systems.

D. Membrane Seal Mitered Directional Changes – Provide factory pre-fabricated directional changes for 90 degree corners, tees, and crosses. Only straight butt splice connections shall be spliced on the jobsite. Ensure that all internal and external webs of the seal profile are properly bonded at all splice locations. Apply a secondary lap splice strip to the underside of the seal.

E. All foreign materials must be totally removed from the gap, including the existing expansion joint and form materials. The heads must first be cleaned out by sandblasting and then vacuumed or blown with dry, oil free, compressed air.

F. Rework the interior faces of the expansion joint openings to provide a uniform width as directed by the Engineer.

G. The Contractor shall provide a blockout per the Manufacturer and project requirements. Any edge or area in need of repair shall utilize applicable repair materials recommended in Division 3 Section “Maintenance of Cast-in-Place Concrete.”

H. The areas adjacent to the joint must be masked with tape to assure neat, clean, joint lines.

I. Work shall not proceed with the expansion joint seal installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer, and as reviewed by the Engineer.

J. The openings shall be thoroughly cleaned as recommended by the seal Manufacturer prior to installation of the seal system.

K. Work shall not proceed under adverse weather conditions or when temperatures are below or above Manufacturer's recommended limitations for installation.

3.3 INSTALLATION

A. Comply with manufacturer's written instructions for storing, handling, and installing expansion control systems and materials unless more stringent requirements are indicated.

B. Terminate exposed ends of joint assemblies with field- or factory-fabricated termination devices.

C. The seal system Manufacturer shall assume direct contractual responsibility for installation of the seal system.

D. Expansion joint system is to be installed in strict accordance with the Manufacturer's instructions by installers certified by the seal system Manufacturer.

E. Non durable and unsound concrete at the joint gap edge must be removed and the concrete must be totally repaired per the seal system Manufacturer. All cracks shall be repaired.

F. The profile shall be cut to the correct length of the appropriate gap for installation, without pulling or exerting excess tension.

G. Clean and abrade sides of profile per the Manufacturer's instruction.

H. Mix adhesive according to Manufacturer's directions only after all preparation of gap and profile are complete.

I. Refer to Manufacturer's Installation Guide for detailed step-by-step instructions on how to install the rubber seal and high strength epoxy adhesive materials.

J. The contractor shall ensure that the joint opening sidewall interfaces run parallel to each other for the entire length of the joint. Sidewalls should be plumb and interfaces must be continuously equidistant from each other across the joint width to accommodate the proper installation of the expansion joint seal system.

K. Expansion joints shall extend a minimum of 6” up at end terminations.

3.4 PROTECTION

A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over expansion control systems. Reinstall cover plates or seals prior to Substantial Completion of the Work.

END OF SECTION 079500

SECTION 099150 - TRAFFIC STRIPING PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes traffic paint for the following applications:

1. Stall striping and pavement markings.

B. Related Sections include the following:

1. Division 01 Section “Unit Prices”

1.3 SUBMITTALS

A. Product Data: For each product indicated.

B. Traffic Striping Layout: According to the contract drawings and existing conditions.

C. Warranty: Include sample warranty, as applicable.

1.4 QUALITY ASSURANCE

A. Installer (Applicator) Qualifications: An experienced applicator, approved by the paint manufacturer, who is specialized in installing work similar in material, design, and extent to that indicated for this Project.

B. Source Limitations: Obtain traffic striping paint from a single manufacturer.

C. Warranty: Provide material with a minimum of one (1) year manufacturer warranty.

D. Preinstallation Conference: Conduct conference at Project Site to comply with requirements in Division 01 Section “General Requirements”

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels showing the following information:

1. Manufacturer's brand name.
2. Type of material.
3. Directions for storage.
4. Date of manufacture and shelf life.
5. Lot or batch number.
6. Mixing and application instructions.
7. Color.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue. Protect from freezing. Keep storage area neat and orderly.

1.6 PROJECT CONDITIONS

A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

C. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

1. Quantity: 3 percent, but not less than 1 gal. (3.8 L) or 1 case, as appropriate, of each material and color applied.

PART 2 - PRODUCTS

2.1 MATERIALS

A. VOC Content: Provide waterproofing and traffic paint materials that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Pavement-Marking Paint: 150 g/L.

2.2 PAVEMENT MARKINGS

A. Pavement-Marking Paint: Waterborne acrylic, ready mixed, complying with FS TT-P-1952B, with drying time of less than 45 minutes.

1. Available Products:

a. ICI Devoe Paint Centers; Acrylic Traffic Paint DV850XX.
b. Sherwin-Williams Co.; Setfast Acrylic Waterborne Traffic Paint TM226/TM227.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.

1. Available Products:
   a. Benjamin Moore & Co.; Safety & Zone Marking Latex M58.
   b. PPG Industries, Inc. (Pittsburgh Paints); Speedhide Traffic and Zone Marking Latex 11-23.

C. Color: Coordinate with Owner.
1. White: standard striping, stop bars and directional arrows.
2. Yellow: curbs and cross-hatch striping.
3. Blue: Spaces accessible to people with disabilities.

D. Glass Beads: Beads (Glass Spheres) shall be used in all pavement markings except stall striping lines and shall conform to FS TT-B-1325, Type I or AASHTO M247, Type I. Glass beads used in all pavement marking shall be a minimum of 80% true spheres when tested according to ASTM-D-1155.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Comply with procedures specified in PDCA P4 for inspection and acceptance of surfaces to be painted.

3.2 PREPARATION

A. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

B. Material Preparation:

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.

3.3 APPLICATION

A. Do not apply traffic paint for striping and other markings until traffic coating has cured according to manufacturer's written recommendations (see Division 07 “Traffic Coatings”).

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to Manufacturer's written instructions.

D. Minimum Coating Thickness: Per manufacturer’s recommendations.

E. Apply paint materials minimum 15 mil in two equal coats. Provide total dry film thickness of the entire system as recommended by manufacturer.

F. Glass Beads: Glass beads shall be distributed upon the marked areas immediately after application of the paint. A dispenser shall be furnished which is properly designed for attachment to the marking machine and suitable for dispensing glass beads.
1. Glass beads shall be applied at the manufacturer’s specified rate (but not less than 6lbs/gal of paint) and evenly distributed while the liquid marking is still fluid.
2. Bead dispensers shall be calibrated at the beginning of the project to the proper flow rate and monitored throughout the course of the project to ensure proper bead coverage.
3. Glass beads shall adhere to and be properly embedded in the cured paint or all marking operations shall cease until corrections are made.
4. A night inspection of the markings is advisable to check for uniform reflectivity of the markings.
5. Test for bead adhesion shall be conducted in accordance with FS TT-P-850 Section 4.3.6 excepting Section 4.3.6.2.

G. Concrete Curb, Directional Arrows, and Striping:
1. Traffic and Zone Marking Paint: Two coats.
   a. Finish Coat: Traffic and Zone Marking Paint.
2. Paint face of curb and top 6” of curb.

3.4 PROTECTING AND CLEANING

A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Engineer.

C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION 099150

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and application of high-performance coating systems on the following substrates:
   1. Steel.
   2. Galvanized metal.

