

CITY OF BALTIMORE

**Brandon M. Scott
Mayor**

DEPARTMENT OF GENERAL SERVICES

**Berke Attila
Director**

CONTRACT NO. GS 21828

ENGINE 33 ELECTRICAL UPGRADES

**1223 N. MONTFORD AVE
BALTIMORE, MARYLAND 21213**

**Marwan Alkarajat
Chief
Major Projects Division**

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**CITY OF BALTIMORE
DEPARTMENT OF GENERAL SERVICES
NOTICE OF LETTING**

Sealed Bids or Proposals, in duplicate, addressed to the Board of Estimates of the Mayor and City Council of Baltimore and marked for **GS21828 – Engine 33 Electrical Upgrades**, will be received at the Office of the Comptroller, Room 204, City Hall, Baltimore, Maryland until 11:00 A.M. on **WEDNESDAY, MAY 17, 2023**. Board of Estimates employees will be stationed at the Security Unit Counter just inside the Holliday Street entrance to City Hall from 10:45 A.M. to 11:00 A.M. on Wednesday to receive Bids. Positively no bids will be received after 11:00 A.M. The bids will be publicly opened by the Board of Estimates in Room 215, City Hall at Noon. Bid opening proceedings can be also viewed live at <https://www.charmtvbaltimore.com/live-stream> at 12:00 Noon. Bid tabulation sheets detailing the bids received will be publicly posted to the Comptroller's website by COB on the date of bid opening.

The Contract Documents may be purchased for a non-refundable cost of **\$50.00** by contacting Azza Rizkallah at azza.rizkallah@baltimorecity.gov as of **FRIDAY, April 07, 2023**. **Conditions and requirements of the Bid are found in the bid package.**

All contractors bidding on this Contract must first be pre-qualified by the City of Baltimore Boards and Commissions. Interested contractors should call 410 396-6883 or contact the Office of Boards and Commissions at 4 South Frederick Street, 4th Floor, Baltimore, MD 21202. **If a bid is submitted by a Joint Venture ("JV"), then in that event, the documents that establish the JV shall be submitted with the bid for verification purposes.** The Prequalification Category required for bidding on this project is **F16000 - ELECTRICAL**

The Cost Qualification Range for this work shall be **\$100,000.01 to \$500,000.00**

A "Pre-Bidding information" session will be conducted at **THE SITE: 1223 N. MONTFORD AVE, BALTIMORE, MD 21213 on TUESDAY, APRIL 18, 2023 AT 10:00 A.M.**

Principal Items of work for this project are:

1. **Electrical**
2. **Ceiling**
3. **Demolition**

The MBE goal is **29%** The WBE goal is **10%**

APPROVED:

APPROVED:

Secretary, Board of Estimates

Chief, Capital Projects Division

Chief Solicitor

Chief, Minority and Women's
Business Opportunity Office

Director,
Department of General Services

ADDITIONAL BIDDING INFORMATION, REQUIREMENTS, AND CONDITIONS

1. Representatives from the Board of Estimates will be stationed at the Security Unit Counter just inside the Holliday Street entrance of City Hall from 10:45 a.m. to 11:00 a.m. every Wednesday to receive Bids.
2. Bid Guarantee: A certified check of the bidder or a bank cashier's check or a bank treasurer's check drawn on a solvent clearing house bank, made payable to the Director of Finance or a bid bond executed on the form as provided in the Bid or Proposal for an amount which is not less than that determined by multiplying the total bid submitted by two percent (2%) will be required with each bid over \$100,000.00. If the bid is less than or equal to \$100,000.00 no Bid Bond is required.
3. Bidders interested in utilizing the City's Self-Insurance Program for payment and performance security for contracts not exceeding \$100,000.00 may contact the Department of Finance, the Program Administrator, for eligibility requirements and premium costs.
4. **The Board of Estimates reserves the right to reject any and all Bids and/or waive technical defects, if in its judgment, the interest of the Mayor and City Council of Baltimore may so require.**
5. Pursuant to Article 5, Subtitle 28 of the Baltimore City Code (2000 Edition)-Minority and Women's Business Program, Minority Business Enterprise (MBE) and Women's Business Enterprise (WBE) participation goals apply to this contract.
6. This contract is subject to a **Performance Evaluation** by the Department of General Services.

END OF SECTION

NOTICE TO BIDDERS**SUPPLEMENTAL BIDDING INSTRUCTION**

The following instruction supplements the bidding instructions found elsewhere in the Bid Book and those referenced therein.

EACH BIDDER IS HEREBY NOTIFIED THAT HE/SHE/IT MUST COMPLETELY FILL IN THE ORIGINAL BID AND THE REQUIRED BID/PROPOSAL AFFIDAVIT AND DOCUMENTS LOCATED IN THE BID BOOK. THE ORIGINAL BID, (WHICH MUST REMAIN ATTACHED TO THE BID BOOK) PLUS THE FULLY COMPLETED DUPLICATE BID MUST BE SUBMITTED IN THE BID ENVELOPE, IF ONE IS PROVIDED FOR THAT PURPOSE.

FAILURE TO FOLLOW THESE SIMPLE DIRECTIONS MAY CAUSE YOUR BID TO BE DECLARED UNRESPONSIVE AND THE BID MAY BE REJECTED BY THE BOARD OF ESTIMATES.

MINORITY AND WOMEN'S BUSINESS PROGRAM

- ❖ INCLUDED IN THIS CONTRACT IS A MINORITY AND WOMEN'S BUSINESS PROGRAM PACKAGE.
- ❖ MINORITY AND WOMEN'S BUSINESS PROGRAM PACKAGE FORMS MUST BE COMPLETED AND SUBMITTED WITH YOUR BID PROPOSAL.
- ❖ FAILURE TO SUBMIT THE INFORMATION AT THE TIME REQUESTED WILL BE CAUSE TO HAVE YOUR BID REJECTED.

BALTIMORE APPRENTICESHIP TRAINEE PROGRAM (BATP)

- ❖ INCLUDED IN THIS CONTRACT IS A BALTIMORE APPRENTICESHIP TRAINEE PROGRAM PACKAGE (BATP DOCUMENTS).
- ❖ BATP FORMS MUST BE COMPLETED AND SUBMITTED **WITH YOUR BID PROPOSAL**.
- ❖ FAILURE TO SUBMIT THE INFORMATION AT THE TIME REQUESTED MAY BE CAUSE TO HAVE YOUR BID REJECTED.
- ❖ COMPLETED BATP FORMS ARE ONLY REQUIRED FOR BIDS OF \$1,000,000.00 OR MORE.
- ❖ **NOTE:** ORIGINAL BATP FORMS ARE INCLUDED IN THE ACCOMPANYING MANILA BID ENVELOPE IF THE ENGINEER'S ESTIMATE FOR A PROJECT IS \$ 750,000.00 OR MORE.

**EMPLOY BALTIMORE AND
BALTIMORE CITY'S YOUTHWORKS PROGRAM**

- ❖ ALSO INCLUDED IN THIS CONTRACT IS AN EMPLOY BALTIMORE PACKET AND A BALTIMORE CITY'S YOUTHWORKS PROGRAM FORM.
- ❖ ALL FORMS IN THE EMPLOY BALTIMORE CERTIFICATION PACKET AND THE SINGLE PAGE BALTIMORE CITY'S YOUTHWORKS FORM MUST BE COMPLETED AND SUBMITTED WITH YOUR BID PROPOSAL.
- ❖ FAILURE TO SUBMIT THE INFORMATION AT THE TIME REQUESTED MAY BE CAUSE TO HAVE YOUR BID REJECTED.
- ❖ THE ACCOMPANYING MANILA BID ENVELOPE CONTAINS AN EMPLOY BALTIMORE PACKET AND BALTIMORE CITY'S YOUTHWORKS PROGRAM ORIGINAL DOCUMENTS WHICH MUST BE COMPLETED FOR ALL CONTRACTS.
- ❖ ALL FORMS IN THESE PACKETS MUST BE COMPLETED AND SUBMITTED **WITH YOUR BID PROPOSAL**.
- ❖ FAILURE TO SUBMIT THE INFORMATION AT THE TIME REQUESTED MAY BE CAUSE TO HAVE YOUR BID REJECTED.

LOCAL HIRING LAW

- ❖ ALSO INCLUDED IN THIS CONTRACT IS NOTIFICATION OF THE LOCAL HIRING LAW EFFECTIVE DECEMBER 23, 2013. PLEASE REFER TO THE "INSTRUCTION TO BIDDERS" SECTION AND THE "LOCAL HIRING LAW" SECTION WITHIN THIS SPECIFICATION FOR REQUIREMENTS OF THE LAW.

BOARD OF ESTIMATES RESOLUTIONS AND EXECUTIVE ORDER**EXECUTIVE ORDER**

WHEREAS, the Mayor and City Council of Baltimore ("City") wishes to encourage all contractors awarded City contracts to agree to employ skilled and qualified Baltimore City residents to meet the contractor's employment needs created as a result of the award of a City contract; and

WHEREAS, the Mayor's Office of Employment Development ("MOED") has established the **EMPLOY BALTIMORE** program designed to create opportunities for businesses that receive City contracts to meet their workforce needs; to access qualified City job seekers; and to ensure that City dollars contribute to the local economy; and

WHEREAS, MOED has a roster of Baltimore City residents, who are skilled and qualified for immediate employment by City contractors; and

WHEREAS, MOED wishes to establish and maintain an ongoing relationship with City contractors in an effort to address current and future employment and/or training needs; and

WHEREAS, increasing employment participation of City residents is good business and a means to improve Baltimore City's employment rate,

NOW, THEREFORE, I, Stephanie Rawlings-Blake, Mayor of the City of Baltimore, by virtue of the authority vested in me by the Charter of Baltimore City, do hereby promulgate the following **EXECUTIVE ORDER**:

1. This Executive Order shall apply to contracts awarded by the City that are in the amounts of \$50,000.01 to \$300,000.00, except for professional service contracts and emergency contracts.

2. Bidders on all contracts awarded by the City in the amounts of \$50,000.01 to \$300,000.00, except for professional service contracts and emergency contracts, shall complete the **Employ Baltimore Certification Statement** contained in the Bid Document and submit it with their bids.

3. Within two (2) weeks of receiving the award of a City contract, the contractor shall schedule a meeting with MOED to: (a) assess its employment needs, and (b) discuss other services provided by MOED. If applicable, MOED will then tailor specific hiring and/or training programs to benefit the contractor. The contractor will not receive its first progress payment under the contract, unless and until the said meeting has been scheduled.

4. Should the contractor's workforce plan indicate a need to fill new jobs, the contractor must agree to post these positions through MOED and its One Stop Career Center Network for a period of seven (7) days prior to publicly advertising the openings. This will enable MOED to identify and refer qualified City residents to the contractor as candidates for these job opportunities.

5. Each contractor shall submit an **Employ Baltimore** Employment Report to MOED on June 30th and December 31st during each and every year of its contract, and at the end of the contract, indicating the number of City residents on its payroll. The submission of the Employments Reports as required shall be a condition precedent to the City's release of a final payment or any and all retainage held by the City, pursuant to the contract.

6. A copy of this **Executive Order** shall be included in all bids, requests for proposals and/or contracts.

7. This **Executive Order** applies to all applicable City contracts entered into on or after December 23, 2013.

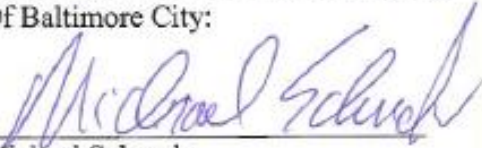
8. This **Executive Order** supersedes the Resolution of the Board of Estimates for the Employ Baltimore Executive Order signed by the Mayor on June 9, 2011, and shall take effect immediately.

IN WITNESS HEREOF, I HAVE HEREUNTO
PLACED MY HAND AND THE GREAT SEAL
OF THE CITY OF BALTIMORE THIS


DAY OF
2013.

STEPHANIE RAWLINGS-BLAKE, MAYOR

Approved As To Form and Legal
Sufficiency By The Law Department
Of Baltimore City:


Michael Schrock
Chief Solicitor

ATTEST:


Custodian of City Seal
Alternate

APPROVED BY THE BOARD OF ESTIMATES:
DEC 18 2013


12/18/13



EXECUTIVE ORDER

WHEREAS, the Mayor and City Council of Baltimore ("City") is committed to promoting the well-being and positive development of the City's youth and providing educational and enrichment opportunities which will lead to academic improvement, safer environments and a reduction in high risk behavior; and

WHEREAS, Baltimore City has an estimated 76,000 citizens between the ages of 14-21, and

WHEREAS, the federal government ceased funding summer job programs for youth in 2000 after 25 years, causing local and state governments to join with businesses, philanthropic, faith-based, community, and educational organizations to obtain grants, tax-deductible donations and job opportunities to help these deserving youth; and

WHEREAS, the City and the Mayor's Office of Employment Development ("MOED") have established the Baltimore City's YouthWorks program to prepare dependable Baltimore City high school and college students for productive employment that meets the workforce needs of local businesses; and

WHEREAS, the City wishes to encourage all local businesses and contractors, service providers, consultants and vendors, etc. doing business with the City to employ skilled and qualified Baltimore City youth between the ages of 14-21, who meet the job ready status, as defined by Baltimore City's YouthWorks program, during the summer of 2008; and

WHEREAS, the need to help Baltimore City's youth has never been greater

NOW, THEREFORE, I Sheila Dixon, Mayor of the City of Baltimore, by virtue of the authority vested in me by the Baltimore City Charter, do hereby promulgate the following **EXECUTIVE ORDER**:

- 1 Henceforth, each and every Solicitation from every City Department, Agency and Office, where the Bid is expected to be \$25,000 or more, shall contain the attached form. Each and every Bidder shall provide the City with the (a) name, (b) complete address, (c) telephone number and (d) a contact person to assist MOED with the YouthWorks program.
2. MOED shall contact each and every business identified in §1 above and request that the business, contractor, service provider, consultant and vendor, etc. join with the City in reaching its goal of employing Baltimore City's YouthWorks referrals, or otherwise assist the Baltimore City's YouthWorks program.
- 3 MOED shall establish and maintain an ongoing relationship with City businesses, contractors, service providers, consultants and vendors, etc. in an effort to address their current and future employment and/or training needs.
- 4 This Executive Order shall take effect immediately

IN WITNESS WHEREOF, I HAVE
PLACED MY HAND AND THE
GREAT SEAL OF THE CITY OF
BALTIMORE THIS 14TH DAY OF
JANUARY 2008

(SIGNED) SHEILA DIXON, MAYOR

Approved As To Form And
Legal Sufficiency By The Law
Department Of Baltimore City

(Signed) Leslie S. Winner
Chief Solicitor

**RESOLUTION OF THE BOARD OF ESTIMATES
OF THE CITY OF BALTIMORE**

WHEREAS, the Mayor and City Council of Baltimore, acting by and through the Board of Estimates pursuant to Article VI, Section 4 of the Charter of Baltimore City, 1964 Revision, as amended, is responsible for awarding contracts and supervising all purchasing by the City; and

WHEREAS, the Board of Estimates wishes to insure that all City contractors, subcontractors and their agents and employees conduct themselves in accordance with established federal, state, and local laws.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF ESTIMATES OF BALTIMORE CITY, that the following policy, which has always been applicable to City contracts, be formally adopted by this Board to apply to all City contractors, subcontractors and their agents and employees:

1. Contractors, subcontractors, and their agents and employees may not engage in unfair labor practices as defined under The National Labor Relations Act and applicable federal regulations and state laws.
2. Contractors, subcontractors, and their agents may not threaten, harass, intimidate or in any way impede persons employed by them who on their own time exercise their rights to associate, speak, organize, or petition governmental officials with their grievances.
3. If the Board of Estimates determines that a contractor, subcontractor, or their agents have violated the policy set forth in this Resolution said contractor, or subcontractor will be disqualified from bidding on City contracts, and if they are currently completing contracts, they will be found in default of their contracts.
4. A copy of this Resolution must be included in all City contracts.
5. This Resolution applies to all City contracts entered into after the date of its adoption and to each and every City contract, or subcontract in effect on the date of its adoption, and each department and agency of the City is charged with the responsibility of so notifying all present contractors, and subcontractors.
6. This Resolution takes effect immediately.