B. Related Requirements:

   1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
   2. Division 09 painting Sections for special-use coatings and general field painting.

1.3 DEFINITIONS

A. Refer to ASTM D 16, unless otherwise specified.

B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state and measure in mils (1/1000-inch).

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.

B. Samples for Verification: For each type of coating system and in each color and gloss of topcoat indicated.

   1. Submit Samples on rigid backing, 8 inches square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
3. VOC content.

1.5 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Engineer will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.

   a. Provide samples of at least 100 sq. ft..

2. Final approval of color selections will be based on mockups.

   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Engineer at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

B. Preinstallation Conference: Conduct conference at Project site.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer and Owner of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
3. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F, or as recommended by the Manufacturer.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F, or as required by the Manufacturer.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces, or as required by the Manufacturer.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 HIGH-PERFORMANCE COATINGS, GENERAL

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Tnemec. (BASIS OF DESIGN)
2. Carboline
3. Ameron
4. Any manufacturer approved by the Engineer as a provider of an equal product and equal or better service.

B. Material Compatibility:

1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
3. Provide products of same manufacturer for each coat in a coating system.

C. Colors: As selected by Engineer and Owner from manufacturer's full range.

1. Include color selection to match existing paint.

2.2 HIGH PERFORMANCE COATING SCHEDULE

A. Steel – Exterior, UV, and Weather exposed steel:

1. System Type: Epoxy/urethane.
2. Surface Preparation: SSPC-SP 6 / NACE 3.
3. Primer: Series 135 Chembuild. DFT 4.0 to 6.0 mils.
4. Finish Coat: Series 73 Endura-Shield. DFT 2.0 to 3.0 mils.
5. Total DFT: 6.0 to 9.0 mils.

2.3 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter to comply with paint manufacturer’s published recommendations.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Examine areas and conditions under which coating systems are to be applied. Notify Engineer of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
   1. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

   1. Use applicators and techniques suited for coating and substrate indicated.
   2. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Contractor to coordinate the services of the Manufacturer to inspect and test coatings for dry film thickness.

   1. Contractor shall touch up and restore coated surfaces damaged by testing.
   2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Engineer, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 099600

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Panel signs.
2. Directional signs outside of deck.

B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for temporary Project identification signs and for temporary information and directional signs.

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
2. Provide message list, typestyles, graphic elements, including tactile characters and Braille as necessary, and layout for each sign.
3. Wiring Diagrams: Power, signal, and control wiring.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

1. Aluminum.
2. Die-cut vinyl characters and graphic symbols. Include representative samples of available typestyles and graphic symbols.

D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:

1. Provide full-size samples for sign types PS-3 and PS-5.

E. Sign Schedule: Use same designations indicated on Drawings.

F. Qualification Data: For Installer and fabricator. Manufacturer's certification showing familiarity with fabricating retro-reflectorized signage, and list of past projects which have similar signage requirements as those outlined in this specification.

G. Maintenance Data: For signs to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative of the sign manufacturer.

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Manufacturer shall be familiar with and able to meet all requirements of Section 1093 "Retroreflective Sheeting" of the "Standard Specifications for Roads and Structures", NCDOT.

C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

D. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

B. For signs supported by or anchored to permanent construction, the Contractor shall advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.

1.8 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of metal finishes beyond normal weathering.
b. Deterioration of embedded graphic image colors and sign lamination.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.

B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 6063-T5.

C. Applied Vinyl: Die-cut characters from vinyl film of nominal thickness of 3 mils (0.076 mm) with pressure-sensitive adhesive backing, suitable for exterior applications.

2.2 PANEL SIGNS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Allenite Signs; Allen Marking Products, Inc.
2. APCO Graphics, Inc.
3. ASI-Modulex, Inc.
4. Best Sign Systems Inc.
5. Grimco, Inc.
6. Innerface Sign Systems, Inc.
7. Mills Manufacturing Company.
8. Mohawk Sign Systems.
9. Seton Identification Products.
10. Signature Signs, Incorporated.
11. Supersine Company (The)

B. Exterior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements:

1. Aluminum Sheet: 0.080 inch (2.03 mm) thick.
2. Edge Condition: Beveled.
3. Corner Condition: Rounded to radius indicated.
4. Mounting: As indicated.

    a. Manufacturer's standard anchors for substrates encountered.

5. Custom Paint Colors: Match Pantone color matching system.
6. Color: As indicated.

C. Signs shall have Type II reflectorized sheeting, meeting all requirements of AASHTO M268, and all requirements Section 1093, “Standard Specifications for Roads and Structures,” January 1, 2006, NCDOT. Sheeting shall consist of lens elements embedded within a transparent plastic, having a smooth, flat outer surface. Material shall be flexible, and free of ragged edges, cracks, and extraneous materials. The reflective vinyl shall meet the following requirements:

1. The retroreflective sheeting surface shall be solvent resistant, such that it may be cleaned with petroleum based cleaning products.
2. The retroreflective sheeting shall have the minimum brightness values (SIA) as shown in Tables 4, 5, and 6 of AASHTO M268.
3. The coefficient of retroreflection shall not be less than 70% of the values for the corresponding colored reflective sheeting shown in Tables 4 and 5 of AASHTO M268.
4. The retroreflective sheeting shall have an 85 degree specular gloss of not less than 40.
5. Retroreflective sheeting shall have a heat activated adhesive backing which shall provide for application of the sheeting without the necessity of additional adhesive coats on either the retroreflective sheeting or application surface.
6. Retroreflective sheeting shall meet the colorfastness requirements of AASHTO M268.
7. 3M Hi Prismatic Reflective vinyl sheeting or approved equal.

D. Brackets: Fabricate brackets and fittings for bracket-mounted signs from extruded aluminum to suit panel sign construction and mounting conditions indicated. Factory paint brackets in color matching background color of panel sign.

E. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by Grade 2 Braille. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.

1. Panel Material: Opaque acrylic sheet.
2. Raised-Copy Thickness: Not less than 1/32 inch (0.8 mm).

F. Engraved Copy: Machine engrave letters, numbers, symbols, and other graphic devices into panel sign on face indicated to produce precisely formed copy, incised to uniform depth.

1. Engraved Plastic Laminate: Engrave through exposed face ply of plastic-laminate sheet to expose contrasting core ply.
2. Engraved Metal: Fill engraved copy with enamel.

3. Engraved Opaque Acrylic Sheet: Fill engraved copy with enamel.
4. Face-Engraved Clear Acrylic Sheet: Fill engraved copy with enamel. Apply opaque background color coating to back face of acrylic sheet.

G. Applied Vinyl: Die-cut characters from vinyl film of nominal thickness of 3 mils (0.076 mm) with pressure-sensitive adhesive backing. Apply copy to exposed face of panel sign.

2.3 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

B. Accessible Parking Signs:

1. Material: 0.080-inch aluminum or other noncorrosive material.
2. Background Color: Blue.
3. Copy Material: Reflective vinyl.
4. Mounting: Flush mounted to building with fasteners to suit building substrate or post-mounted as indicated.
5. Signs to meet all requirement of the North Carolina State Building Code, 2002 Edition, and Volume 1C.

2.4 FABRICATION

A. General: Provide manufacturer's standard signs of configurations indicated.

1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
3. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

2.5 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: Manufacturer's standard Class 1 clear anodic coating, 0.018 mm or thicker, over a polished (buffed) mechanical finish, complying with AAMA 611.

B. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, are sized and located to accommodate signs.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches (75 mm) of sign without encountering protruding objects or standing within swing of door.

B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.

1. Shim Plate Mounting: Provide 1/8-inch- (3-mm-) thick, concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach plate with fasteners and anchors suitable for secure attachment to substrate. Attach panel signs to plate using method specified above.
2. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

C. Bracket-Mounted Signs: Provide manufacturer's standard brackets, fittings, and hardware for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with manufacturer's written instructions.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 101400

Kimley-Horn and Associates, Inc.
333 Fayetteville St., Ste. 600
Raleigh, NC 27601
Office – (919) 835-1494
Fax – (919) 653-5847

City of Durham
2011 Fay Street
Durham, NC 27704
Office – (919) 560-4197

Daily Report
Church Street Parking Deck Structural Rehabilitation

Date: _____ **Prime Contractor:** _____

Project Name: Church Street Parking Deck Structural Rehabilitation

Project Address: 109 South Mangum Street, Durham, NC, 27701

Start Time: _____ **End Time:** _____

General Weather Conditions: _____ **High Temp:** _____ **Low Temp:** _____

List of Contractors on Site (include approximate number of personnel):

_____

_____

_____

Provide brief description of work performed today:

_____

_____

_____

_____

List of All Meetings and Significant Decisions:

_____

_____

_____

_____

List Stoppages, Delays, Shortages, and Losses (include reason if applicable):

_____

_____

_____

List Substantial Completions Authorized:

_____

_____

_____

_____

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Office – (919) 835-1494
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City of Durham
2011 Fay Street
Durham, NC 27704
Office – (919) 560-4197

Measured Repair Quantities:

Repair Type	Unit	Completed To-day	Project To Date	Bid Quantities
3.1 – Elevated Ramp Slab Repl.	LS			
3.2 – Shallow Spall Repair	SF			
3.3 – Exposed Rebar Repair	SF			
3.4 – Rout/Seal Cracks & Joints	LF			
3.5 – Two-Way Crossover Removal	LS			
3.6 – Stair 1 Curb Repair	LS			
3.7 – ADA Curb Cut	LS			
3.8 – Vehicular Exit Curb	LS			
3.9 – SOG Shaving	LS			
3.10 – Deep Spall Repair	SF			
4.1 – Brick Isolation Joint Repair	LS			
4.2 – Wall Joint Repair	LF			
4.3 – Rotated Brick Repair	LS			
5.1 – Extensive Moment Connection	EA			
5.2 – Stair 1 Repair	SF			
5.3 – Stair 2 Repair	LS			
5.4 – Stair 3 Repair	LS			
5.5 – Perimeter Steel Beam Repair	LF			
5.6 – Metal Decking Repair	SF			
5.7 –Beam Repair Adjacent to Stair 1	LS			
5.8 – Typical Moment Connection	EA			
5.9 – Filler Beam Connection	EA			
5.10 – Steel Plate Installation	LF			
5.11 – Trench Drain Repair	LS			
5.12 – Stair 1Railing Repair	LS			
5.13 – Steel Bar Repair	LF			
5.14 – Stair Pan Remove/Replace	SF			
5.15 – Steel Cleaning/Repainting	SF			
5.16 – Web Repair Plates	EA			
5.17 – Column Line E Steel Repair	LF			
7.1 – Expansion Joint	LF			
7.2 – Remove/Replace Joint Sealant	LF			
7.3 – Apply Silane Sealer	SF			
9.1 – Restripe Pavement Markings	LS			
9.2 – New Pavement Markings	LS			
10.1 – Signage	LS			
26.1 – Relocate Light Fixture	LS			
Alternate No. ___				
Allowance No. ___				

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City of Durham
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Durham, NC 27704
Office – (919) 560-4197

Additional Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Signed:_____

Print: _____

April 8, 2011

Kimley-Horn and Associates, Inc.
333 Fayetteville Street, Suite 600
Raleigh, NC 27601

Attn: Mr. Chris Iser

Re: Lead Paint Sampling Results
Durham Parking Deck
Durham, North Carolina
Terracon Project No. 70111031

Dear Mr. Iser:

Terracon Consultants, Inc. (Terracon) conducted lead paint sampling on Monday April 4, 2011 at the above referenced location. This sampling was conducted in general accordance with Terracon's proposal P70110065 dated February 17, 2011. We understand that this sampling was requested to determine the presence of lead-containing paint on parking deck surfaces.

Lead-containing paint was identified on seventeen (17) of the twenty (20) surfaces sampled. Please refer to the attached analytical report for details.

Lead is regulated by the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA).

The Resource Conservation and Recovery Act (RCRA) gave the USEPA authority to regulate the waste status of demolition or renovation debris, including lead-containing materials. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leaching Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). EPA exempts from most RCRA requirements those generators whose combined hazardous waste generation is less than 100 kilograms (kg) per month.

Detectable lead quantities may constitute a lead dust hazard during renovation/demolition activities. Personnel performing renovation/demolition activities that may disturb painted components with concentrations of lead above the designated analytical detection limit should comply with all current OSHA regulations in order to minimize employee exposure. OSHA defines lead-based paint as a paint, which contains lead, regardless of the concentration. Currently, any proposed renovation/demolition is subject to the OSHA regulations (29 CFR 1926.62 – Lead Exposure in Construction). The OSHA regulation defines specific training requirements, engineering controls and working practices for construction personnel subject to this standard.

Occupational exposure to lead occurring in the course of construction work, including maintenance activities, painting, alteration and repairs is subject to the OSHA "Interim" Lead Exposure in Construction standard.

Construction work covered by 29 CFR 1926.62 includes any repair or renovation activities or other activities that disturb in-place lead-containing materials, but does not include routine cleaning and repainting where there is insignificant damage, wear, or corrosion of existing lead-containing coatings or substrates. Employers must assure that no employee will be exposed to lead at concentrations greater than 50 micrograms per cubic meter (μg/m3) averaged over an eight-hour period without adequate protection. The OSHA Standard also establishes an action level of 30 μg/m3 which if exceeded triggers the requirement for medical monitoring.

The above overview is not intended to be inclusive of all potentially pertinent regulatory information. The relevant EPA and OSHA standards should be consulted prior to undertaking activities involving the demolition, renovation, or maintenance of surfaces coated with lead-based paints.

Terracon appreciates the opportunity to provide this service to Kimley-Horn and Associates, Inc. If you have any questions regarding this report, or if you need assistance with project oversight and sampling during demolition or renovation of this structure, please contact the undersigned at 919.873.2211.

Sincerely,
Terracon Consultants, Inc.