APPROVED BY THE BOARD OF
ESTIMATES

(Signed)

Shirley A. Williams June 29, 1994

Clerk

Date

Approved As To Form And
Legal Sufficiency This
28th Day of June, 1994

(Signed) Leslie S. Winner

Leslie S. Winner

Principal Counsel

RESOLUTION OF THE BOARD OF ESTIMATES**APPRENTICESHIP TRAINING PROGRAMS**

WHEREAS, the Mayor and City Council of Baltimore, acting by and through the Board of Estimates, pursuant to Article VI, Section 4 of the Charter of Baltimore City, 1964 Revision, as amended, is responsible for awarding contracts and supervising all purchasing by the City; and,

WHEREAS, the Board of Estimates wishes to insure that all prime contractors performing under any City construction contract conduct apprenticeship training programs as a condition of their contracts;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF ESTIMATES OF BALTIMORE CITY, that the following policy applies to all prime contractors performing under any construction contract of the City that has a total cost of \$1,000,000.00 or more:

1. Prime Contractors shall conduct apprenticeship training programs as a condition of their contracts.
2. Prime Contractors shall submit to the contract administrator for the City agency supervising the contract, within ten days of their receipt of notice of award of each contract, evidence of its participation in a certified apprenticeship program that has been previously approved by the contract administrator, or an apprenticeship training action plan for approval by the contract administrator. Prime Contractors will further submit, from time to time as requested by the contract administrator, evidence of and statistics concerning the apprenticeship training actually performed by the Prime Contractors in connection with each City contract.
3. If the Board of Estimates determines that a Prime Contractor has violated the policy set forth in this Resolution, then the Prime Contractor may be disqualified from bidding on future City contracts, or may be found in default of its existing contract.
4. A copy of this Resolution must be included in all City contracts.
5. This Resolution applies to all City Contracts entered into after the date of its approval by the Board of Estimates.
6. This Resolution takes effect immediately.

NOTICE: Resolution effective February 05, 2014.

**RESOLUTION
OF
THE BOARD OF ESTIMATES OF BALTIMORE CITY
THE REGULATION OF BOARD OF ESTIMATES MEETINGS AND PROTESTS**

WHEREAS, the Mayor and City Council of Baltimore, acting by and through the Board of Estimates ("Board"), pursuant to Article VI, § 1 et seq. of the Charter of Baltimore City, 1996 Edition, as amended (HEREIN after referred to as "Charter"), is responsible for formulating and executing the fiscal policy of the City, approvals of settlements, acquisitions and dispositions of real property, awarding contracts and supervising purchasing by the City; and other duties as prescribed in the Charter; and

WHEREAS, the Board, pursuant to Article VI, § 1 of the Charter is composed of the Mayor, President of the City Council, Comptroller, City Solicitor, and Director of Public Works, and the President of the City Council shall be President of the Board, and one of the members shall act as Secretary; and

WHEREAS, the members of the Board meet in public forum each Wednesday at 9:00 a.m. (unless in periodic recess) in the Hyman Pressman Hearing Room to conduct the business of government; and

WHEREAS, the Board, pursuant to Article VI, § 2 et seq. of the Charter, may promulgate rules and regulations and summon before it heads of departments, bureaus or divisions, municipal officers, and members of commissions and boards; and

WHEREAS, in the interest of promoting better government, order and efficiency the Board wishes to establish certain rules, applicable to all private individuals, business entities, fraternal organizations, special interest groups, associations and other entities, etc. (HEREIN after collectively referred to as "entity") who wish to speak at the meetings of the Board.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF ESTIMATES OF BALTIMORE CITY, that the following rules for the conduct of Board meetings be formally adopted by the Board to apply to all issues to be acted upon, considered, noted, or received at any given meeting:

1. Anyone wishing to speak before the Board, whether individually or as the spokesperson of an entity must notify the Clerk of the Board in writing no later than by noon on the Tuesday preceding any Board meeting, or by an alternative date and time specified in the agenda for the next scheduled meeting. The written protest must state (1) whom you represent and the entity that authorized the representation (2) what the issues are and the facts supporting your position and (3) how the protestant will be harmed by the proposed Board action.

2. Requests to speak on matters submitted to the Board for its information, notation or status report from a previous Board action may be heard at the discretion of the President of the Board. This rule does not preclude the submitting agency from orally presenting the report or matter at the meeting of the Board.

3. Matters may be protested by any entity directly and specifically affected by a pending matter or decision of the Board. The person or entity must submit a written protest of that matter or pending decision. In order for a protest to be considered, the protestant must be present at the Board of Estimates meeting.

4. An entity affected by the disposition of the matter in a way different than an average taxpayer or citizen and who so specifies to the satisfaction of the Board may have their protest heard and considered by the Board. However, the President of the Board reserves the right to call a person or organization to give testimony that he/she determines furthers the effective and fair decision making process of the Board. Protests filed by persons not affected by the disposition of the matter in a way different than an average taxpayer or citizen will be handled and responded to as may be determined by the Clerk of the Board.

5. Protests may be submitted, orally presented and argued by representatives or entities directly impacted by a matter or pending decision before the Board. A Procurement Lobbyist, as defined by Part II, Sec. 8-8 (c) of The City Ethics Code must register with the Board of Ethics as a Procurement Lobbyist in accordance with Section 8-12 of The City Ethics Code. If any member of the Board has sufficient information to determine that Section 8-12 has not been complied with, he or she may make a complaint to the Board of Ethics.

6. The President of the Board shall have the right to limit all speakers to items and issues on the Board agenda, as well as provide a maximum time limit available to a speaker who wishes to address the Board.

7. In the interest of promoting order and efficiency of hearings, persons who are disruptive to the hearing may be required to leave the hearing room.

8. A copy of this Resolution shall be posted in the Department of Legislative Reference, the President of the Board's web site, and the Secretary to the Board's web site and shall be included in all Solicitations.

9. This Resolution shall apply to all Board meetings which are convened two (2) weeks or more after its formal adoption.

Adopted by the Board of Estimates:

Bernie N. Taylor JUN 22 2014
Clerk Date

Approved As To Form and Legal
Sufficiency This 14th Day of
January, 2014

[Signature]
Chief Solicitor

SECTION 00025
SPECIAL PROVISIONS

SP-1 CONTRACT DOCUMENTS

The Contract Documents for this project consist of but are not limited to, the following:

1. **Contract Book** which contains:

- A. Notice of Letting
- B. Special Provisions
 - 1) Instruction to Bidders
 - 2) Special Conditions
 - 3) Construction Details and Materials
 - 4) Notice of Proposed Change Order
 - 5) Extra Work Certification
 - 6) Subcontractors acknowledgement of progress payment
- C. Bid or Proposal and Detached Duplicate
- D. Agreement
- E. Bonds

May contain: Addendum

2. **Contract Plans**

The following numbered and titled Plans form a part of these Contract Documents. The Engineer will furnish, from time to time as the work progresses, such supplemental drawings as may necessary for further illustrating the details of the permanent work, and the Contractor will be required to abide by any modifications, supplemental Plans and Specifications that may be furnished by the Engineer.

The Plans referred to in the Contract Documents are entitled:

CITY OF BALTIMORE
DEPARTMENT OF GENERAL SERVICES
CONTRACT NO. GS21828
ENGINE 33 ELECTRICAL UPGRADES

These documents contain drawings as shown in the Table of Contents.

3. **Standard Specifications**

The City of Baltimore, Department of Public Works, Specifications for Material, Highways, Bridges, Utilities and Incidental Structures, Issue of 2006 is hereby made part of these Contract Documents and hereinafter referred to as "Standard Specifications".

Any references in the Contract Documents made to an Article, Section, Paragraph or Table shall refer to the Standard Specifications, unless otherwise noted.

4. **Book of Standards**

The City of Baltimore, Department of Public Works, Book of Standards are hereby made a part of these Contract Documents and hereinafter referred to as "Book of Standards". Any reference in the Contract Documents made to a Standard Number shall refer to the Book of Standards, unless otherwise noted.

The Book of Standards is available online at:

<https://transportation.baltimorecity.gov/transportation/bookofstandards>

5. **Guidelines for the Performance Evaluation of Design Consultants and Construction Contractors**

Pursuant to and in accordance with provisions of Article VI, Section 11 (c) AND 11(f) of the Charter of Baltimore City 1996 Edition, the City of Baltimore, City of Baltimore Rules for Qualification of Contractors, Performance Evaluations of Construction Contractors and Consultants and Procedures and Guidelines for Hearings before the Office of Boards and Commissions Review Committee November 30, 2016, Guidelines have been promulgated for the evaluation of the performance of design consultants and construction contractors and are hereby made a part of these Contract Documents.

SECTION 00100
INSTRUCTIONS TO BIDDERS

IB-1 PURCHASE OF THE STANDARD SPECIFICATIONS

The Standard Specification is also available free online for download at:
<http://generalservices.baltimorecity.gov/gm-major-projects/greenbook>

IB-2 SCOPE OF WORK

The Principal Items of work under this Contract are as shown on the **NOTICE OF LETTING**

IB-3 LOCATION(S) OF WORK

Work under this Contract will be restricted to the location(s) listed herein. There shall be no deviation from the location(s) so specified either by additions, subtractions or alterations by the Contractor or his representative without advance written permission from the Engineer.

IB-4 CONTRACT BOOK

The successful Bidder, upon execution of the Agreement and Bonds, will receive up to five (5) copies of the Contract Book – no charge.

IB-5 BALTIMORE APPRENTICESHIP TRAINEE FORMS (BATP)

Also included in this contract is a Baltimore Apprenticeship Trainee Program package (BATP documents). The duplicate BATP forms must be completed and submitted with your bid proposal. Completed BATP forms are only required for bids of \$1,000,000.00 or more. Failure to submit the information at the time requested MAY be cause to have your bid rejected.

IB-6 EMPLOY BALTIMORE PACKET

Also included in this contract is an Employ Baltimore Packet. The accompanying manila bid envelope contains Employ Baltimore Packet duplicate documents which must be completed for all contracts with bids in excess of \$50,000.01. All forms in the Employ Baltimore Packet must be completed and submitted with your bid proposal. Failure to submit the information at the time requested may be cause to have your bid rejected.

IB-7 LOCAL HIRING LAW

Article 5, Subtitle 27 of the Baltimore City Code, as amended (the “Local Hiring Law”) and its rules and regulations apply to contracts and agreements executed by the City on or after the Local Hiring Law’s effective date of December 23, 2013. The Local Hiring Law applies to every contract for more than \$300,000 made by the City, or on its behalf, with any person. It also applies to every agreement authorizing assistance valued at more than \$5,000,000 to a City subsidized project. Unless the Mayor’s Office of Employment Development (“MOED”) grants an exception under the Local Hiring Law, at least 51% of the new jobs required to complete the contract of project must be filled by Baltimore City residents.

1. Within two (2) weeks of the Board of Estimate’s award of the contract or approval of the agreement, the contractor shall have a meeting, whether in person or via telephone, with MOED to complete an employment analysis and review the workforces plan required for such contract or agreement. The contractor will not receive any payments under the contract or agreement, unless and until the employment analysis is performed. Contact information for MOED can be found on its website: www.oedworks.com.
2. Should the contractor’s workforce plan indicate a need to fill new jobs, the contractor shall post the new job opening with MOED’s One Stop Career Center Network for a period of seven (7) days prior to its publicly advertising these opening. Further, the contractor shall interview qualified Baltimore City residents referred from MOED, and unless granted an exception, fill at least fifty-one percent of the new jobs required to complete the contract or project, with Baltimore City residents.

IB-8 BALTIMORE CITY’S YOUTHWORKS PROGRAM

Also included in this contract is a Baltimore City’s Youthworks Form. The accompanying manila bid envelop contains a Baltimore City’s Youthworks Form duplicate document which must be completed for all contracts. The single page Baltimore City’s Youthworks Form must be completed and submitted with your bid proposal. Failure to submit the information at the time requested MAY be cause to have your bid rejected.

IB-9 CONTRACTORS EXPENSES, PERMITS, LICENSES, CHARGES, AND NOTICES

Per the City of Baltimore, Department of Public Works, Specifications for Material, Highways, Bridges, Utilities and Incidental Structures, Issue of 2006, Sections 00 73 18 – Contractors Expense and 01 41 26 – Permits, Licenses, Charges, and Notices in the Baltimore City Green Book, the Contractor is responsible for all permit fees. “Permit fees” shall include all fees associated with any permit necessary for the Contractor to perform work, including the building permit. Information regarding the cost of the building permit, trade permits and other permits can be found at http://static.baltimorehousing.org/pdf/permits_fees.pdf.

IB-10 BOND PREMIUM

A letter from the bonding company with the bonding rate is required. Awarded Contractor is required to provide this information upon executing the Payment and Performance Bonds.

IB-11 CERTIFICATION TO ACCOMPANY REQUESTS FOR PROGRESS PAYMENTS or REQUESTS FOR PAYMENTS Per the City of Baltimore, Department of Public Works, Specifications for Material, Highways, Bridges, Utilities and Incidental Structures, Issue of 2006, Sections 01 29 76, the following language shall be included in all requests for progress Payments:

**CITY OF BALTIMORE
DEPARTMENT OF GENERAL SERVICES**

CONTRACT NUMBER: GS21828

PROJECT: ENGINE 33 ELECTRICAL UPGRADES

DATE: _____
(Preferably as of end of month)

To the Director of Finance:

In reference to the above referenced contract, we hereby certify that as of the above date no extra work or other conditions that would give rise to additional costs have been authorized either in writing, verbally, or otherwise except that which is represented by fully executed Change Orders Expenditure Authorization Requests and that as of the above date we are not aware of any condition that would give rise to any additional claim upon the Mayor and City Council of Baltimore in reference to the above project, EXCEPT AS FOLLOWS:

(List exceptions here):

Supporting Documents
Attached hereto:

CERTIFIED CORRECT:

1. Contractor's Release
conditional upon Final payment

Name of Contractor

2. Subcontractors' Acknowledgement
of progress Payment and Release

Date of Certification

By: _____
Authorized Signature

THIS FORM MUST ACCOMPANY ALL REQUESTS FOR PAYMENTS.

IB-12 SUBCONTRACTOR'S ACKNOWLEDGEMENT OF PROGRESS PAYMENT

Per the City of Baltimore, Department of Public Works, Specifications for Material, Highways, Bridges, Utilities and Incidental Structures, Issue of 2006, Sections 01 29 77, the following language shall be included in all requests for progress Payments:

**SUBCONTRACTOR'S ACKNOWLEDGEMENT
OF PROGRESS PAYMENT**

NOTICE: THIS DOCUMENT STATES THAT YOU HAVE BEEN PAID FOR PERFORMING CERTAIN SERVICES. PLEASE READ IT CAREFULLY BEFORE SIGNING.