Lee B. Clark
Staff Industrial Hygienist
Environmental Services

Amanda J. McKenney
Department Manager
Industrial Hygiene Services
NC Lead Paint Inspector #110220

Attachment: Laboratory Analytical Results

Appendix B

Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3rd Ed. Method No. 3050B/Method No. 7420

ACCREDITED LABORATORY AIHA Environmental Lead See aihalqap.org for details

Customer: Terracon
5240 Green's Dairy Rd
Raleigh NC 27616

Attn: Lee Clark
Amanda McKenney

Lab Order ID: 1104313
Analysis ID: 1104313_PBP
Date Received: 4/5/2011
Date Reported: 4/8/2011

Project: DPA-Durham Parking Authority

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Mass *(g)*	Analytical Sensitivity *(% by weight)*	Concentration *(% by weight)*
DPA-001 / 1104313PBP_1	Exterior beam-north side	0.0567	0.002%	**0.008%**
DPA-002 / 1104313PBP_2	Exterior beam-level 2 south side	0.0601	0.002%	**0.007%**
DPA-003 / 1104313PBP_3	Interior beam level 2 north side	0.0555	0.002%	**0.069%**
DPA-004 / 1104313PBP_4	Interior beam level 1 north side	0.0553	0.002%	**0.17%**
DPA-005 / 1104313PBP_5	Exterior channel north side	0.0599	0.002%	**0.010%**
DPA-006 / 1104313PBP_6	Exterior channel south side	0.0627	0.002%	**0.01%**
DPA-007 / 1104313PBP_7	Exterior column level 2 north	0.0544	0.002%	**0.009%**
DPA-008 / 1104313PBP_8	Exterior column level 2 south	0.0665	0.002%	**0.01%**
DPA-009 / 1104313PBP_9	Interior column level 1 north	0.0521	0.003%	**0.018%**
DPA-010 / 1104313PBP_10	Interior column level 1 south	0.0517	0.003%	**0.012%**

Scientific Analytical Institute successfully participates in the AIHA ELPAT for Lead program. ELPAT Laboratory ID: 173190 (R.L. = 0.01 wt.%)
The quality control samples run with the samples in this report have passed all AIHA required specifications unless otherwise noted.

Melissa Sharps (20)

Analyst

Approved Signatory

Scientific Analytical Institute, Inc. 302-L Pomona Dr. Greensboro, NC 27407 (336) 292-3888

Appendix B

Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3rd Ed. Method No. 3050B/Method No. 7420

ACCREDITED LABORATORY AIHA Environmental Lead See aihalqap.org for details

Customer: Terracon
5240 Green's Dairy Rd
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Attn: Lee Clark
Amanda McKenney

Lab Order ID: 1104313
Analysis ID: 1104313_PBP
Date Received: 4/5/2011
Date Reported: 4/8/2011

Project: DPA-Durham Parking Authority

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Mass *(g)*	Analytical Sensitivity *(% by weight)*	Concentration *(% by weight)*
DPA-011 / 1104313PBP_11	Exterior handrail notheast ramp	0.0635	0.002%	**<0.006%**
DPA-012 / 1104313PBP_12	Exterior handrail northwest	0.0574	0.002%	**<0.007%**
DPA-013 / 1104313PBP_13	Stairs at southwest corner	0.0516	0.003%	**0.016%**
DPA-014 / 1104313PBP_14	Stairs at southwest corner-tread	0.0522	0.003%	**0.013%**
DPA-015 / 1104313PBP_15	Stairs at northeast corner-riser	0.0513	0.003%	**0.12%**
DPA-016 / 1104313PBP_16	Stairs at northeast corner-stringer	0.0536	0.003%	**0.014%**
DPA-017 / 1104313PBP_17	Drainage pipe-level 1 noth	0.0532	0.003%	**0.010%**
DPA-018 / 1104313PBP_18	Drainage pipe-level 1 south	0.0507	0.003%	**0.019%**
DPA-019 / 1104313PBP_19	Stair tower roof-southwest	0.0513	0.003%	**<0.008%**
DPA-020 / 1104313PBP_20	Stair tower roof-northeast	0.0536	0.003%	**0.27%**

Scientific Analytical Institute successfully participates in the AIHA ELPAT for Lead program. ELPAT Laboratory ID: 173190 (R.L. = 0.01 wt.%)
The quality control samples run with the samples in this report have passed all AIHA required specifications unless otherwise noted.

Melissa Sharps (20)

Analyst

Approved Signatory

pbRpt_3.3.3/pbCalc_3.3.07

Scientific Analytical Institute
302-L Pomona Dr. Greensboro, NC 27407
Phone: 336.292.3888 Fax: 336.292.3313
www.sailab.com lab@sailab.com

Lab use only
Lab Order ID: 110413
Client Code: TIT02

Contact Information

Company Name: Terracon
Address: [redacted] 5240 Green's Dairy Rd
[redacted] Raleigh NC 27616
Contact: [redacted] Lee Clark / Russell Chapman / Amanda McKenney
Phone ☐: [redacted] (919) 873-2211
Fax ☐: [redacted] (919) 873-9555
Email ☒: [redacted] Ajmckenney@terracon.com
PO Number: LBClark@terracon.com, rhchapman@terracon
Project Name/Number: DPA - Durham Parking Authority

Billing/Invoice Information

Company: SAME
Address: 5240 Greens Dairy Rd
Raleigh NC 27616
Contact: Amanda McKenney
Phone ☒: (919) - 873 - 2211
Fax ☒: (919) - 873 - 9555
Email ☒: Ajmckenney@terracon.com

Turn Around Times

3 Hours	☐	72 Hours	☒
6 Hours	☐	96 Hours	☐
12 Hours	☐	*120 Hours*	☐
24 Hours	☐	144+ Hours	☐
48 Hours	☐		

Lead Test Types

Paint Chips by Flame AA	☒	Soil by Flame AA	☐	Other	☐
Wipe by Flame AA	☐	Air by Flame AA	☐		

Sample ID #	Description/Location	Volume/Area	Comments
DPA - 001	Exterior Beam - North Side		
DPA - 002	Exterior Beam - Level 2 south side		
DPA - 003	Interior Beam Level 2 North side		
DPA - 004	Interior Beam Level 1 North side		
DPA - 005	Exterior Channel North side		
DPA - 006	Exterior Channel South side		
DPA - 007	Exterior Column Level 2 North		
DPA - 008	Exterior Column Level 2 South		
DPA - 009	Interior Column Level 1 North		
DPA - 010	Interior Column Level 1 South		
DPA - 011	Exterior Handrail Northeast Ramp		
DPA - 012	Exterior Handrail Northwest		
DPA - 013	Stairs at Southwest corner		
DPA - 014	Stairs at Southwest corner - tread		
DPA - 015	Stairs at Northeast corner - Riser		
DPA - 016	Stairs at Northeast corner - stringer		
DPA - 017	Drainage Pipe - Level 1 North		
DPA - 018	Drainage Pipe - Level 1 South		
DPA - 019	Stair Tower Roof - southwest		
DPA - 020	Stair Tower Roof - Northeast		