As of the date listed below, the undersigned subcontractor has received progress payments

totaling \$ _____ **to date** for labor, services, equipment, or materials

furnished to _____
(Name of General Contractor)

on the following contract of the Mayor and City Council of Baltimore:

Contract No. GS21828 - ENGINE 33 ELECTRICAL UPGRADES

Is your company's work on this contract completed _____ Yes _____ No

Dated: _____
Subcontractor Name (Company)

By _____
Name (Signature)

Name (Printed) Title

THIS FORM MUST ACCOMPANY ALL REQUESTS FOR PAYMENT

IB 13 BID DOCUMENT CHECKLIST*

The following must occur as part of your bid submission or your bid may be deemed non-responsive:

| DONE | REQUIRED ACTIONS |
|--------------------------|--|
| <input type="checkbox"/> | Each Addendum issued must be acknowledged on the specific Addendum form and attached to the contract specification with the bid submission. |
| <input type="checkbox"/> | Bid Prices for each and every item and the total must be entered where indicated. <u>Make sure that the Unit Price item (s) is filled out.</u> |
| <input type="checkbox"/> | Follow all of the instructions on the Minority Business forms contained in the bid/specification package: Complete each line with the <u>exact</u> information that is requested; If a total subcontract value is requested, do not enter a percentage instead; Execute the form on behalf of the bidder; Confirm that the proposed subcontractor has executed the form. |
| <input type="checkbox"/> | Provide one original Bid Bond (with original Power of Attorney) or other acceptable bid security in acceptable amount along with a copy of the bid bond or other bid security: If locally funded, 2% of the total bid amount |
| <input type="checkbox"/> | Complete and answer all Bid/proposal Affidavits located after the Bid or Proposal. Ensure that a representative with the proper authority signs in the appropriate pages. Should a representative who is NOT an officer or director of the company execute the bid, attach legal evidence of his/her ability to do so. |
| <input type="checkbox"/> | Complete the Employ Baltimore Certification Statement for projects \$300,000.00 and below, and/or the Local Hiring Certification and Compliance Statement for projects \$300,000.00 and above |
| <input type="checkbox"/> | Ensure the Duplicate Bid is an <u>exact replica</u> of the Original Bid and submit with the Original Bid. |

***PLEASE NOTE-** This list is not intended to be exhaustive nor all inclusive, but is provided for bidder's guidance and informational purposes only.

IB-14 DIGITAL SPECIFICATIONS & DRAWINGS

Specifications & Drawings for this project will be e-mailed to those who purchase the bid. All documents included in the e-mail shall be considered as part of the Bid documents.

IB-15 CDC Guidelines

All individuals, including Contractors and sub-contractors, on City property and in its facilities shall abide with all CDC guidelines in regard to COVID 19.

END OF SECTION

SPECIAL CONDITIONS**SC-1 MINIMUM WAGE RATES & LABOR TRAFFICKING NOTICE REQUIREMENTS**

The Baltimore City Code Art. 5 Subtitle 25 "Prevailing Wages for Work Under Construction Contracts" establishes what is more commonly referred to as the City's "Prevailing Wage" requirement. Contractors awarded City Construction contracts are required to pay their employees a "prevailing Wage" to be determined each year by the Board of Estimates. Contractors must become thoroughly familiar with the "Prevailing Wage" requirement. A copy of the City Code Art. 5 Subtitle 25 can be found on the City of Baltimore's website (<http://civilrights.baltimorecity.gov/wage-commission>).

Included is a copy of the Prevailing Wage Rates that apply to this contract and Art. 5 subtitle 25-9 (Required Records-In General) and subtitle 25-10 (Required Records-Project Payroll Reports), which sets forth certain reporting requirements. An example of a payroll report is also included to be used in complying with Subtitle 25-10. If you find it more convenient you may use your own payroll form so long as it provides the information required and is in close conformity with the form enclosed. Copies of completed payroll reports shall be submitted as follows:

One Copy: Office of Civil Rights & Wage Enforcement
7 E. Redwood St. 9th Flr.
Baltimore, MD 21202
Phone (410)-396-4835
Fax: (410) 752-3190

One Copy: Contracting Agency

If you need additional clarification regarding Article 5, Subtitle 25, please contact the Wage Commission at 410-396-4835.

FISCAL YEAR 2022 PREVAILING WAGE RATES

CLASSIFICATION NO. 1

The following minimum hourly wage rates shall apply to all contracts in excess of One Hundred Thousand Dollars (\$100,000) in connection with new building construction, major remodeling and rehabilitation of buildings and for construction, reconstruction, erection, conversion installation, alteration, renovation, razing, demolition, moving or removing on any airport, pier wharf, sewer, drain, main, conduit, machinery or mechanical, electrical or other equipment or any other operation, or work to be done or performed in, on, upon or in connection with any building, bridge over water, tunnel, tower, stack, filtration plant, waste water or sewage treatment works, pumping stations, and other such structures.

| JOURNEYMEN | HOURLY RATE | FRINGE BENEFITS | TOTAL |
|--|--------------------|------------------------|--------------|
| Asbestos Workers (Insulation Mechanics) | \$39.27 | \$18.72 | \$58.04 |
| Boilermakers | \$17.62 | \$6.96 | \$24.58 |
| Bricklayers | \$34.00 | \$12.84 | \$46.84 |
| Carpenters/Resilient & Soft Floor Layers | \$30.34 | \$14.02 | \$44.36 |
| - Millwright | \$33.65 | \$18.06 | \$51.71 |
| - Piledriver | \$33.62 | \$15.73 | \$49.35 |
| Cement Mason/Plasterers | \$28.45 | \$11.47 | \$39.32 |
| Electricians | \$41.00 | \$18.84 | \$59.84 |
| Elevator Construction Mechanic | \$50.04 | \$41.42 | \$91.46 |
| Firestop Mechanic | \$29.41 | \$8.43 | \$37.84 |
| Glaziers | \$30.77 | \$22.96 | \$53.73 |
| Ironworkers | | | |
| - Ornamental | \$31.17 | \$24.16 | \$55.33 |
| - Structural | \$31.17 | \$24.16 | \$55.33 |
| - Reinforcing Rodmen | \$31.17 | \$24.16 | \$55.33 |
| - Fence Erectors | \$28.70 | \$20.66 | \$49.36 |

APPROVED BY BOARD OF ESTIMATES



By Celeste.Amato at 4:36:17 PM, 3/16/2022

CLERK TO THE BOARD OF ESTIMATES

FISCAL YEAR 2022 PREVAILING WAGE RATES

| JOURNEYMEN | HOURLY RATE | FRINGE BENEFITS | TOTAL |
|--|------------------------|----------------------------|----------------|
| Laborers | | | |
| - General Laborers: Flaggers, Tool and Material Handlers (Except Tenders), Clean-Up, Janitors, Truck Checkers, Dumpmen, Spotter, Landscape Laborer, Mulcher, Watchmen (Including Fire Watchmen) | \$18.25 | \$6.29 | \$24.54 |
| - Construction Laborers: All Laborers not otherwise classified | \$19.10 | \$6.29 | \$25.39 |
| - Semi-Skilled Laborers: Potmen, Power or Air Tool Operators, Pipelayers, Drillers Concrete Laborers, Signalmen, Small Machine Operators, Laser Beam Operators, Scaffold Builders, Caisson Laborer, Jack Hammer Operator (80 lbs. and over), Hazmat Handler | \$19.41 | \$6.29 | \$25.70 |
| Painters | | | |
| - Brush and Trim | \$25.06 | \$9.86 | \$34.92 |
| - Spackling, Taping, Wall Covering | \$25.06 | \$9.86 | \$34.92 |
| - Spray, Structural Steel, Steam Cleaning, Sandblasting | | | |
| Plumbers/Steamfitters/Pipefitter | \$41.92 | \$22.09 | \$64.01 |
| Roofers | | | |
| - Slate and Tile | \$31.26 | \$13.82 | \$45.08 |
| - Wood Block | \$31.26 | \$13.82 | \$45.08 |
| - Composition - Waterproof | \$31.26 | \$13.82 | \$45.08 |

FISCAL YEAR 2022 PREVAILING WAGE RATES

APPROVED BY BOARD OF ESTIMATES

A handwritten signature in black ink, appearing to read "C. Amato", with a horizontal line extending from the end of the signature.

By Celeste.Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimate

FISCAL YEAR 2022 PREVAILING WAGE RATES

JOURNEYMEN

Sheet Metal Worker (Inc. Air
Balance, Metal Roofing)
Sprinkler Fitter
Stonemason
Tile, Terrazzo, Marble Workers
Tile, Terrazzo, Marble Finisher

**POWER EQUIPMENT
OPERATORS**

GROUP I: Certified Crane
Operators (CCO)

GROUP II: Backfiller, backhoe,
batching plants, boat captain,
cableway, loader hoe, (with a
front end bucket over 1 ¼ yds.),
concrete mixing plant, concrete
paver, derrick boat, double
concrete pump, dragline, Eimco
type overhead loader, elevating
grader, scraper or pan type
excavator (25 yds. and over),
front end loader (1 ¾ yds. and
over), gradall, grader, hoist (2
active drums or more), multiple
conveyor, pile driving machine,
power shovel, repair mechanic,
shield, standard gauge
locomotive, trenching machine,
tunnel mucking machine, twin
engine scraper, welder, whirley
rig.

| HOURLY RATE | FRINGE BENEFITS | TOTAL |
|----------------|--------------------|---------|
| \$42.67 | \$22.75 | \$65.42 |
| \$34.40 | \$19.14 | \$53.54 |
| \$38.81 | \$18.66 | \$57.10 |
| \$31.18 | \$12.74 | \$43.92 |
| \$25.81 | \$11.66 | \$37.47 |
| \$37.70 | \$16.14 | \$53.84 |
| \$31.73 | \$13.15 | \$44.88 |

APPROVED BY BOARD OF ESTIMATES



By Celeste.Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimates

FISCAL YEAR 2022 PREVAILING WAGE RATES

| JOURNEYMEN | HOURLY RATE | FRINGE BENEFITS | TOTAL |
|--|-------------|-----------------|---------|
| <u>POWER EQUIPMENT OPERATORS</u> | | | |
| <u>GROUP III:</u> Asphalt spreader bulldozer, bull float, loader, hoe, (with a front end bucket 1 ¼ yds. and under), concrete mixer (with skip), concrete pump, concrete spreader, scraper or pan type excavator (under 25 yds.) finishing machine, front end tractor loader (under 1 ¾ yds.), hi-lift fork lift, longitudinal float, narrow gauge locomotive, one drum hoist, power roller, screeding machine, snooper/vac truck, stone crusher, stone spreader, sub-grader tractor with attachments (2 or more provided both attachments are being used). | \$29.78 | \$13.15 | \$42.93 |
| <u>GROUP IV:</u> Crawler or rubber tire tractor no attachments), compressors, elevator operator, firemen, fuel truck, grease truck, grout pump, light plant, mighty midget with compressor, single conveyor, space heaters, welding machines, welldriller, wellpoint system, deck hands, oilers (all types). | \$24.65 | \$13.17 | \$37.82 |

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By Celeste.Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimates

FISCAL YEAR 2022 PREVAILING WAGE RATES

| JOURNEYMEN | HOURLY RATE | FRINGE BENEFITS | TOTAL |
|---|------------------------|----------------------------|--------------|
| Truck Driver | | | |
| - Goose Neck Drop Frame | \$15.82 | \$3.75 | \$19.57 |
| - Trailer Driver | \$15.50 | \$3.75 | \$19.25 |
| - Flat Bed and Pickup | \$13.89 | \$3.75 | \$17.64 |
| - Dump Truck Driver (Site Only) Welder Receives Rate For Craft Involved | \$12.85 | \$4.60 | \$17.45 |

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By Celeste.Amato at 4:36:17 PM, 3/16/2022

 Clerk to the Board of Estimates

FISCAL YEAR 2022 PREVAILING WAGE RATES

APPRENTICESHIP RATES
PERCENTAGE OF JOURNEYMAN'S HOURLY
RATE
PLUS FULL JOURNEYMAN'S FRINGE BENEFITS (UNLESS PARTIAL FRINGE
BENEFITS ARE APPROVED BY THE MARYLAND APPRENTICESHIP AND TRAINING
COUNCIL)

| <u>ASBESTOS WORKERS</u> | |
|--------------------------------|----|
| First year | 45 |
| Second year | 55 |
| Third year | 65 |
| Fourth year | 75 |
| Fifth year | 85 |

| <u>BOILERMAKERS</u> | |
|----------------------------|----|
| First 6 months | 50 |
| Second 6 months | 60 |
| Third 6 months | 65 |
| Fourth 6 months | 70 |
| Fifth 6 months | 75 |
| Sixth 6 months | 80 |
| Seventh 6 months | 85 |
| Ninth 6 months | 90 |

| <u>BRICKLAYERS & STONE MASONS</u> | |
|--|----|
| First 6 months | 50 |
| Second 6 months | 55 |
| Third 6 months | 60 |
| Fourth 6 months | 70 |
| Fifth 6 months | 80 |
| Sixth 6 months | 90 |

APPROVED BY BOARD OF ESTIMATES



By Celeste.Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimates

FISCAL YEAR 2022 PREVAILING WAGE RATES

APPRENTICESHIP RATES
PERCENTAGE OF JOURNEYMAN'S HOURLY
RATE

PLUS, FULL JOURNEYMAN'S FRINGE BENEFITS (UNLESS PARTIAL FRINGE BENEFITS ARE APPROVED BY THE MARYLAND APPRENTICESHIP AND TRAINING COUNCIL)

| <u>CARPENTERS</u> | |
|--------------------------|----|
| First year | 60 |
| Second year | 70 |
| Third year | 80 |
| Fourth year | 90 |

| <u>CEMENT FINISHERS</u> | |
|--------------------------------|----|
| First 500 hours | 50 |
| Second 500 hours | 55 |
| Third 500 hours | 60 |
| Fourth 500 hours | 65 |
| Fifth 500 hours | 70 |
| Sixth 500 hours | 75 |
| Seventh 500 hours | 80 |
| Eighth 500 hours | 90 |

| <u>ELECTRICIANS</u> | |
|----------------------------|----|
| First 6 months | 40 |
| Second 6 months | 40 |
| Second year | 55 |
| Third year | 65 |
| Fourth year | 70 |
| Fifth year | 75 |

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Clerk to the Board of Estimate

FISCAL YEAR 2022 PREVAILING WAGE RATES

APPRENTICESHIP RATES
PERCENTAGE OF JOURNEYMAN'S HOURLY
RATE
PLUS FULL JOURNEYMAN'S FRINGE BENEFITS (UNLESS PARTIAL FRINGE
BENEFITS ARE APPROVED BY THE MARYLAND APPRENTICESHIP AND TRAINING
COUNCIL)

| <u>IRONWORKERS</u> | |
|---------------------------|----|
| First 1,000 hours | 60 |
| Second 1,000 hours | 65 |
| Third 1,000 hours | 70 |
| Fourth 1,000 hours | 75 |
| Fifth 1,000 hours | 80 |
| Sixth 1,000 hours | 85 |
| Seventh 1,000 hours | 90 |
| Eighth 1,000 hours | 95 |

| <u>MILLWRIGHTS</u> | |
|---------------------------|----|
| First year | 60 |
| Second year | 70 |
| Third year | 80 |
| Fourth year | 90 |

| <u>PAINTERS</u> | |
|------------------------|----|
| First 1,000 hours | 55 |
| Second 1,000 hours | 70 |
| Third 1,000 hours | 85 |

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By Celeste Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimate

FISCAL YEAR 2022 PREVAILING WAGE RATES

APPRENTICESHIP RATES
PERCENTAGE OF JOURNEYMAN'S HOURLY
RATE
PLUS FULL JOURNEYMAN'S FRINGE BENEFITS (UNLESS PARTIAL FRINGE
BENEFITS ARE APPROVED BY THE MARYLAND APPRENTICESHIP AND TRAINING
COUNCIL)

| <u>PLASTERERS</u> | |
|--------------------------|----|
| First 1,000 hours | 50 |
| Second 1,000 hours | 55 |
| Third 1,000 hours | 60 |
| Fourth 1,000 hours | 65 |
| Fifth 1,000 hours | 70 |
| Sixth 1,000 hours | 75 |
| Seventh 1,000 hours | 80 |
| Eighth 1,000 hours | 85 |

| <u>PLUMBERS/STEAMFITTERS/ PIPEFITTERS</u> | |
|--|----|
| First year | 40 |
| Second year | 50 |
| Third year | 60 |
| Fourth year | 70 |
| Fifth year | 80 |

| <u>POWER EQUIPMENT OPERATORS</u> | |
|---|----|
| First period | 55 |
| Second period | 60 |
| Third period | 65 |
| Fourth period | 70 |
| Fifth period | 75 |
| Sixth period | 80 |