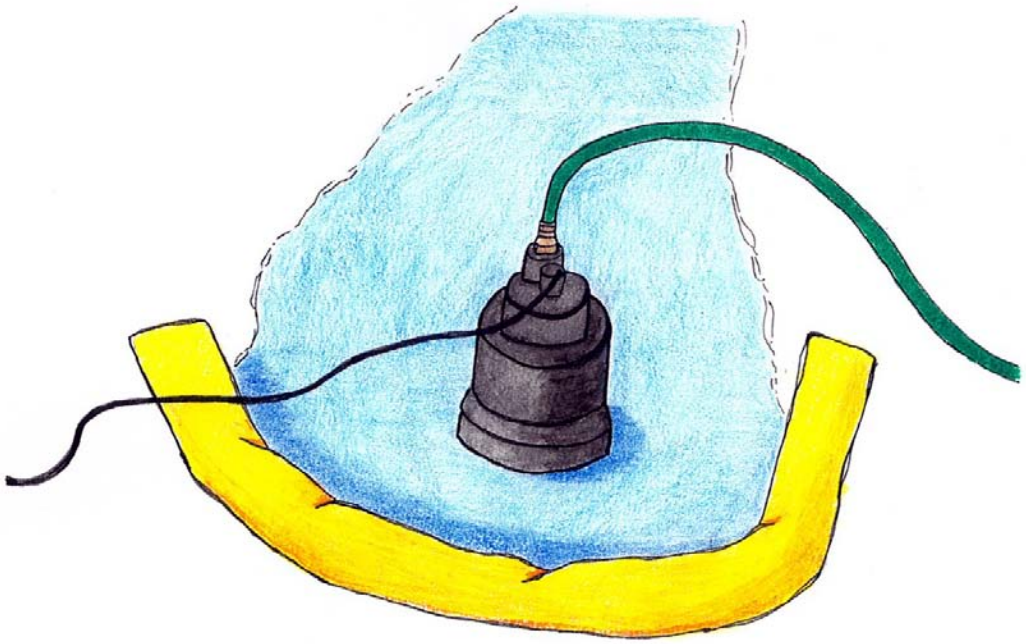
Accepted ☒
Rejected ☐

Total Number of Samples 20

Relinquished by	Date/Time	Received by	Date/Time
Russell Chapman	4/4/11 12:45		4-5@10A

Proper Containment, Collection, and Disposal of Wastewater from Surface Washing

February 2011



City of Durham
Department of Public Works
Stormwater Services
101 City Hall Plaza
Durham, NC 27701
(919) 560-4326
(919) 560-4316 fax
StormWaterQuality@durhamnc.gov

Clean Water is important to all of us!

It's up to all of us to make it happen. In recent years sources of water pollution like industrial wastes from factories have been greatly reduced. Now, more than 60% of water pollution comes from things like cars leaking oil, fertilizers from farms and gardens, and failing septic tanks. All these sources add up to a big pollution problem.

Why do we need clean water?

Having clean water is important for our health and economy. Clean water provides a chance for family activities like swimming, fishing, and boating. It provides jobs and commercial opportunities (everything from tour guides to outdoor gear sellers and boat builders). Clean water adds beauty to our landscape and provides important wildlife habitat. And perhaps most importantly we need clean water for drinking. All of us benefit from clean water—and all of us have a role in getting and keeping our lakes, rivers, and ground water clean.

The City of Durham realizes the importance of clean water and has taken steps to help protect our natural resources. These steps include the City's ordinance that prohibits anything other than rainwater from getting into a storm drain. This includes soapy or dirty runoff from commercial pressure or power washing. **Your business must properly contain, collect, and dispose of the wastewater it creates.** Your business may be subject to fines and other penalties if it does not handle its wastewater properly.

What's the problem with power or pressure washing?

Power washing itself is not a problem—in fact, it can actually help keep pollution out of our local waterways if done correctly. The issue is that there is a lot besides water in the runoff from power or pressure washing. For instance, the grime that comes off parking lots can contain oil, grease, and toxic chemicals. If wastewater is not collected properly, all of this pollution will run along with the water into a storm drain. The water that enters a storm drain is not treated or cleaned before it enters our rivers and lakes.

Planning and Site Preparation

You will need to develop a method to contain, collect, and dispose of wastewater. A number of complete systems that help accomplish this are available for purchase. However, many businesses have found it less expensive and more effective to develop their own unique containment system using common construction materials. A list of vendors, both for complete systems and for developing your own system, is available from the Stormwater Services Division.

Proper Planning

Proper planning can help you avoid delays, unanticipated costs, and violations. Before beginning, you should make sure that you know the location of all the drains near the site you will be cleaning. You should also have a good understanding of what pollutants will be in your wastewater. This information will help ensure that your job goes smoothly—you can make sure you have all the necessary equipment and that employees have all the training they need. You can also plan appropriately for the disposal of your wastewater—especially if will need to be pretreated or is hazardous.

Pre-cleaning or Dry Cleaning

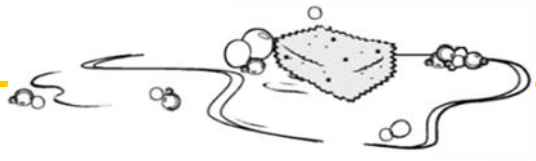
One of the easiest ways to reduce the amount of wastewater that needs special handling is to properly pre-clean the area you will be power or pressure washing. Pre-cleaning includes: picking up litter, sweeping up dirt and other debris, and using an absorbent to remove any oil or grease stains.

Pre-cleaning can allow you to use less water and cleaning chemicals (such as soap). In some instances, such as cleaning plazas and sidewalks, proper pre-cleaning will mean the difference between being able to dispose of your wastewater in a planted area and having to divert it to the sanitary sewer system.

Adding Soap to the Mix

Soap changes the way water molecules attach to each other. This makes it easier to loosen and rinse away dirt and grime. Unfortunately, this property of soap will also strip protective coatings from fish and damage their gills. In addition, most soap contains phosphates that can cause algae to grow. Large amounts of algae looks and smells bad. As algae decays, the process uses up oxygen in the water that fish need. Other pollutants that may be in soap include dyes, acids, and ammonia.

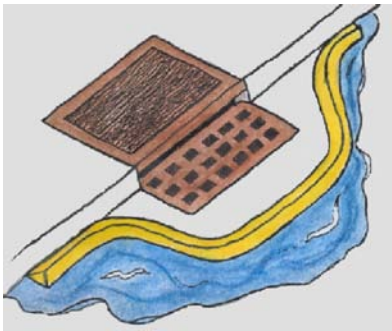
As you power or pressure wash, any time you use soap (or other cleaning chemicals) you must dispose of that water in the sanitary sewer system.



Containment

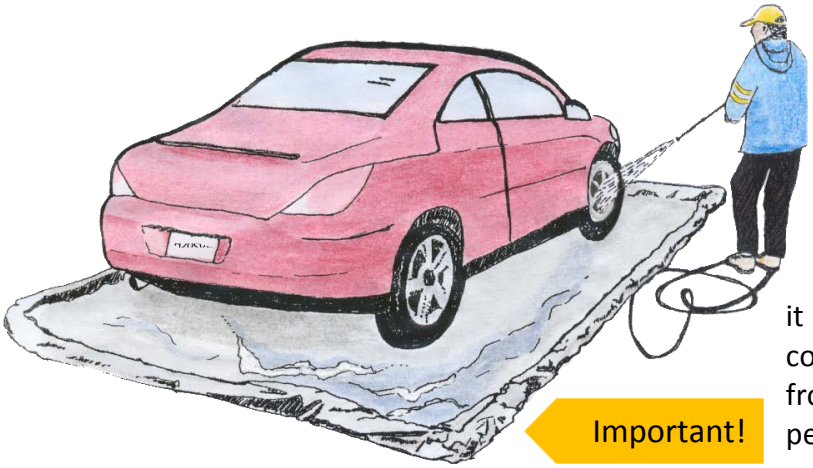
The City does not require you to use a specific containment method. However, proper containment should prevent any wastewater from entering storm drains or nearby streams. It will also allow you to collect the wastewater and dispose of it properly.

There are two major approaches to wastewater containment. The first method is to let the wastewater flow to a low point and to collect it there. To use this approach, you will need to first determine where all the storm drains are located. You will also need to determine where the high and low spots are on the property so you will understand where the water will flow. Once you have this information you can make sure to block or plug any storm drains in the path of your wastewater. Some of the many ways to accomplish this are shown below.



You can contain wastewater with storm drain mats (left), flexible berms (middle) and flexible or inflatable drain plugs (right). If you use this containment method, you will need to wash down the pavement when you are done and collect that water as well.

With smaller jobs you can contain wastewater at the cleaning site. This is done by using collapsible pools, containers, or trays to capture wastewater.

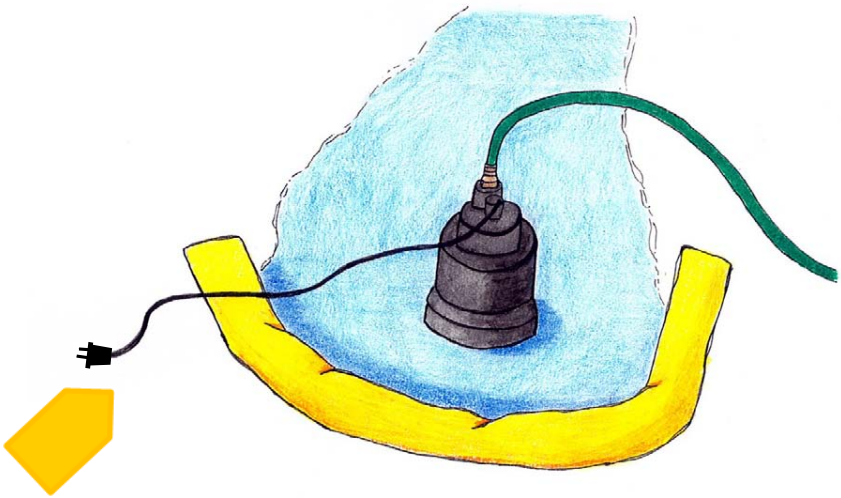


Important!

Before buying or building a containment system make sure it is large enough! It should easily contain wastewater and spray from the largest jobs you perform.

Collection

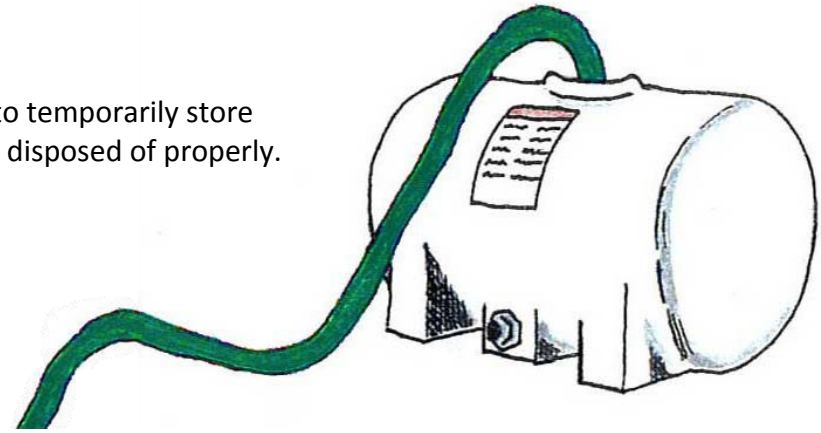
Wastewater can be collected from its containment using a wet vacuum, a sump pump, or a vacuum pump. It is important to collect your wastewater because any pollutants left on the pavement will eventually be carried into a nearby storm drain by rainwater. Wastewater that contains soap, detergent, cleaning products, hazardous waste, or large amounts of any other pollutant, cannot be left on paved surfaces.



A generator can power your sump pump or wet vacuum. Be careful to keep power cords out of the water to avoid safety risks!

A sump pump or wet vacuum can be used with a flexible berm to collect wastewater.

Plastic tanks can be used to temporarily store wastewater until it can be disposed of properly.



Disposal

Once you have contained and collected your wastewater, you will need to dispose of it properly. Proper disposal methods include using the sanitary sewer system, one of Durham's Water Reclamation Facilities, or using a private treatment company. In using any of these methods you may need to pre-treat your water.

If your wastewater:	**You may need to pre-treat by:**
is over 150°F	cooling the wastewater to under 150°F
has a pH <5 or >12	neutralizing the pH to between 5 and 11
is oily or greasy	using an oil-water separator
has dirt, grit, or paint chips	using a filter to remove large particles

If you dispose of your wastewater in the sanitary sewer system, you can do so by using an oil and water separator, a sewer clean out, a sink, or a floor drain (with the property owners permission).

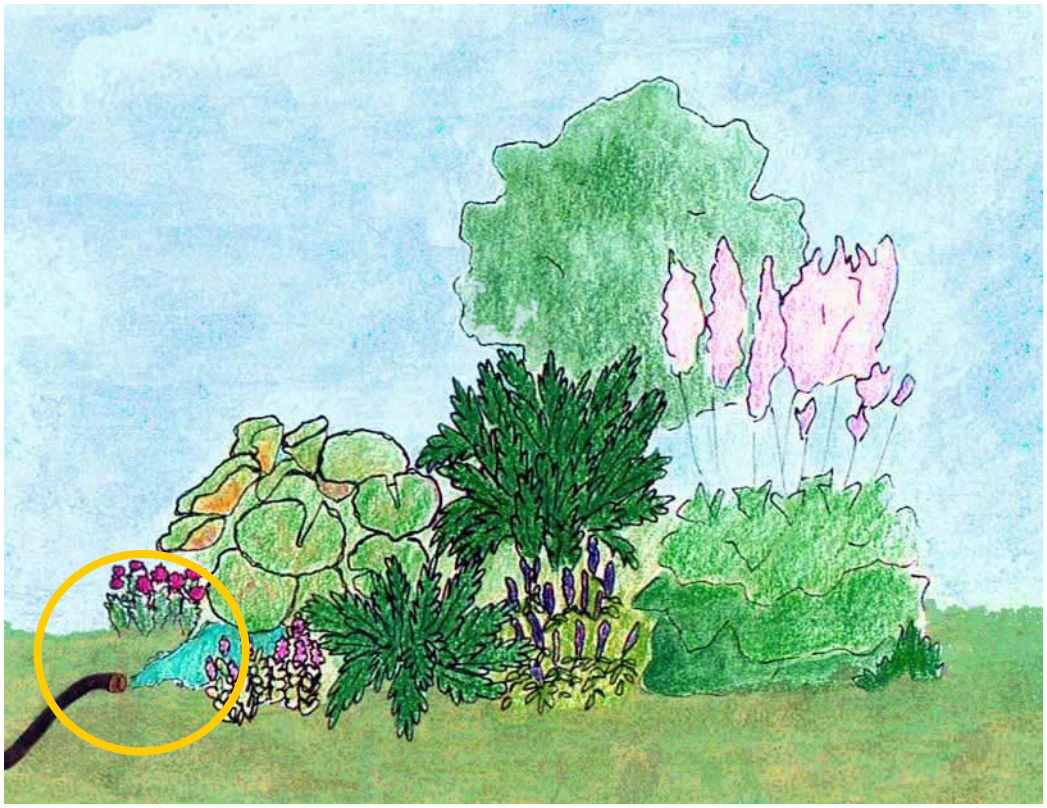
You must get approval from the Water Management Department **before** disposing of your wastewater in the City's sanitary sewer system or at one of the City's Water Reclamation Facilities. You can obtain approval by contacting the Industrial Pretreatment Coordinator at (919) 560-4386.