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By Celeste Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimate

FISCAL YEAR 2022 PREVAILING WAGE RATES

APPRENTICESHIP RATES
PERCENTAGE OF JOURNEYMAN'S HOURLY
RATE

PLUS FULL JOURNEYMAN'S FRINGE BENEFITS (UNLESS PARTIAL FRINGE
BENEFITS ARE APPROVED BY THE MARYLAND APPRENTICESHIP AND TRAINING
COUNCIL)

| <u>ROOFERS</u> | |
|-----------------------|----|
| First year | 55 |
| Second year | 65 |
| Third year | 75 |

| <u>SHEET METAL WORKERS</u> | |
|-----------------------------------|----|
| First 6 months | 40 |
| Second 6 months | 45 |
| Third 6 months | 50 |
| Fourth 6 months | 55 |
| Fifth 6 months | 60 |
| Sixth 6 months | 65 |
| Seventh 6 months | 70 |
| Eighth 6 months | 75 |
| Ninth 6 months | 80 |
| Tenth 6 months | 85 |

| <u>SHEET METAL WORKERS</u> | |
|-----------------------------------|----|
| First 6 months | 45 |
| Second 6 months | 50 |
| Third 6 months | 55 |
| Fourth 6 months | 60 |
| Fifth 6 months | 65 |
| Sixth 6 months | 70 |
| Seventh 6 months | 75 |
| Eighth 6 months | 80 |
| Ninth 6 months | 85 |
| Tenth 6 months | 90 |

APPROVED BY BOARD OF ESTIMATES



By Celeste.Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimate

FISCAL YEAR 2022 PREVAILING WAGE RATES

**APPRENTICESHIP RATES PERCENTAGE OF
JOURNEYMAN'S HOURLY RATE
PLUS FULL JOURNEYMAN'S FRINGE BENEFITS (UNLESS PARTIAL FRINGE
BENEFITS ARE APPROVED BY THE MARYLAND APPRENTICESHIP AND TRAINING
COUNCIL)**

| | |
|------------------------|----|
| <u>LABORERS</u> | |
| First year | 70 |
| Second year | 90 |

LABORER'S WORK

Laborers may not assist mechanics in the performance of mechanic's work, nor use tools peculiar to established trades. Their work should be confined to the following manual tasks:

1. Digging and filling holes and trenches.
2. Loading, unloading and stockpiling materials.
3. Cleaning and sweeping.
4. Driving stakes.
5. Placing concrete and asphalt (not finishing)
6. Stripping forms.
7. Ripping out material which is to be discarded, including asbestos.
8. Clearing and grubbing.

The above definition is to preclude inadvertent misclassification of laborers.

APPROVED BY BOARD OF ESTIMATES



By Celeste Amato at 4:36:17 PM, 3/16/2022

Clerk to the Board of Estimates

ART. 5, § 25-9 BALTIMORE CITY CODE

§ 25-9. Required records - In general.

(a) Contractors to maintain.

The contractor and each of his subcontractors shall maintain payrolls and basic records relating thereto during the course of the work and shall preserve them for a period of 3 years thereafter for all laborers, mechanics, and apprentices working directly upon the site of the work.

(b) Contents.

These records shall contain:

- (1) the name and address of each such employee;
- (2) his classification in accordance with the classifications fixed in the contract;
- (3) a designation of laborer, mechanic, or apprentice;
- (4) the number of hours worked each day;
- (5) the hourly wage rate;
- (6) the gross wages, deductions made, and actual wages paid;
- (7) a copy of the Social Security returns and evidence of payment thereof;
- (8) a record of fringe benefit payments including contributions to approved plans, funds, or programs and/or additional cash payments; and
- (9) such other data as may be required by the Board of Estimates from time to time.

(City Code, 1950, art. 1, §14(e); 1966, art. 1, §16(f)(1st sen.); 1976/83, art. 1, §19(d)(1).)
(Ord. 45-225; Ord. 59-1960; Ord. 67-969; Ord. 73-348; Ord. 04-672.)

§ 25-10. Required records - Project payroll reports.

(a) Contractor to submit.

The contractor shall submit 2 complete copies of his weekly project payrolls and the weekly project payrolls of each of his subcontractors, consecutively numbered, not later than 14 days from the end of their respective payroll periods, 1 copy to be sent to the contracting agency, the other to the Wage Commission where the same will be available for public inspection during regular business hours. 02/12/16 -52- FINANCE AND PROCUREMENT ART. 5, § 25-10

(b) Contents.

The weekly project payrolls shall contain:

- (1) the name of the prime contractor and the subcontractor, if any;
- (2) a designation of the project and location;
- (3) the name, Social Security Number, and occupation of each employee;
- (4) his classification in accordance with the classifications fixed in the contract;
- (5) a designation of laborer, mechanic, or apprentice;
- (6) the number of hours worked daily by said employee at straight time and at overtime and his hourly wage rate for each;
- (7) the gross wages paid to said employee per week; and
- (8) such other data as may be required by the Board of Estimates from time to time.

(c) Prime contractor responsible for subcontractors.

The prime contractor shall be responsible for the submission of all subcontractors' payrolls covering work performed directly at the work site.

(d) Signed statement of compliance.

Each copy of the payroll shall be accompanied by a statement signed by the contractor or the subcontractor, as the case may be, indicating:

- (1) that the payroll is correct;
- (2) that the wage rates contained therein are not less than those established by the Board of Estimates as set forth in the contract;
- (3) that the classification set forth for each laborer, mechanic, or apprentice conforms with the work he performed; and
- (4) that the contractor and the subcontractor, as the case may be, has complied with the provisions of this subtitle.

(City Code, 1966, art. 1, §16(f)(2nd sen.) ; 1976/83, art. 1, §19(d)(2).) (Ord. 59-1960; Ord. 67-969; Ord. 73-348.)

U.S. Department of Labor
Wage and Hour Division

PAYROLL
(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)



Rev. Dec. 2008

OMB No.: 1235-0008
Expires: 02/28/2018

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

| | | | | | |
|---|--|-----------------|--|-------------------------|--|
| NAME OF CONTRACTOR <input type="checkbox"/> OR SUBCONTRACTOR <input type="checkbox"/> | | ADDRESS | | | |
| PAYROLL NO. | | FOR WEEK ENDING | | PROJECT AND LOCATION | |
| | | | | PROJECT OR CONTRACT NO. | |

| (1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER | (2) NO. OF WITHHOLDING EXEMPTIONS | (3) WORK CLASSIFICATION | TO OVERTIME | (4) DAY AND DATE | | | | | | | (5) TOTAL HOURS | (6) RATE OF PAY | (7) GROSS AMOUNT EARNED | (8) DEDUCTIONS | | | | | | (9) NET WAGES PAID FOR WEEK |
|--|--|-------------------------------|----------------|-----------------------|--|--|--|--|--|--|-----------------------|-----------------------|----------------------------------|-------------------|-------------------------|--|--|-------|---------------------|---|
| | | | | HOURS WORKED EACH DAY | | | | | | | | | | FICA | WITH- HOLDING TAX | | | OTHER | TOTAL DEDUCTIONS | |
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

SUBTITLE 26A LABOR TRAFFICKING NOTICE REQUIREMENTS

This requirement went into effect on January 24, 2022.

Labor Trafficking - Notice Requirements For the purpose of requiring certain contractors with the City of Baltimore to place a notice regarding the human-trafficking prevention hotline in certain locations; providing that certain contractors may obtain the required human-trafficking notices from the United States Department of Homeland Security's Blue Campaign website; providing for certain penalties; and generally relating to labor trafficking notice requirements for city contractors.

Subtitle 26A is included hereunder;

SUBTITLE 26A
LABOR TRAFFICKING NOTICE REQUIREMENTS

§ 26A-1. Applicability.

The requirements of this subtitle apply to:

- (1) construction contracts, including:
 - (i) contracts in excess of \$5,000 made by the Board of Estimates, or on its behalf, with any person, firm, or corporation for the construction, reconstruction, erection, conversion, installation, alteration, repair, maintenance, renovation, razing, demolition, moving, removing, grading, paving, repaving, curbing, filling, excavation, or any other operation or work to be done or performed in, on, upon, or in connection with any building, bridge, viaduct, tunnel, tower, stack, or other structure, airport, land, highway, pier, wharf, sewer, drain, main, conduit, machinery, or mechanical, electrical, or other equipment;
 - (ii) each and every project approved by the Mayor and City Council on or after January 1, 2021, receiving funds from tax increment financing in excess of \$10,000,000 in the aggregate to the extent those funds are used in whole or in part for the construction, reconstruction, erection, conversion, installation, alteration, repair, maintenance, renovation, razing, demolition, moving, removing, grading, paving, repaving, curbing, filling, excavation, or any other operation or work to be done or performed in, on, upon, or in connection with any building, bridge, viaduct, tunnel, tower, stack, or other structure, airport, land, highway, pier, wharf, sewer, drain, main, conduit, machinery, or mechanical, electrical, or other equipment; and

- (2) service contracts, as defined in § 26-1(e) of this article.

(Ord. 22-10.)

§ 26A-2. Requirements.

- (1) The prime contractor must post a sign that states the following:

“LABOR TRAFFICKING 101

Labor trafficking includes recruiting, harboring, transporting, providing, or obtaining people for forced or coerced labor.

The coercion could be threats directed at the victim or someone else. Labor trafficking is often linked with exploitation of a worker. To learn more, visit www.mdhumantrafficking.org.

If a worker ...

- (1) lacks possession of their own identification and travel documents,

ART. 5, § 26A-3

BALTIMORE CITY CODE

- (2) lives at their place of work and in isolated conditions,
 - (3) experiences verbal or physical abuse from their employer or supervisor,
 - (4) is made to work in unsafe conditions, prevented from taking adequate breaks, or forced to meet daily quotas
- ... they may be a victim of labor trafficking.

FOR IMMEDIATE ASSISTANCE
CALL THE NATIONAL HUMAN TRAFFICKING HOTLINE

+1 (888) 373-7888 OR TEXT “BeFREE” TO 233733”

(2) The sign must:

- (i) be at least 16 by 20 inches in size;
 - (ii) contain the text required under subsection (1) of this section in English, Spanish, and any other languages required by the federal Voting Rights Act for voting materials in Baltimore City; and
 - (iii) draw attention to the phone and text numbers of the National Human Trafficking Resource Center Hotline by showing the phone and text numbers in bold type.
- (3) The prime contractor may meet the requirements of this section by creating their own signs using a font size of not less than 30 points for the hotline and text numbers and a font size of not less than 12 points for the body text, or using copies of the signs created and made available online by the United States Department of Homeland Security’s Blue Campaign website.

(Ord. 22-10.)

§ 26A-3. Sign location.

A copy of the labor trafficking sign required by § 26A-2 {“Requirements”} of this subtitle shall be posted by the contractor at the site of the work in a clear and conspicuous place where it can be easily seen and read by the workers. Example areas include break rooms, locker rooms, cafeterias, and other similar locations.

(Ord. 22-10.)

§ 26A-4. Penalties for failure to post signage.

(a) *In general.*

(1) *Prerequisite to citation.*

A citation under this section may only be issued after the issuance of a written warning and a failure to correct the violation within 30 days of the date of the warning.

(2) *Authorization to issue.*

In addition to any other civil or criminal remedy or enforcement procedure, this subtitle may be enforced by issuance of an environmental citation under City Code Article 1, Subtitle 40.

(b) *Process not exclusive.*

The issuance of a citation to enforce this subtitle does not preclude pursuing any other civil or criminal remedy or enforcement action authorized by law.

(c) *Each day a separate offense.*

Each day a violation continues is a separate offense.
(Ord. 22-10.)

SC-2 DEFINITIONS:

Supplement Standard Specification Section 00 23 00.01 as follows;

1. Design Project Manager - the representative of Department of General Services or the duly authorized representative.
2. Project Engineer – the representative of the Department of General Services, and whose authority is commensurate with that of the Engineer
3. Building Manager - the City's on-site manager of the building(s) involved in this contract.

SC-3 EQUAL OPPORTUNITY COMPLIANCE**Article 5 §29-15 Mandatory nondiscrimination contract clause:**

Contractor shall not discriminate on the basis of race, gender, religion, national origin, ethnicity, sexual orientation, gender identity or expression, age, or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors, suppliers, or commercial customers. Contractor shall provide equal opportunity for subcontractors to participate in all of its public sector and private sector subcontracting opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that has occurred or is occurring in the marketplace, such as those specified in Article 5, Subtitle 28 of the Baltimore City Code, as amended from time to time. Contractor understands and agrees that violation of this clause is a material breach of the contract and may result in contract termination, debarment, or other sanctions. This clause is not enforceable by or for the benefit of, and creates no obligation to, any third party.

Article 5 §29-16 Contractor bid requirements:

As part of its bid or proposal, Bidder shall provide to the City a list of all instances within the past 5 years where there has been a final adjudicated determination in a legal or administrative proceeding in the State of Maryland that the bidder has discriminated against its subcontractors, suppliers, vendors, or commercial customers on the basis of race, gender religion, national origin, ethnicity, sexual orientation, gender identity or expression, age or disability, and a description of any resulting sanction entered and remedial action taken.

Bidders may submit this document in a separate sealed envelope with the bid documents.

Article 5 §29-17 Contract disclosure requirement:

Upon the City's request, and only after filing a complaint against Contractor pursuant to Article 5, Subtitle 29, of the Baltimore City Code, as amended from time to time, Contractor agrees to provide the City within 60 calendar days, a truthful and complete list of the names of all subcontractors, vendors, and suppliers that Contractor has used in the past 4 years on any of its contracts that were undertaken within the Baltimore City Market Area as defined in Article 5, §28-1(d) of the Baltimore City Code, as amended from time to time, including the total dollar amount paid by Contractor for each subcontract or supply contract. Contractor agrees to fully cooperate in any investigation conducted by the City pursuant to the City's Commercial Non - Discrimination Policy, as contained in Article 5, Subtitle 29, of the Baltimore City Code as amended from time to time. Contractor understands and agrees that violation of this clause is a

material breach of the contract and may result in contract termination, debarment, and other sanctions. Contractor shall not discriminate on the basis of race, gender, religion, national origin, ethnicity, sexual orientation, gender identity or expression, age, or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors, suppliers, or commercial customers. Contractor shall provide equal opportunity for subcontractors to participate in all of its public sector and private sector subcontracting opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that has occurred or is occurring in the marketplace, such as those specified in Article 5, Subtitle 28 of the Baltimore City Code, as amended from time to time. Contractor understands and agrees that violation of this clause is a material breach of the contract and may result in contract termination, debarment, or other sanctions. This clause is not enforceable by or for the benefit of and creates no obligation to, any third party.