If you plan to use one of the City's Water Reclamation Facilities, you will also need to call to schedule your disposal. Contact the North Durham Facility at (919) 560-4384, and the South Durham Facility at (919) 560-4386.

A sewer clean out is one option for disposing of your wastewater. Never open a sanitary sewer manhole for any reason. It is unsafe and illegal.

Disposal to a Planted Area

In special cases (as outlined on page 11), you may be able to dispose of your wastewater in a landscaped area with grass or plants. The planted area must be able to absorb all the water you place in it. You will need to obtain the property owner's permission before using this disposal method.



Wastewater that contains any of the following **may not be disposed** of in a planted area:

-grease or oil
-food wastes or scraps
-hazardous materials
-biological wastes
-chlorine
-solvents
-surfactants/soap*
-petroleum products

*Soapy waste water may be disposed of in an on-site planted area if it is from washing the exterior of a residential building.

Best practices for specific surfaces...

Sidewalks and Plazas

1. Sweep the area that you are cleaning and any area your wastewater will flow through to remove dirt and litter. Use absorbents to spot treat any oil or grease stains (there should not be many as these areas only have foot traffic). Dispose of collected dirt, litter, and absorbent in the trash.
2. Wash the area down using only water. Keep the wastewater out of the storm drains. With the property owner's permission the wastewater can be disposed of in a planted area.

   OR

   Wash the area using water and soap (or another cleaner). Contain, collect, and then dispose of water in the sanitary sewer system or at the wastewater treatment plant.

Parking Lots, Driveways, Drive Thrus, Parking Garages, Etc.

1. Sweep the area that you are cleaning and any area wastewater will flow through to remove dirt and litter. Use absorbents to spot treat oil or grease stains. Dispose of collected dirt, litter, and absorbent in the trash.
2. Wash the area using water and soap (or another cleaner). Contain, collect, and then dispose of water in the sanitary sewer system or at the wastewater treatment plant. If the wastewater is oily or greasy, you will need to dispose of it through an oil/water separator or a grease interceptor. (This may be especially true around restaurants and grease disposal areas.)

Masonry Mineral Deposits (Efflorescence)

1. Sweep any area your wastewater will flow through to remove dirt and litter. Use absorbents to spot treat oil or grease stains. Dispose of collected dirt, litter, and absorbent in the trash.
2. If you use an acid wash to remove the mineral deposits on the masonry, you will need to contain and collect your wastewater.
3. Rinse down the acid treated area with an alkaline soap.
4. Collect all of the wastewater and neutralize the pH to between 5 and 11. Dispose of wastewater in the sanitary sewer system or at the wastewater treatment plant.

Best practices for specific surfaces...

Commercial Building Exteriors

Buildings that are glass, steel, unpainted, or painted with no loose paint:

1. Sweep any hard surfaces your wastewater will flow through to remove dirt and litter. Use absorbents to spot treat oil or grease stains. Dispose of collected dirt, litter, and absorbent in the trash.
2. Wash the building using only water. Keep the wastewater out of the storm drains. With the property owner's permission the wastewater can be disposed of in a planted area. Keep in mind that this may stress, damage, and potentially even kill plants.

   OR

   Wash the area using water and soap (or another cleaner). Contain, collect, and then dispose of water in the sanitary sewer system or at the wastewater treatment plant. You may need to filter the water first.

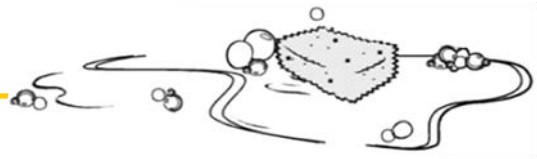
You should avoid pressure washing any wood treated with chromated copper arsenate (or CCA)—especially avoid using an acid wash or any cleaning products containing chlorine. This will increase the arsenic leaching out of the wood.

Residential Building Exteriors

Buildings that are glass, steel, unpainted brick or vinyl, or a painted surface with no loose paint:

1. Sweep any hard surfaces your wastewater will flow through to remove dirt and litter. Use absorbents to spot treat oil or grease stains. Dispose of collected dirt, litter, and absorbent in the trash.
2. Keep the wastewater out of the storm drains. With the property owner's permission the wastewater can be disposed of in a planted area. This may stress, damage and potentially even kill plants, especially if any cleaning chemicals were used.

You should avoid pressure washing any wood treated with chromated copper arsenate (or CCA)—especially avoid using an acid wash or any cleaning products containing chlorine. This will increase the arsenic leaching out of the wood.



Best practices for specific surfaces...

To Remove Paint for Repainting OR Washing a Building with Loose Paint

NOTE: Make sure you know what kind of paint you are removing. If it is toxic (i.e. contains lead, copper, tributyl tin, or PCBs) then you will need to dispose of the paint chips as a hazardous waste. You will also need to contact the Industrial Pretreatment Coordinator at (919) 560-4386 to see if your wastewater will need to be handled as a hazardous waste.

1. You will need to contain and collect your wastewater.
2. As much as possible, collect any paint chips by sweeping them up or rinsing the area. (This may be easier if you scrape the paint chips off, as much as possible, before you power or pressure wash the remaining paint.)
3. Before disposing of wastewater in the sanitary sewer system you will need to filter out any paint chips. Non-toxic paint chips can be disposed of as normal garbage. Toxic paint chips will need to be handled as a hazardous waste.

Graffiti Removal

1. If you are sand blasting the graffiti off, you will need to contain and collect your wastewater.
2. As much as possible, collect any paint chips by sweeping them up or rinsing the area. (This may be easier if you scrape the paint chips off, as much as possible, before you power or pressure wash the remaining paint.)
3. Before disposing of wastewater in the sanitary sewer system you will need to filter out any paint chips and the sand. Non-toxic paint chips can be disposed of as normal garbage. Toxic paint chips will need to be handled as a hazardous waste.