SC-4 PAYMENTS TO THE CITY

Any payments to the Mayor and City Council or any of its Departments, Agencies, Board or Commissions due under the terms of this Agreement or arising incident thereto, shall be made to the Director of Finance and be mailed or delivered to:

Director of Finance
Abel Wolman Municipal Building
200 Holliday St., Room One
Baltimore, Maryland 21202

SC-5 CONTRACTOR TO EXECUTE REQUIRED DOCUMENTS AND START WORK PROMPTLY

~~DELETE~~ Standard Specification Section 00 51 00.07 CONTRACTOR TO EXECUTE REQUIRED DOCUMENTS AND START WORK PROMPTLY and

REPLACE it with the following:

The successful Bidder shall promptly execute and submit a formal Contract, all subcontract agreements in accordance with Article 5 Subtitle 28 of the Baltimore City Code, any and all contract documents specified in an Award Letter, the required Bonds, and all insurance policies or certified copies thereof issued in favor of the Mayor and City Council of Baltimore, as provided in the Special Provisions, all of which shall be subject to the approval of the City Solicitor as to form, terms and conditions. Failure to comply with these requirements within thirty (30) calendar days after the Award shall be just cause for the annulment of the Award. It is understood and agreed that in the event of annulment of the Award, the Board of Estimates may require the Bidder to forfeit, to the use of the City, the amount of the certified check deposited with its Proposal, not as penalty, but as liquidated damages. As an alternative remedy, the City may elect to start the running of contract time (without allowing the Contractor to start work) or to pursue any other remedy allowed to the City under the law or equity.

SC-6 NOISY WORK

SUPPLEMENT Standard Specification Section 01 14 23 as follows:

Work creating excessive noise (jack hammering, demolition, etc.) in or near occupied areas is prohibited after 7:00 PM or before 9:00 AM, and must be coordinated with the Building Manager

and Project Engineer, and performed at times which do not unduly disturb the building's occupants or surrounding occupied areas; and at no additional cost to the City.

SC-7 MAINTENANCE OF TRAFFIC

SUPPLEMENT Standard Specification Section 01 55 26 with the following:

If violations to Maintenance of Traffic restrictions are not remedied/corrected within twelve (12) hours from the documented notice being given to the Contractor, an appropriate deduction will be made from the Contractor's next Progress Estimate. The deduction will be equal to the daily pro rata share of the Schedule of Values price bid for Maintenance of Traffic, which is determined by the lump sum price bid for Maintenance of Traffic divided by the number of days in the contract, or \$200.00 per day, whichever is more, for each day or portion thereof that the deficiencies exist and will continue until the deficiencies are satisfactorily corrected and accepted by the Project Engineer. The amount of money deducted will be a permanent deduction from the Contract and will not be recoverable. Upon satisfactory correction of the deficiencies, payment of the Maintenance of Traffic Schedule of Values item will resume.

SC-8 OVERTIME REIMBURSEMENT

DELETE Paragraph "C." of the Standard Specification Section 00 73 18 CONTRACTOR'S EXPENSE and

REPLACE it with the following:




- C. The Contractor shall reimburse the City for inspection and all other services required when and if, the Contractor chooses to work in excess of the normal eight (8) hour workday, forty (40) hour work week, weekends, or on a City holiday. The amount due the City shall be deducted from the Contractor's monthly pay estimate at the hourly rate of one hundred fifty dollars (\$150.00). The rate specified is per inspector and/or Building Manager on the project while the overtime work is ongoing. The Contractor should assume that, if one (1) to two (2) crews are working, at least one (1) inspector will be on site. If three (3) to five (5) crews are working, at least two (2) inspectors will be on site. If more than five (5) crews are working, at least three (3) inspectors will be on site. This overtime reimbursement shall not apply to overtime work done at the City's request due to no fault of Contractor.

SC-9 PROJECT IDENTIFICATION:

SUPPLEMENT Standard Specification Section 01 58 00 PROJECT IDENTIFICATION as follows:

The Contractor shall furnish, install, and maintain project signs using the design shown below and at a location as directed by the Engineer.

The Contractor shall update the completion date on the project signs quarterly until substantial completion.

| | |
|--|---------------------------------|
|  | <h1>Work In Progress</h1> |
|  | <h2>Mayor Brandon M. Scott</h2> |
|  | |
| <p>Better Schools. Safer Streets. Stronger Neighborhoods.</p> | |
| <p>DEPARTMENT OF GENERAL SERVICES PROJECT NAME (ALL CAPS) informational phone # completion date</p> | |

SC-10 CONTRACTOR PHOTO IDENTIFICATION

The Contractor shall provide a photograph identification badge for each member of his workforce. Each individual shall display the identification badge before entering the project site and as requested during their presence on the project site. The identification badge shall include the individual's photograph, name, organization, and the contract number. Contractor's workforce shall include, but is not limited to, subcontractors, suppliers, manufacturers' representatives, testing agencies, etc. The Contractor shall furnish a photocopy of an individual's identification badge to the Engineer prior to the individual's beginning work at the site. In those instances where the duration of an individual's on-site visit is to be very limited, the Contractor will issue a temporary, non-photo, identification card. The individual may not enter the site until the temporary, non-photo, identification card is issued.

SC-11 CONTRACTOR WORK HOURS

SUPPLEMENT Standard Specifications Section 01 14 18 GENERAL WORK HOURS as follows:

Except otherwise Specified in the Special Provisions or other Contract Documents, or directed by the Engineer, the regular eight (8) hour working day shall begin no earlier than 7:00 A.M. and end no later than 5:00 P.M. Any other working hours must be coordinated with the Engineer and the Building Manager.

SC-12 SUNDAY AND HOLIDAY WORK

DELETE from Paragraph “A.” of Section 01 14 21 SUNDAY AND HOLIDAY WORK of the Standard Specification the word “SUNDAY”, and

SUBSTITUTE the words “SATURDAY AND SUNDAY”.

ADD to Paragraph “B.” of Section 01 14 21 SUNDAY AND HOLIDAY WORK of the Standard Specifications the following holidays:

Martin Luther King, Jr. Birthday, Presidents Day, Good Friday, Columbus Day, Veterans Day, and any other holidays or City non-work days as indicated by the Baltimore City Labor Commissioner at

<http://labor-commissioner.baltimorecity.gov/official-city-holidays>.

SC-13 WARRANTIES

DELETE Paragraph A of Standard Specification Section 01 78 36 WARRANTIES

REPLACE it with:

“The Contractor warrants and guarantees to the City all the improvements made for a period of two (2) years after the date of acceptance or occupancy by the City”.

SC-14 PROGRESS MEETING DUTIES

The Contractor shall employ and provide a clerk, satisfactory to the Engineer, who shall be available at all times to record minutes of all meetings and send sufficient copies of minutes of the meetings to all interested parties or as directed by the Engineer.

SC-15 ENGINEER’S OFFICE

An ENGINEER’S OFFICE will NOT be required as per Section 13 22 00 of the City of Baltimore, Department of Public Works – Specifications – Materials, Highways, Bridges, Utilities, and Incidental Structures 2006.

SC-16 BUILDER’S RISK

Supplement Standard Specification Section 00 73 16.01 as follows:

Contractor shall have and maintain during the life of the Contract such Property Insurance upon the Contractor’s entire work at the site up to the complete value thereof. This insurance shall protect the City, as its interest may appear in the work, and shall insure against the perils of fire and extended coverage, theft vandalism and malicious mischief. All Risk Insurance may not contain exclusions relating to flood, earthquake, mysterious disappearance, hail and terrorism.

If the Property Insurance contains a co-insurance provision, the Contractor shall be responsible for the amount of the insurance satisfying the co-insurance amount so as to make the co-insurance clause inoperable. If not covered otherwise, the Contractor shall have and maintain

during the life of the Contract similar Property Insurance on portions of the work stored off the site or in transit when such portions of the work are to be included in any payment.

SC-17 MATERIALS:

Supplement Standard Specification Section 01 45 14 as follows:

Materials and equipment shall be new, and shall be those of the manufacturers named in the specifications or of a quality, capacity, etc., approved as equal by the Project Engineer.

SC-18 REUSE AND RECYCLING OF SELECTED MATERIALS

The contractor shall include the processing of certain materials to be recycled and/or reused as noted in the Contract Documents.

It is the intention of the City to recycle as much of the materials resulting from New Construction, Restoration, Stabilization and Demolition projects as feasible. The Contractor, therefore, shall be required to source separate certain materials that have recycling potential. These items include but are not limited to: structural steel, concrete, bricks (excluding refractory type), lumber, plaster, plasterboard, insulation cement, roofing materials, floor and wall tiles, pipes, wires and other items physically attached to the structure, including appliances.

MATERIALS MANAGEMENT REPORTING: At each Project Progress Meeting the contractor shall provide spreadsheet (one electronic and one hardcopy) inventory of the following:

- The material type,
- The number of truckloads and/or containers,
- Their overall individual vehicle daily volumes hauled, and
- Individual vehicles "net" payload weights, of all materials intended to be reused, recycled and /or disposed.

| DATE | | | | | | |
|-------------|----------------------|------------------------|-------------------|---------------------------------------|---------------------------------------|--|
| | Material Type | Unit of Measure | # of Units | Total Weight of Day's Material | Total Volume of Day's Material | End Use: Reused / Recycled / Disposed |
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SC-19 TERMINATION FOR CONVENIENCE OF THE CITY

- A. Performance of work under this Contract may be terminated by the City in accordance with this clause, in whole or in part, whenever the City shall determine that such termination is in the best interest of the City. Any such termination shall be effected by delivery to the Contractor of a written Notice of Termination specifying the extent to which performance of work is terminated and the effective date of termination.
- B. After receipt of a Notice of Termination, and except as otherwise directed by the Engineer, the Contractor shall:
1. Stop work under the Contract on the date and to the extent specified in the Notice of Termination;
 2. Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of the portion of the work under the Contract as is not terminated;
 3. Terminate all orders and subcontracts to the extent that they relate to the work terminated by the Notice of Termination;
 4. Assign to the City, in the manner, at times, and to the extent directed by the Engineer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the City shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;
 5. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Engineer, to the extent he may require, which approval or ratification shall be final for all the purposes of this clause;
 6. Transfer title and deliver to the City, in the manner, at the times, and to the extent, if any, directed by the Engineer, fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in connection with the performance of the work terminated by the Notice of Termination, and/or completed or partially completed plans, drawings, information, and other property which, if the Contract had been completed, would have been required to be furnished to the City;

7. Use its best efforts to sell, in the manner, at the times, to the extent, and at the price or prices directed or authorized by the Engineer, any property of the types referred to in (6) above. The Contractor will not be required to extend credit to any purchaser, and may acquire any such property under the conditions prescribed by and at a price or prices approved by the Engineer; provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the City to the Contractor under this contract or shall otherwise be credited to the price or cost of the work covered by this contract or paid in such other manner as the Engineer may direct;
 8. Complete performance of any part of the work that has not been terminated by the Notice of Termination; and
 9. Take any action that may be necessary, or as the Engineer may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the City has or may acquire an interest.
 10. Submit to the Engineer a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of those items for which the disposition has been directed or authorized by the Engineer. The Contractor may request the City to remove such items or enter into a storage agreement covering them. Not later than fifteen (15) days thereafter, the City shall accept title to these items and remove them or enter into a storage agreement covering the same; provided, that the list submitted shall be subject to verification by the Engineer upon removal of the items, or if the items are stored, within forty-five (45) days from the date of submission of the list. Any correction to this list shall be made prior to final settlement.
- C. After receipt of a Notice of Termination, the Contractor shall submit to the Engineer its termination claim, in the form and with certification prescribed by the Engineer. This claim shall be submitted promptly but in no event later than six (6) months from the effective date of termination, unless one or more extensions in writing are granted by the Engineer upon request of the Contractor made in writing within the six-month period or authorized extension thereof. However, if the Engineer determines that the facts justify such action, he may receive and act upon any such termination claim at any time after the six-month period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed, the Engineer may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.
- D. Subject to the provisions of paragraph (C), the Contractor and the Engineer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts

may include a reasonable allowance for profit on work done; provided, that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. The Contract shall be amended accordingly, and the Contractor shall be paid the agreed amount. Nothing in paragraph (E) of this clause, prescribing the amount to be paid to the Contractor in the event of failure of the Contractor and the Engineer to agree upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts that may be agreed upon to be paid to the Contractor pursuant to this paragraph.

E. In the event of the failure of the Contractor and the Engineer to agree as provided in paragraph (D) upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, the Engineer shall pay to the Contractor the amounts determined by the Engineer as follows, but without duplication of any amounts agreed upon in accordance with paragraph (D):

1. With respect to all contract work performed before the effective date of the Notice of Termination, the total (without duplication of any items) of:

i. the cost of the work;

ii. the cost of settling and paying claims arising out of the termination of work under subcontracts or orders, as provided in paragraph (B)(5) above, exclusive of amounts paid or payable on account of supplies or materials delivered or services furnished by subcontractors or vendors before the effective date of the Notice of Termination, which amounts shall be included in the costs payable under (i) above; and

iii. a sum, as profit on (i) above, determined by the Engineer to be fair and reasonable; provided, however, that if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, no profit shall be included or allowed under this subdivision (iii) and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

2. The reasonable cost of the preservation and protection of property, incurred pursuant to paragraph B(8) above, and any other reasonable cost incidental to termination of the work under this Contract, including expenses incidental to the determination of the amount due to the Contractor as the result of the termination of the work under the Contract.

3. The total sum to be paid to the Contractor under (1) of this paragraph shall not exceed the total contract price as reduced by the amount of

payments otherwise made and as further reduced by the contract price of work not terminated. Except for normal spoilage, and except to the extent that the City shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor as provided in (E)(1) above, the fair value, as determined by the Engineer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the City or to a buyer pursuant to paragraph B(7).

- F. Costs claimed, agreed to, shall be in accordance with all applicable City, State and local laws, regulations and ordinances.
- G. The Contractor shall have the right of appeal, under the clause of the Specifications entitled "Disputes," from any determination made by the Engineer unless the Contractor has failed to submit his claim within the time provided herein and has failed to request and receive a written extension of time in which to submit his claim. In any case where the Engineer has made a determination of the amount due to the Contractor, the City shall pay to the Contractor the following:
 - 1. if there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the Engineer, or
 - 2. if an appeal has been taken, the amount finally determined on such appeal.
- H. In arriving at the amount due the Contractor under this clause there shall be deducted
 - 1. all unliquidated advances or other payments made to the Contractor, applicable to the terminated portion of this contract,
 - 2. any claim that the City may have against the Contractor in connection with this contract, and
 - 3. the agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the Contractor or sold, pursuant to the provisions of this clause, and not otherwise recovered by or credited to the City.
- I. If the termination hereunder is partial, the Contractor may file with the Engineer a claim for an equitable adjustment of the price or prices specified in the contract relating to the continued portion of the contract (the portion not terminated by the Notice of Termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices. Any claim by the Contractor for an equitable adjustment under this clause shall be asserted within ninety (90) days from the effective date of the termination notice, unless an extension is granted in writing by the Engineer.

- J. The City may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the Contractor in connection with the terminated portion of this contract whenever in the opinion of the Engineer the aggregate of such payments shall be within the amount to which the Contractor shall be entitled hereunder.
- K. Unless otherwise provided for in this Contract, or by applicable statute, the Contractor shall, from the effective date of termination until the expiration of three years after final settlement under this contract, preserve and make available to the City at all reasonable times at the office of the Contractor but without direct charge to the City, all books, records, documents and other evidence bearing on the costs and expenses of the Contractor under this contract and relating to the work terminated hereunder, or, to the extent approved by the Engineer, reproductions thereof.

SC-20 PROJECT MANAGEMENT SOFTWARE

The Contractor shall provide a schedule of deliverables utilizing Professional Project Management software approved by the Engineer. This schedule shall reflect the anticipated activities, time frames, and in work days for the activities listed. Also, the contractor is expected to utilize "Unifier" for submittals, RFIs, invoicing and any other reports and documents as required and directed by the Engineer. The City will provide the license and Training material for Unifier as required.

SC-21 TEMPORARY TOILET ROOM FACILITIES

The Contractor may use the toilet room facilities that are on site.

SC-22 PROJECT SUPERVISION BY THE CONTRACTOR

The Contractor shall have a Superintendent on the premises during all phases and operations of work. The Superintendent shall be English Speaking.

SC-23 MODIFICATION OF SCOPE

Contractors should be aware that the project is not limited to the scope as defined in these bid documents and that DGS reserves the right to modify the scope of work as necessary with a change order.

SECTION 00300

NOTE: NO INFORMATION OTHER THAN THAT INCLUDED IN OR ATTACHED TO THIS ORIGINAL BID DOCUMENT (WHERE SUCH ATTACHMENT IS PERMITTED) WILL BE USED IN DETERMINING AWARD.

ORIGINAL (NOT TO BE DETACHED)
NOTICE TO BIDDERS

CITY OF BALTIMORE
DEPARTMENT OF GENERAL SERVICES
CONTRACT NUMBER GS21828

THE COMPLETE (ORIGINAL)
CONTRACT BOOK AND
DUPLICATE OF BID OR
PROPOSAL MUST BE
INCLUDED IN THE
BID ENVELOPE

BID OR PROPOSAL

A. BID PRICES

Proposal of _____
Address _____
Made this _____ day of _____ 20____

Bid Due **WEDNESDAY, May 17, 2023**

Certified Check or Bank Cashier's Check or Bank Treasurer's Check or Bid Bond: Equal to two percent (2%) of the Total Bid Submitted.

Completion Time: **120** consecutive calendar days

Liquidated Damages: **\$ 1,500.00** per consecutive calendar day

To the Board of Estimates of Baltimore City:

_____ propose to furnish all necessary labor and materials, tools, implements, tackle, equipment and machinery, and to construct and complete the **GS 21828 – ENGINE 33 ELECTRICAL UPGRADES** at 1223 N. Montford Ave, Baltimore, Maryland, all in strict accordance with the attached contract documents, at and for the lump sum base bid price of:

A. Base Bid:

Written Words (\$ _____) Numerical

Proposals will be evaluated based on the Base bid price.

The foregoing price is to include and cover the furnishing of all materials and labor requisite and proper, and the providing of all necessary machinery, tools' apparatus, and means for performing the work and the doing as set forth and described in the Contract Documents.

B. BIDDER'S REPRESENTATION

The undersigned bidder certifies that (he/she) has thoroughly examined the site on which the work is to be done, and is thoroughly conversant with all the work called for on the drawings and in all the specifications and with all the requirements necessary and existing to properly execute the work in its entirety; that all allowances have been made for contingencies, etc., for the through, prompt and intelligent execution and completion of the work, within the time required.

C. RECEIPT OF ADDENDA:

The Bidder acknowledges receipt of the following Addenda:

Addendum No. _____ dated _____
Addendum No. _____ dated _____
Addendum No. _____ dated _____
Addendum No. _____ dated _____

Signature and Title

The foregoing price is to include and cover the furnishing of all materials and labor requisite and proper, and the providing of all necessary machinery, tools, apparatus and means for performing the work and the doing of all the above mentioned work as set forth and described in the Contract Documents.

Note: Each and every person Bidding and Named above must sign here.

In case of Firms, give the first and last name of each member, in full, with Title.

In case a Bid shall be submitted by or in behalf of any Corporation, it must be signed in the name of such Corporation by some authorized Officer or Agent, thereof, who shall also subscribe his Name and Title. If practicable, the Seal of the Corporation shall be affixed.

In case a Bid shall be submitted by joint venture ("JV"), the document that established the JV must be submitted with the bid for verification purposes, and Officers or Agents of all of the firms that are part of the Joint Venture must sign below as acknowledgement of their participation in this bid.

WITNESS _____ (SIGNED) _____

(TITLE) _____

WITNESS _____ (SIGNED) _____

(TITLE) _____

WITNESS _____ (SIGNED) _____

(TITLE) _____

D. ALTERNATE PRICES:

Attention is directed to the Contract and General Conditions for the Construction, and Division, and Subdivisions which are hereby made a part of the Alternate Prices and which shall apply as fully as if repeated herein.

Consult the drawings and the applicable portions of the Specifications for location and extent. All work shall be subject to all stipulation as set forth in the individual sections of the specifications for the work involved as fully as if repeated herein.

In as much possible, the work that comprises the alternates is defined on the drawings and labeled accordingly. For special conditions that occur between the Base Bid and an Alternate, or between different Alternates, hereinafter described. Should a clarification of intent regarding what is included in a particular Alternate be required, it shall be requested of the DGS Project Engineer in a timely manner prior to receipt of Bids, but in no event later than the date for submission of bid RFIs, otherwise it shall be understood that the Contractor will complete all work covered by the Base Bid and whatever Alternates that are accepted plus whatever coordination or permanent or temporary work that is required to effectively and satisfactorily terminate incomplete construction or service either at the point of juncture with the new work or where directed.

THIS DOES NOT APPLY TO THIS PROJECT

| E. STANDARD UNIT PRICES: | |
|---|----------|
| In all instances when the Engineer, with the approval of the Director, Department of General Services, orders extra work to be performed and/or orders alterations, changes, additions and/or omissions to be made in the work, in accordance with Paragraph 14 of the General Conditions of the Specifications, the unit prices set out in the following schedule shall prevail: | |
| A. Price per cubic yard for earth excavation in general; including disposal of the excavated material either on or off the site, and/or placing the excavated material in compacted fill, as directed by the Engineer | \$20.00 |
| B. Price per cubic yard for pit and trench excavation, either hand or machine, in material other than rock; including all required pumping, sheeting, sheet piling, bracing and shoring; compacted backfill using the excavated material and disposal of all surplus excavated material either on or off site as directed by the Engineer. | \$47.50 |
| C. Price per cubic yard of pit and trench excavations in rock; including all required blasting, drilling, hand tool wedging, pumping, bracing, shoring, compacted backfill using approved material available on the site, and disposal of all excavated rock either on or off the site, as directed by the Engineer. | \$140.00 |
| D. Concrete Material and Installation | |
| 1. Concrete material costs for the actual amount of additional concrete placed will be paid for at the per-yard amount shown on the supplier's invoice plus an additional 10% to cover all overhead and profit for the same. | |
| 2. Installation costs per cubic yard of concrete in place will be paid as follows: | |
| a. Placement of footings, pedestals, grade beams, and pile caps, including curing but excluding forms and reinforcing | \$45.00 |
| b. Placement of walls and columns placed at elevations not higher than 5 feet above grade, including curing and finishing of vertical services, but excluding forms and reinforcing | \$35.00 |
| E. Price per pound of reinforcing steel place including all required accessories, bracing, shores and stripping | \$.76 |
| F. Price per square foot of concrete contact area for forms in place, including all required accessories, bracing, shores and stripping | |
| 1. Footings, grade beams and pile caps | \$4.15 |
| 2. Walls, columns and other vertical surfaces not higher than 5 feet above grade including steel column encasement. | \$6.10 |
| G. Price per square foot of masonry foundation walls, including horizontal steel reinforcing for specified foundation walls in place. | |
| For 4" thick walls | \$4.80 |
| For 8" thick walls | \$6.75 |
| For 10" thick walls | \$8.50 |
| For 12" thick walls | \$10.40 |
| For 16" thick walls | \$13.00 |
| All unit prices shall apply equally to both additions and/or deductions, and include all costs of and permitted percentages for, overhead, profit, taxes, Workmen's Compensation Insurance, Public Liability Insurance, Health and Welfare Payment, Social Security Taxes, Unemployment Compensation, etc. If a change involves an omission and no extra work, the Contractor shall receive a sum not in excess of 5% of the unit price for overhead. | |

| |
|--|
| The definition of rock, as listed under Item C. shall be as follows: |
| Any material, which cannot be removed by methods other than drilling, wedging and/or blasting, shall be termed rock excavation. All other excavations shall be termed earth excavation. Should boulders be encountered, those in size up to ½ cubic yard shall be termed earth excavation. |
| |

F. BID/PROPOSAL AFFIDAVIT

INSTRUCTIONS: The following Bid/Proposal Affidavit is a material and integral part of this Bid. Each Bidder shall read it carefully and enter all information required therein prior to executing it before a Notary Public. Failure to properly complete and execute this Bid/Proposal Affidavit MAY cause your bid to be found non-responsive and it may be rejected by the Board of Estimates.

1. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

I am the (title) _____ and the duly authorized representative of (business name) _____ and that I possess the legal authority to make this Affidavit on behalf of myself and the business for which I am acting.

2. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in Section 16-101(b) of the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies has been convicted of, or has had probation before judgment imposed pursuant to Criminal Procedure Article, §6-220, Annotated Code of Maryland, or has pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, **except** as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business):

3. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies, has:

(1) Been convicted under state or federal statute of:

(a) A criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or

(b) Fraud, embezzlement, theft, forgery, false pretenses, falsification or destruction of records or receiving stolen property;

(2) Been convicted of any criminal violation of a state or federal antitrust statute;

(3) Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. §1961 et seq., or the Mail Fraud Act, 18 U.S.C. §1341 et seq., for acts in connection with the submission of bids or proposals for a public or private contract;

(4) Been convicted of a violation of the State Minority Business Enterprise Law, §14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(5) Been convicted of a violation of the City of Baltimore's Minority and Women's and Business Enterprises Law, Baltimore City Code, Article 5, Subtitle 28;

(6) Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsections (1)—(5) above;

(7) Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of bids or proposals for a public or private contract; or

(8) Admitted in writing or under oath, during the course of an official investigation or other proceedings, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in §§B and C(1)—(7) above, **except** as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment):

4. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities, including obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, **except** as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status

of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension).

5. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

(1) The business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Sections 16-101, et seq., of the State Finance and Procurement Article of the Annotated Code of Maryland and/or Article 5, Subtitle 40, of the Baltimore City Code; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, **except** as follows (you must indicate the reasons why the affirmations cannot be given without qualification):

6. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business has:

(1) Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the accompanying bid or offer that is being submitted;

(2) In any manner, directly or indirectly, entered into any agreement of any kind to fix the bid price or price proposal of the bidder or offeror or of any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the accompanying bid or offer is submitted.

7. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, Election Law Article, Title 14, Disclosure By Persons Doing Public Business, Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a municipal corporation or a political subdivision of the State, during a calendar year in which the person receives in the aggregate \$100,000 or more shall file with the State Board of Elections a statement disclosing contributions in excess of \$500 made during the reporting period to a candidate for elective office in any primary or general election.

I am aware of, and the above business will comply with all applicable provisions of the Maryland Annotated Code, Election Law Article, §14-101 *et seq.*, "Disclosure By Persons Doing Public Business", ("Election Law"). I hereby certify, in accordance with §14-107 of the Election Law, that the above business has filed the statement required under §14-104(b)(1) of the Election Law.

8. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT

I FURTHER AFFIRM THAT:

(1) The business named above is a (domestic ____) (foreign ____) corporation registered in accordance with the Corporations and Associations Article, Annotated Code of Maryland, and that it is in good standing and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation.

(If not applicable, so state). _____

(2) Except as validly contested, the business has paid, or has arranged for payment of, all taxes due the City of Baltimore and the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, the Department of Labor, Licensing, and Regulation and the City of Baltimore, as applicable.

(3) If awarded the contract resulting from this Bid/Proposal, the business shall remain in full compliance with all requirements of this § 8 during the term, and any extensions thereof, of the said contract.

9. CONTINGENT FEES

I FURTHER AFFIRM THAT:

The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency, any fee or any other consideration contingent on the making of the Contract.

10. CERTIFICATION OF WORK CAPACITY AND PREQUALIFICATION CLASSIFICATIONS

I FURTHER AFFIRM THAT:

We hold Certificate No. _____ which expires on _____.

We have the Work Capacity to perform this contract as provided in the Standard Specifications and in accordance with the rules, regulations and requirements of the Baltimore City Contractors' Qualification Committee.

Furthermore, our current Certificate of Prequalification includes work Classifications covering Contract Items to a total of at least Fifty Percent (50%) of the Aggregate Amount Bid.

11. ACKNOWLEDGEMENT

I ACKNOWLEDGE THAT this Affidavit shall be included in my Bid/Proposal and that my failure to furnish it MAY be cause for my Bid/Proposal to be rejected. I further acknowledge that this Affidavit is subject to applicable laws of the United States, the State of Maryland and the City of Baltimore, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of this Bid/Proposal shall be construed to supersede, amend, modify or waive, on behalf of the City of Baltimore, the exercise of any statutory right or remedy conferred by the Constitution and the laws of Maryland and Baltimore City with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.

I FURTHER ACKNOWLEDGE THAT if the business is awarded the contract resulting from this Bid/Proposal, this Affidavit shall become a material part of the contract and the business agrees that it shall remain in full compliance with all Affirmations contained herein during the term of the contract an any and all extensions thereto.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

By: _____
Name/Title

Subscribed and sworn to me this _____ day of _____ 20____.

Notary Public

My commission expires on _____.

**G. MAYOR AND CITY COUNCIL OF BALTIMORE CITY
BALTIMORE CITY CODE, ARTICLE 5, SUBTITLE 28
MINORITY AND WOMEN'S BUSINESS PROGRAM**

PART A: INSTRUCTIONS

The requirements of Article 5, Subtitle 28 of the Baltimore City Code – Minority and Women's Business Program are a part of this contract and are incorporated by reference. The failure of any bidder, contractor or subcontractor to comply with Article 5, Subtitle 28 is subject to any or all of the following penalties: (1) suspension of contract; (2) withholding of funds; (3) rescission of contract based on material breach; (4) refusal to accept a bid; (5) disqualification of a bidder, contractor, or other business from eligibility for providing goods or services to the City for a period not to exceed 2 years; and (6) payment of liquidated damages. Art. 5, §28-122.

All bidders are advised to read all instructions and forms carefully. Please follow the instructions for each section of the forms. Failure to respond or properly execute the forms can result in disqualification and possible rejection of your bid.

A complete copy of Article 5, Subtitle 28 of the Baltimore City Code is available online at:
<https://legislative.reference.baltimorecity.gov/city-codes>

1. BID REQUIREMENTS

Bids must include a commitment to utilize MBEs and WBEs at a percentage that equals or exceeds the contract goals indicated in the contract specifications. **Bidder must submit the following completed documents WITH THE BID:**

- ✓ **Part B: Statement of Intent Form(s)** – to be signed by Bidder and MBE and/or WBE.
 - ✓ **Part D: MBE/WBE Participation Affidavit** – to be completed and signed by Bidder
- Any bid that does not include a signed Statement of Intent Form(s) and the MBE/WBE Participation Affidavit is non-responsive and will be rejected. MBE/WBE MUST be certified with the City of Baltimore.**

ONLY SUBMIT IF APPLICABLE:

- ✓ **Part C: Statement of Self-Performance** – to be signed by Bidder who is certified by the City as MBE and/or WBE. This is only filled out if the prime plans to self-perform to fulfill the MBE/WBE goals.
- ✓ **Part E: MBE/WBE Participation Waiver Request** – to be completed and submitted by Bidder if unable to meet the participation goals. (Please note: Substantial documentation must be provided to justify reasons for not being able to meet goals) Specifically, on Part E numbers one, two, and three must be addressed in detail.

2. VERIFYING CERTIFICATION

- Bidder is responsible for verifying that each MBE and WBE to be used on a contract is certified with Baltimore City by the Minority and Women's Business Opportunity

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- Office (MWBOO) at bid opening for the work and/or services to be performed on the contract. Art. 5, §28-48(d).
- The MBEs and WBEs named must be certified for the services they are listed to perform, and the services must be required as part of the Detailed Specifications of the contract.
- A directory of certified MBEs and WBEs is available online at <https://cityservices.baltimorecity.gov/mwboo/>
- County, State, or Federal certification is not acceptable, the MBE and WBE **must** be certified with the City of Baltimore.