OR

1. If you are using solvents in your pressure washing you will need to contain and collect your wastewater.
2. Call the Industrial Pretreatment Coordinator at (919) 560-4386 before disposing of your wastewater to ensure the solvent is safe for the sanitary sewer system.

Best practices for specific surfaces...

Grocery Carts

1. You will need to contain, collect, and filter your wastewater.
2. If you only use water to clean the cart, you may dispose of the wastewater in a planted area, the sanitary sewer, or a wastewater treatment plant. If you used soap or another cleaning agent then you will have to dispose of the wastewater in the sanitary sewer or at a wastewater treatment plant.

Dumpster and Surrounding Area

1. Sweep the area that you are cleaning and any area your wastewater will flow through to remove dirt and litter. Use absorbents to clean oily or greasy areas. Dispose of collected dirt, litter, and absorbent in the trash.
2. Wash the area using water and soap (or another cleaner). Contain and collect your wastewater.
3. If your wastewater is contaminated with large amounts of dirt, grime, food particles, or other particles you will need to filter it.
4. If your wastewater is oily or greasy, you will need to dispose of it through an oil/water separator or a grease interceptor. Dispose of wastewater in the sanitary sewer system or at the wastewater treatment plant.

Restaurant Equipment

Restaurant floor mats, exhaust hoods or filters, grease bins/storage and other oily restaurant equipment needs special handling.

1. Wash the area or item using water and soap (or another cleaner).
2. Contain, collect, and then dispose of water in the sanitary sewer system or at the wastewater treatment plant. If the wastewater is oily or greasy, you will need to dispose of it through an oil/water separator or a grease interceptor.

Disposal Methods by Surface Type

Surface Type	Potential Pretreatment Required				Potential Disposal Methods			
	screen/filter to remove debris	netralize pH so between 5-11	oil/grease separator	cool water so less than 150o F	landscaped area	sanitary sewer	wastewater treatment plant	as a hazardous waste
Areas with no vehicular traffic: sidewalks, plazas (just water)					X	X	X	
Areas with no vehicular traffic: sidewalks, plazas (with soap or other cleaner)						X	X	
Parking lots, driveways, drive-through areas, parking garages, etc.			X			X	X	
Building Exteriors:								
glass, steel, other unpainted surface, painted surface without loose paint (just water)	X				X	X	X	
glass, steel, other unpainted surface, painted surface without loose paint (with soap or other cleaner)	X				X*	X	X	
treated wood shingles (should be dry cleaned only!)								X
In Preparation for Repainting:								
to remove non-toxic paint for repainting	X	X			X*	X	X	
to remove toxic paint (contains: lead, copper, tributyl tin, PCBs) before repainting	X	X				X	X	X
Graffitti Removal (sand blasting)	X				X	X	X	
Graffitti Removal (using solvents and pressure washing)						X	X	
Masonry (mineral deposits, efflorescence)		X				X	X	
Food or Grease Removal								
Grocery carts	X					X	X	
Product racks (i.e. rolling bakery racks) if no grease or oil	X					X	X	
Dumpster and dumpster area	X		X			X	X	
Grease bins and storage	X		X			X	X	
Restaurant floor mats	X		X			X	X	
Exhaust filters and hoods	X		X			X	X	
Lunch wagon/food carts/ food delivery vehicles	X		X			X	X	
Restaurant alleys	X		X			X	X	

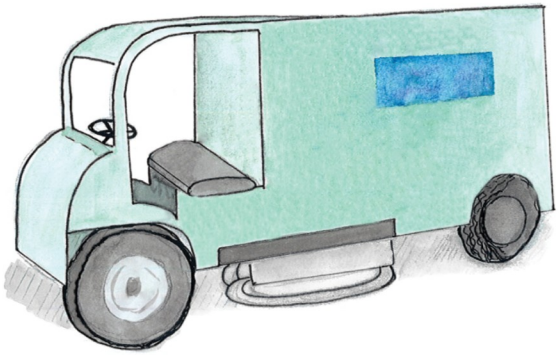
*With owners permission, allowed but not preferred. This may stress, damage, or kill plants.

Other Options...

There are many options besides those shown in previous sections. The City does not require any specific method or equipment be used as long as you properly contain, collect, and dispose of your wastewater. The following are examples of other equipment you may want to consider.

Some rotary cleaners also collect dirty wash water along with supplying high pressure water for cleaning. This water is carried through a hose to a storage tank.

A ride-on surface cleaning system is a vehicle with built in pressure cleaning equipment. The vehicle collects and recycles your wastewater. While this equipment can make your cleaning job (and properly handling your dirty wastewater) easy, it can be relatively expensive.



A vacuum boom or berm integrates containment and collection. The suction from the vacuum helps seal the berm to the ground and also sucks the wastewater through a hose into a storage tank.

Complying with Durham's Ordinance

You will need to develop a method to contain, collect, and dispose of wastewater. A number of complete systems that help accomplish this are available for purchase. However, many businesses have found it less expensive and more effective to develop their own unique containment system using common construction materials. A list of vendors, both for complete systems and parts for developing your own system, is available from the Stormwater Services Division.

Whom do I contact to schedule a compliance inspection?

You should contact Stormwater Services at (919) 560-4326 to schedule a demonstration of your containment, collection, and disposal methods before starting any commercial power washing. This is a requirement for receiving your business license.

City of Durham Stormwater Services Contact Information

Address:
Department of Public Works
Stormwater Services
101 City Hall Plaza, Third Floor
Durham, North Carolina 27701

Phone: (919) 560-4326 (option #8 and then #5 on the menu)

Fax: (919) 560-4316

E-mail: StormWaterQuality@durhamnc.gov

To schedule a demonstration, please call the stormwater hotline at (919) 560-7946 or e-mail Stormwater Services at StormWaterQuality@durhamnc.gov.

Other Requirements

Other requirements (unrelated to stormwater) may apply to your power or pressure washing business including the City's sewer use ordinance, the City's water conservation ordinance, the Durham City/County zoning ordinance, and the City's business privilege license ordinance.

-For approval to dispose of wastewater into the City's sanitary sewer system, please contact the Water Management Department's Industrial Pretreatment Coordinator at (919) 560-4386.
-For more information regarding Durham's water conservation ordinance, please contact the Water Management Department at (919) 560-4381.
-For more information regarding Durham's zoning ordinance and requirements for obtaining a home occupation permit contact the front desk of the Planning Department at (919) 560-4137.
-For more information regarding the City's business privilege licensing, please contact the Business License Office at (919) 560-4700.

If you are using, storing, or transporting certain cleaning chemicals or hazardous wastes (for example, wastewater from stripping paint containing lead or copper) there may be additional Occupational Safety and Health Administration (OSHA) or U.S. Department of Transportation (DOT) regulations you need to follow. Please contact the appropriate group to find out more about these regulations:

-OSHA—Raleigh Area Office at (919) 790-8096

-U.S. DOT—Office of Hazardous Materials Safety (HAZMAT) at the toll-free number (in the U.S.) 1-800-HMR-4922 (1-800-467-4922). (The hotline operates Monday through Friday from 9:00 am to 5:00 pm eastern standard time.)

Notes