3. COUNTING MBE AND WBE PARTICIPATION

a) Participation of M/WBE's

A business enterprise that is certified as both an MBE and WBE (M/WBE) may not be counted toward both the MBE and WBE goals for the same project. The bidder must select the goal to which the business enterprise is to be counted. Art. 5, §28-31(b) and §28-35.

b) Credit for Self-Performance

A bidder that is an MBE or WBE may count up to 50% of the dollar value of the work it intends to perform with its own forces toward the applicable MBE or WBE goal. The amount of credit may not exceed the MBE's or WBE's available work capacity as calculated with the Contractor Prequalification rules. **Intentions to count self-performance toward the MBE or WBE goal must be indicated on Part C: Statement of Intent to Self-Perform.** Art. 5, §28-31(d).

c) Commercially Useful Function

The bidder may count toward the contract goals only expenditures to MBEs and WBEs that perform a commercially useful function in the execution of the contract. Commercially useful function means the performance of real and distinct work for which the business enterprise has the skill, expertise, and actual responsibility to perform, manage and supervise. Art. 5, §28-32.

d) Joint Ventures

A bidder may count toward the contract goal the portion of its expenditure to a joint venture that is equal to the percentage of the MBE or WBE participation in the joint venture. The MBE or WBE member of the joint venture must have an interest in the control, management, risks and operation of the joint venture commensurate with the member's percentage of ownership. The MBE or WBE member of the joint venture must be responsible for a clearly defined portion of the work to be performed, equal to its share in the ownership, control and management of the joint venture. Art. 5, §28-33.

e) Subcontracting by MBE or WBE

A bidder may not count toward its contract goal any agreement with a certified MBE or WBE subcontractor who intends to subcontract more than 10% of the dollar amount of the services to be performed under its agreement with the bidder. This restriction does not apply to an MBE's

or WBE's contracts for the purchase of materials, equipment or supplies that are incidental to the performance of services under its agreement with the bidder. Art. 5, §28-34.

f) Manufacturers and Suppliers

Manufacturers – A bidder may count toward the contract goal its entire expenditure to a certified MBE or WBE that manufactures the goods supplied. Art. 5, §28-36.

Non-Manufacturers – **Only 25% of each contract goal may be attained by expenditures to MBEs and WBEs that are non-manufacturing suppliers.** Art. 5, §28-37. *Example:* If the bid amount is \$100,000 and the MBE or WBE goal is 15% or \$15,000; then the limit for the MBE or WBE suppliers that are non-manufacturers is \$3,750 or 25% of the 15% goal.

g) Insurance Companies and Travel Agents

A bidder may count toward the contract goals only the fees or commissions charged by an MBE or WBE insurance company or travel agent. Art. 5, §28-38.

h) Financial Institutions

A bidder may count toward the contract goals only the fees charged and earned by an MBE or WBE financial institution. Art. 5, §28-39.

i) Non-Affiliation

A bidder may not use an MBE or WBE to meet a contract goal if the bidder has a financial interest in, has an interest in the ownership or control of, or is significantly involved in the operation of the MBE or WBE. Art. 5, §28-41.

4. **WAIVER REQUESTS**

If a bidder is unable to comply with a contract goal, the bidder may submit a waiver request with the bid. The waiver request must be made on the MBE/WBE Participation Waiver Request Form. A waiver will not be granted unless the waiver request includes documentation that demonstrates good faith efforts to meet the goals. Art. 5, §28-62.

5. **SUBSTITUTION OF MBE OR WBE**

The Minority and Women's Business Opportunity Office must approve the substitution, after award of a contract, of any MBE or WBE that is included on a bidder's Statement of Intent at the time of bid opening. Any unjustified failure to comply with this requirement after award of a contract is a material breach of contract. Art. 5, §28-63(a).

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6. CONTRACT REQUIREMENTS

During the term of the contract, any unjustified failure to comply with the levels of MBE and WBE participation identified in the bid is a material breach of contract. Art. 5, §28-48 (e).

Before final payment, the contractor must submit the Subcontractor Utilization Form with its final payment request. The Subcontractor Utilization Form will include a list of the names of all subcontractors utilized on the contract, both MBE/WBE and non-MBE/WBE, the total amount paid to each subcontractor, and the owner's race/ethnicity and gender.

**THIS PACKAGE OF MBE AND WBE PARTICIPATION
COMMITMENT FORMS, AS DETAILED IN INSTRUCTION 1.
BID REQUIREMENTS, ARE DUE WITH THE BID.**

**MBE AND WBE PARTICIPATION
COMMITMENT FORMS**

Name of Bidder (Proposer): _____

Address: _____

Contracting Agency: _____

Contract (Project) Title: _____

Contract Number: _____

Bid Due Date: _____

The MBE goal is __29__% The WBE goal is __10__%

If MBE Sub-Goals Apply: (the MBE sub-goals will be listed in the solicitation, if there are no MBE sub-goals listed please leave blank)

African American: ____% Asian American: ____% Hispanic American: ____% Native American: ____%

**PART B:
MBE/WBE AND PRIME CONTRACTOR'S STATEMENT OF INTENT**

COMPLETE A SEPARATE FORM FOR EACH MBE and WBE NAMED IN THIS BID. (You are permitted to make additional copies of this form as needed). PART A: INSTRUCTIONS MUST BE REVIEWED BEFORE COMPLETING THIS FORM, WITH PARTICULAR ATTENTION PAID TO SECTIONS 2, 3A and 3F.

Contract Number: _____

Name of Prime Contractor: _____

Name of Baltimore City Certified Subcontractor:

City Certification Number: _____ **MBE** _____ **WBE**

List the City certified Work and/or Service to be performed by MBE or WBE:
(The selected MBE and/or WBE above must be City certified for the work/service being performed)

Materials/Supplies to be furnished by MBE or WBE:

Percentage of work to be performed by MBE or WBE: _____%

Dollar Amount to be paid to MBE or WBE for work performed: \$ _____
(If MBE sub-goals apply, please list the percentage for this Statement of Intent.) (the MBE sub-goals would be listed in the solicitation, if there are no MBE sub-goals listed please leave blank)

African American: ____% Asian American: ____% Hispanic American: ____% Native American: ____%

The undersigned Prime Contractor and Subcontractor agree to enter into a contract for the work/service indicated above for the percentage and corresponding dollar amount listed to meet the MBE/WBE participation goals. This form is subject to the Prime Contractor's execution of a contract with the City of Baltimore. The Subcontractor is currently certified as an MBE or WBE with the City of Baltimore Minority and Women's Business Opportunity Office to perform the work described above.

Signature of Prime Contractor **(REQUIRED)**

Date

Email Address

Phone

Signature of MBE or WBE **(REQUIRED)**

Date

Email Address

Phone

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PLEASE NOTE: CHANGES TO INFORMATION ON PART B: MBE/WBE AND PRIME CONTRACTOR'S STATEMENT OF INTENT THAT ARE MATERIAL TO THE AGREEMENT BETWEEN THE PRIME CONTRACTOR AND MBE OR WBE MUST BE INITIALED BY BOTH PARTIES.

**PART C:
STATEMENT OF INTENT TO SELF-PERFORM**

PART A: INSTRUCTIONS MUST BE REVIEWED BEFORE COMPLETING THIS FORM, WITH PARTICULAR ATTENTION PAID TO SECTION 2, 3a, 3b and 3f.

Name of Prime

Contractor: _____

City Certification Number: _____ **MBE** _____ **WBE**

List the City certified Work and/or Service to be self-performed:

(The Prime Contractor MBE or WBE above must be City certified for the work/service being performed)

Materials/Supplies to be furnished:

Total Percentage of Self-Performed Work toward the MBE or WBE Goal: _____%

**Total Dollar Amount of Work/Services to be
Self-Performed by the Prime Contractor on this Contract:**
\$ _____

(If MBE sub-goals apply, please list the percentage for this Statement of Intent.) (the MBE sub-goals would be listed in the solicitation, if there are no MBE sub-goals listed please leave blank)

African American: ____% Asian American: ____% Hispanic American: ____% Native American: ____%

The undersigned Prime Contractor agrees to Self-Perform the Work/Service indicated above for the Dollar Amount and/or Percentage indicated to meet the MBE/WBE participation goals, subject to the Prime Contractor's execution of a contract with the City of Baltimore. The Prime Contractor is currently certified as an MBE or WBE with the City of Baltimore Minority and Women's Business Opportunity Office to perform the work described above.

Signature of Prime Contractor (**REQUIRED**)

Date

Email Address

Phone

PART D: MBE/WBE PARTICIPATION AFFIDAVIT

The Undersigned authorized representative of Contractor does hereby make the following Affidavit: Contractor has read the Bidder Information and Instructions regarding the MBE/WBE Program. Contractor acknowledges **the MBE goal of 29 % and the WBE goal of 10 %** for this contract. Contractor has achieved the following participation:

MBE _____ % **and** \$ _____

WBE _____ % **and** \$ _____

of the total contract amount which is \$_____.

My firm has made good faith efforts to achieve the MBE and WBE participation goals for this contract. I understand that, if awarded the contract, my firm must submit to the Minority and Women's Business Opportunity Office (MWBOO) copies of all executed agreements with the MBE and WBE firms being utilized to achieve the participation goals and other requirements of Article 5, Subtitle 28 of the Baltimore City Code. I understand that these documents must be submitted prior to the issuance of a notice to proceed.

I understand that, if awarded the contract, my firm must submit to the MWBOO the Subcontractor Utilization Form, canceled checks, and any other documentation and reports required by MWBOO verifying payments to the MBE and WBE firms utilized on the contract, including electronic verification.

I understand that, if awarded this contract and I find that I am unable to utilize the MBEs or WBEs identified in my Statements of Intent, I must substitute other certified MBE and WBE firms to meet the participation goals. I understand that I may not make a substitution until I have obtained the written approval of MWBOO.

I understand that, if awarded this contract, authorized representatives of the City of Baltimore may examine, from time to time, the books, records and files of my firm to the extent that such material is relevant to a determination of whether my firm is complying with the MBE and WBE participation requirements of this contract.

I do solemnly declare and affirm under the penalty of perjury that the contents of the foregoing Affidavit are true and correct to the best of my knowledge, information, and belief.

Contractor Company Name

Signature

Email Address and Phone

Print Name and Title

PART E: MBE/WBE PARTICIPATION WAIVER REQUEST FORM

Name of Bidder _____

Address _____

Contracting Agency: _____

Contract (Project) Number and Title: _____

Bid Due Date: _____

Goals on this contract..... MBE: _____% and WBE: _____%

If MBE Sub-Goals Apply:

African American: ____% Asian American: ____% Hispanic American: ____ % Native American: ____%

I have achieved.....MBE: _____% and WBE: _____%

If MBE Sub-Goals Apply:

African American: ____% Asian American: ____% Hispanic American: ____ % Native American: ____%

I am requesting a waiver of.....MBE: _____% and WBE: _____%

If MBE Sub-Goals Apply:

African American: ____% Asian American: ____% Hispanic American: ____ % Native American: ____%

I have contacted MWBOO for assistance: _____Yes _____No (*Check One*)

Number of MBE firms contacted: _____ (*Attach a list of names.*)

Number of WBE firms contacted: _____ (*Attach a list of names.*)

Attach documentation of your good faith efforts to secure, contact and negotiate with MBEs and WBEs, including:

- (1) The reasons your company is unable to secure sufficient MBE/WBE participation to meet the stated goals
- (2) The efforts made by your company to select portions of the contract to be performed by MBEs and WBEs
- (3) For each MBE or WBE that placed a bid that you consider to be unacceptable, a statement that explains the basis for that conclusion
- (4) **Please consult the Bidder Information Guide & MWBOO FAQ for additional waiver guidance.**

Signature of Authorized Company Representative _____

_____Date

BIDDER SUBMISSION CHECKLIST

- ☐ You have reviewed the **Bidder Information Guide** following this checklist
- ☐ You retained the **Subcontractor Utilization Form** for submission after performing on the contract, if awarded. **This form is not to be submitted with your bid.**

— **Part B: Statement of Intent Form(s)**

- ☐ Name of Bidder and Name of MBE or WBE included at the top of the form
- ☐ Form is signed by both Bidder and MBE or WBE
- ☐ Form indicates whether the subcontractor is a MBE or WBE
- ☐ Checked MWBOO database to verify MBE and WBE certification
- ☐ Listed the MBE or WBE subcontractor's City certification number
- ☐ Checked SDAT database to verify good standing of MBE and WBE
- ☐ Detailed Brief description of work to be provided
- ☐ Detailed Materials/supplies to be provided (if applicable)
- ☐ Stated Percentage of Work to be performed
- ☐ Stated Dollar amount of work to be performed
- ☐ The percentages being performed by the MBE and WBE meet the goals set on the bid solicitation

— **Part D: MBE/WBE Participation Affidavit**

- ☐ The applicable MBE/WBE goal was entered in the first paragraph (this goal should match the goal stated in the bid solicitation)
- ☐ Stated MBE or WBE percentage (%) of work to be performed (this percentage should match the goals set on the bid solicitation)
- ☐ Stated dollar value corresponding to the percentage of work to be performed (if this is a requirements contract, this can be left blank)
- ☐ Completed Company name and address
- ☐ Signed your name
- ☐ Printed name and title of the person who signed the form

OPTIONAL FORMS, these should only be submitted if applicable

— **Part C: Statement of Self-Performance**

- ☐ You are certified MBE/WBE by Baltimore City MWBOO
- ☐ Included the percentage of work to be applied to the applicable MBE or WBE participation goal
- ☐ Self-performing percentage is not over 50%
- ☐ Detailed Brief description of work to be provided
- ☐ Detailed Materials/supplies to be provided (if applicable)
- ☐ Stated Percentage of Work to be self-performed
- ☐ Stated Dollar amount of work to be self-performed
- ☐ Form is signed by the Bidder

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— **Part E: MBE/WBE Participation Waiver Request**

- ☐ **You submitted an additional document addressing questions one, two and three on Part E.**
- ☐ You exercised good faith efforts to achieve the applicable contract participation goals
- ☐ You reviewed the Bidder Information Guide for guidance regarding waivers and good faith efforts
- ☐ You detailed all efforts that were undertaken to secure MBE and/or WBE participation on this contract in the Waiver Request Form and submitted additional documentation of these efforts.
- ☐ **You have double-checked that all bid forms that will be submitted are complete, contain the required information, and are signed and dated.**

Bidder Information Guide

What are some common mistakes or omissions that I should try to avoid and things to keep in mind?

- Any bid that does not include a signed Statement of Intent Form(s) and the MBE/WBE Participation Affidavit is non-responsive and will be rejected.
- Any Statement of Intent Form(s) and/or MBE/WBE Participation Affidavit that are not properly executed or do not contain all required information will result in a finding of non-compliance and will be rejected.
- **Utilizing a business that is not certified with the City of Baltimore or that has an expired certification, without an extension due to a pending application for renewal, will not count towards meeting a MBE/WBE participation goal.** City Code Article 5, §28-41(d) states that each bidder is responsible for verifying that all MBEs and WBEs to be used have been certified by the Office before bid opening.
- The failure to exercise good faith efforts when requesting a waiver and not meeting the applicable MBE/WBE goals for the contract will result in a finding of non-compliance
- A business enterprise that is Baltimore City certified as both an MBE and WBE (M/WBE) may not be counted toward both the MBE and WBE goals for the same project. The bidder must select the goal to which the business enterprise is to be counted. Art. 5, §28-31(b) and §28-35.
- A bidder that is a City certified MBE/WBE may only count up to 50% of the dollar value of the work it intends to perform with its own forces toward the applicable MBE or WBE goal. The amount of credit may not exceed the MBE/WBE's available work capacity as calculated with the Contractor Prequalification rules. Intentions to count self-performance toward the MBE or WBE goal must be indicated on Part C: Statement of Intent to Self-Perform. A bidder's statement that they will self-perform, but the business is not City certified as a MBE/WBE, may result in the bid being found non-compliant.
- A bidder may count toward the contract goal the portion of its expenditure to a joint venture that is equal to the percentage of the MBE or WBE participation in the joint venture. The MBE or WBE member of the joint venture must have an interest in the control, management, risks and operation of the joint venture commensurate with the member's percentage of ownership. The MBE or WBE member of the joint venture must be responsible for a clearly defined portion of the work to be performed, equal to its share in the ownership, control and management of the joint venture. Art. 5, §28-33.

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- A bidder may not count toward its contract goal any agreement with a certified MBE or WBE subcontractor who intends to subcontract more than 10% of the dollar amount of the services to be performed under its agreement with the bidder. This restriction does not apply to an MBE/WBE that contracts for the purchase of materials, equipment or supplies that are incidental to the performance of services under its agreement with the bidder. Art. 5, §28-34.
- A bidder may count toward the contract goal its entire expenditure to a certified MBE or WBE that manufactures the goods supplied. Art. 5, §28-36.
- Only 25% of each contract goal may be attained by expenditures to MBEs and WBEs that are non-manufacturing suppliers. Art. 5, §28-37.
- A bidder may count toward the contract goals only the fees or commissions charged by an MBE or WBE insurance company or travel agent. Art. 5, §28-38.
- A bidder may count toward the contract goals only the fees charged and earned by an MBE or WBE financial institution. Art. 5, §28-39.
- A bidder may not use an MBE or WBE to meet a contract goal if the bidder has a financial interest in, has an interest in the ownership or control of, or is significantly involved in the operation of the MBE or WBE. Art. 5§28-41.

Is there any limitation of what services a MBE/WBE can perform that count towards the contract participation goals?

MBE/WBEs subcontractors must perform a commercially useful function. Commercially useful function is defined in the City Code as the performance of real and distinct work for which the business enterprise has the skill, expertise, and actual responsibility to perform, manage and supervise. Art. 5, §28-32. As a result, the bidder should think broadly and consider all functions and services necessary to fully perform the contract.

Can I get a waiver of the contract participation goals?

If a bidder is unable to comply with a contract goal, the bidder may submit a waiver request with the bid. The waiver request must be made on the MBE/WBE Participation Waiver Request Form. A waiver will not be granted unless the waiver request includes documentation that demonstrates good faith efforts to meet the goals. Art. 5, §28-62. The bidder should have previously consulted the MWBOO certification directory, <https://cityservices.baltimorecity.gov/mwboo/>, and made attempts to secure MBE/WBE subcontractor participation.

Each waiver request **must include documentation** of your good faith efforts to secure, contact and negotiate with MBEs and WBEs, including:

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(1) The reasons your company is unable to secure sufficient MBE/WBE participation to meet the stated goals;

(2) The efforts made by your company to select portions of the contract to be performed by MBEs and WBEs; &

(3) For each MBE or WBE that placed a bid that you consider to be unacceptable, a statement that explains the basis for that conclusion.

Each waiver is reviewed individually, highly scrutinized, and will not be granted if the bidder's submission does not evidence that they undertook several steps to secure participation in good faith.

What are "good faith efforts"?

MWBOO uses the term good faith efforts in several contexts including bid participation forms, waivers, and in evaluating efforts to meet contract participation goals by bidders. All efforts must begin with an evaluation of the availability of certified MBE/WBEs to perform the contract services by consulting the MWBOO certification directory:

<https://cityservices.baltimorecity.gov/mwboo/>

If there are certified MBE/WBEs that can provide the goods or services under the contract the contractor/vendor must undertake efforts to contact those businesses, secure price quotes, and exercise diligence in determining if they have the capabilities and expertise to perform. The availability of MBE/WBEs strongly undercuts any request for participation goals to be waived.

The following are additional examples of actions that can show that efforts were undertaken in good faith to meet the applicable contract goals, including but not limited to:

- The bidder should solicit interest as early in the acquisition process as practicable to allow the MBE/WBEs to respond to the solicitation and submit a timely offer for the subcontract. The bidder should determine with certainty if the MBE/WBEs are interested by taking appropriate steps to follow-up on initial solicitations.
- The bidder should identify portions of the work to be performed by MBE/WBEs in order to increase the likelihood that the MBE/WBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units (for example, smaller tasks or quantities) to facilitate MBE/WBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces. This may include, where possible, establishing flexible timeframes for performance and delivery schedules in a manner that encourages and facilitates MBE/WBE participation.
- The bidder should provide interested MBE/WBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation with their offer for the subcontract.
- A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including MBE/WBEs subcontractors, and would take a

firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using MBE/WBEs is not sufficient reason for a bidder's failure to meet the contract MBE/WBEs goal, as long as such costs are reasonable and not excessive.

- The bidder should engage in negotiations in good faith with interested MBE/WBEs. It is the bidder's responsibility to make a portion of the work available to MBE/WBEs subcontractors and suppliers and to select those portions of the work or material needed that is consistent with the available MBE/WBEs subcontractors and suppliers, so as to facilitate MBE/WBEs participation.
- Evidence of such negotiation includes: the names, addresses, and telephone numbers of MBE/WBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for MBE/WBEs to perform the work.
- Bidders should include detailed information regarding their attempts to secure participation. MWBOO cannot accept unsupported statements about efforts to secure MBE/WBE participation. **All waivers must include documentation of those efforts.** For example: you should include email correspondence with subcontractors to show their response or lack of response.
- It is insufficient to simply state that you contacted a business and provide their directory entry or contact information. It is insufficient to make arguments why you believe the goals should be waived and you should be permitted to perform the entire contract with no participation goals. It is insufficient to detail that the contract was previously granted a waiver or that you were previously awarded this contract. A promise to use MBE/WBEs after contract award is not considered to be responsive to the contract solicitation or to constitute good faith efforts. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts or to meet the contract MBE/WBE participation goals.
- It is the bidder's responsibility to establish and document the efforts that were undertaken to secure MBE/WBE participation. **Waivers are judged solely based upon the information provided and detailed to MWBOO in the bid submission.**
- There are numerous ways to identify subcontractors to participate on the contract such as: the MWBOO certification directory, <https://cityservices.baltimorecity.gov/mwboo/>, attending pre-bid information sessions, business matchmaking meetings and events, advertising and/or written notices, posting of Notices of Sources Sought and/or Requests for Proposals, and/or written notices or emails to all MBE/WBEs listed in MWBOO's directory that specialize in the services or goods required to perform the contract.

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- MBE/WBEs should not be rejected as unqualified without sound reasons based on a thorough investigation of their capabilities. Factors such as the contractor's standing within their industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.
- Bidders should make reasonable efforts, if needed, to assist interested MBE/WBEs in obtaining bonding, lines of credit, insurance, or related assistance or services as required by the subcontractor.
- Contacting and utilizing the services of available minority/women community organizations; minority/women contractors' groups; local, State, and Federal minority/women business assistance offices (including MWBOO); and other organizations as allowed on a case-by-case basis to assist in the recruitment and placement of MBE/WBEs. When considering a waiver, you should contact MWBOO if you feel as though you have exhausted the ability to identify additional MBE/WBEs who could perform on the contract.

MWBOO will evaluate all of the detailed efforts in determining if the bidder has exercised good faith efforts.

| |
|--------------------------------|
| SUBCONTRACTOR UTILIZATION FORM |
|--------------------------------|

THIS FORM MUST BE INCLUDED WITH REQUEST FOR FINAL PAYMENT

Prime Contractor's Name: _____

Contract Number and Title: _____

Total Contract Dollar Amount: _____

Provide the following information for EACH and EVERY subcontractor, both MBE/WBE and NON-MBE/WBE used on this contract. (Make additional copies of this form as needed).

| | |
|--|---|
| Name of Subcontractor | Goods or services provided on subcontract |
| Race/ethnicity AND gender of subcontractor's owner | Dollar amount of subcontract |
| Dollar amount paid to date | If amount paid to date is less than subcontract dollar amount, explain why. |

| | |
|--|---|
| Name of Subcontractor | Goods or services provided on subcontract |
| Race/ethnicity AND gender of subcontractor's owner | Dollar amount of subcontract |
| Dollar amount paid to date | If amount paid to date is less than subcontract dollar amount, explain why. |

Prime Contractor's Signature_____
Date

H. **MAYOR AND CITY COUNCIL OF BALTIMORE, MARYLAND**

THE BALTIMORE APPRENTICE TRAINEE PROGRAM (BATP)

BID FORM

Contracting Agency DEPARTMENT OF GENERAL SERVICES

Contract (Project Title) **GS21828 - ENGINE 33 ELECTRICAL UPGRADES**

Scheduled Bid Due Date: **Wednesday, May 17, 2023**

THIS APPRENTICE TRAINEE FORM IS DUE WITH THE BID.

FOR MORE INFORMATION ABOUT THIS FORM OR ASSISTANCE, CONTACT:

Minority and Women's Business Opportunity Office (MWBOO)
100 N. Holliday Street, Rm. 101
Baltimore, MD 21202
(410) 396-4355

MWBOO (12/00)

MAYOR AND CITY COUNCIL OF BALTIMORE, MARYLAND
THE BALTIMORE APPRENTICE TRAINEE PROGRAM (BATP)

PART I.

The City of Baltimore has established an Apprenticeship Trainee Program which requires all bidders on City Construction Projects costing \$1,000,000.00 dollars or more to participate in an Apprenticeship/OJT Training Program certified by the State of Maryland.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Provision. The purpose for this objective is to insure a pool of qualified minorities and women to replace those journeymen who, in the natural course of events will leave the workforce.

The bidder, shall commit to use its best efforts to meet the BATP requirements set forth in these contract documents. If awarded this contract, the bidder shall notify each firm with which the bidder proposes to contract, of the BATP requirements and make these requirements a material part of the subcontract where appropriate.

The bidder hereby designates:

NAME _____

TITLE _____

PHONE # _____

as the person who has been charged by the bidder with the responsibility for carrying out and reporting the bidders compliance with this program.

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1. The Bidder shall use its best efforts to comply with the BAT Program requirements set forth in these contract documents. Failure to implement and carry out the BAT Program requirements set forth in these contract documents shall be a material breach of this contract and grounds for termination of the contract.

2. The contractor shall prepare and submit to the contracting agency a plan for apprentice participation together with the construction schedule. The agency engineer shall designate the number of trainees and hours to be utilized and the area in which the trainees are to be required.

A. The draft construction schedule submitted to the contracting agency shall include a copy of the state certified apprentice/ojt program in which the bidder is participating, required labor resources by trade in order to determine the availability of apprentice opportunities, and a trade breakdown of anticipated participation by apprentices. The construction schedule and any updates shall include the apprentice participation by trade.

B. Apprentice participation shall be distributed throughout each technical discipline or trade designated by the engineer.

C. The contracting agency will review and approve the apprenticeship participation plan and forward a copy of the approved plan to MWBOO.

D. Goals for trainees will be based on the contractor's current utilization (Exhibit I in the contract document) and the availability of minorities and females in specified trade areas as indicated in the publication of the Maryland Department of Labor, Licensing and Regulation, Office of Labor Market Analysis and Information.

E. The specific efforts proposed to be undertaken by the contractor or its subcontractors if additional efforts are required to implement the BAT Program.

F. With each progress payment request, the contractor shall submit a BAT Program Report (AA2A) and a written projection for the following month of Apprentice hourly participation by trade.

G. The BAT Program participation plans shall apply to all change orders and extra work orders.

H. Requests for modifications or amendments of the contractors must be submitted to the contracting agency with copies to MWBOO.

The contractor will receive a written response to the request.

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PART II. AFFIDAVIT

The undersigned, being first duly sworn, on oath states to the City of Baltimore on behalf of the bidder as follows:

1. The bidder gives assurance that it will provide opportunity for training and employment for minorities and women in apprenticeship positions, and other positions whether with the bidder or subcontractors, employed on the project.
2. The bidder gives assurance that it will use its best efforts to comply with the BAT Program.
3. The bidder will maintain records in an easily retrievable and understandable form that will document any and all openings and opportunities for apprentice/trainee and, where appropriate, will make these requirements a part of all subcontract agreements on this project.
4. Bidder acknowledges that any and all bids which fail to include this form duly executed and notarized with the M/WBE portion of the bid documents may be declared as non-responsive by the Baltimore City Board of Estimates.
5. The bidder agrees to submit all forms as required in Part I & III of this document.

Name of Bidder

Name of Project Contract

By _____

Title _____

Date _____

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I hereby certify that on this _____ day of _____, 20____, before me the subscriber, a Notary Public of the State of _____, in and for _____
_____ City or County, personally appeared _____ who
acknowledged himself-herself to be the (title) _____ of
(company) _____ and being
duly authorized, executed the foregoing affidavit for the purposes and uses therein contained.

Signature of Notary Public

My Appointment Expires (SEAL)

THE BALTIMORE APPRENTICE TRAINEE PROGRAM (BATP)

INSTRUCTIONS

Part III

I. Advertisement for Construction Bids (Contracting Agency)

All bid advertisements for construction projects where the cost is estimated to be \$ 1,000,000.00 or more shall include the following language:

"The City of Baltimore has established an apprentice participation program requirement for this contract."

II. Bid Documents

All bid documents where the cost of the bid is estimated to be \$1,000,000.00 or more shall include the BATP BID FORM unless otherwise determined by the agency engineer.
The BATP Bid Form Must Be Submitted With the Bid.

III. Pre-Bid Conference

If there is a pre-bid conference, an MWBOO Compliance Representative shall be present to discuss the BAT Program.

IV. The following forms must be submitted as indicated.

A. The Plan for the Apprenticeship Participation must be completed and submitted for each area of training as designated by the agency engineer before the notice to proceed is issued.

B. The Maryland Apprenticeship Agreement forms must be submitted with each Progress Payment request to the contracting agency or as new trainees are hired.

C. With each progress payment request, the prime contractor must submit the MWBOO AA2 and AA2A to the contracting agency.

D. If an apprentice is terminated, the contracting agency shall be informed within 10 working days. A new Apprentice Agreement form on the replacement trainee should be attached.

E. MWBOO forms AA1 and 1A shall be submitted semi-annually on June 30th and December 31st of each year to the contracting agency.

ATTACHMENT

V. Penalties and Sanctions

A. A determination by the Board of Estimates after recommendation by the Minority and Women's Business Opportunity Office (MWBOO) that the contractor has failed to comply with any portion of the BATP rules as herein provided and described, or its approved apprenticeship plan, shall subject the offending party to any or all of the following:

1. suspension of contract;
2. withholding of funds;
3. rescission of contract based upon a material breach of contract;
4. disqualification of a bidder, contractor for a period of not to exceed two years;
5. payment of liquidated damages.

B. Violation; disqualification. It is a violation of this program to:

1. Willfully falsify, conceal or cover up by a trick, scheme or device a material fact, or make any false, fictitious or fraudulent statements or representations or make use of any false, fictitious or fraudulent statement or entry.
2. Willfully obstruct, impede, or attempt to obstruct or impede any authorized official or employee who is investigating the validity of any activity under the BATP

**BALTIMORE APPRENTICE TRAINEE PROGRAM
TRAINEE REVIEW**

PROJECT NUMBER: GS21828 DATE: _____
 PROJECT NAME: ENGINE 33 ELECTRICAL UPGRADES
 CONTRACTOR: _____

TRAINEE'S SUPERVISOR: _____
 CONTRACTOR'S EEO OFFICER: _____

| Name | Race | Classification | Rqd. Prog. Hrs. | Actual Training for the Month | Actual Training Hours to Date | Min. Rate | Pres. Rate | Jrnymn. Rate |
|----------|-------|----------------|-----------------------|--|--|--------------|---------------|-----------------|
| 1. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 2. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 3. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 4. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

MWBOO (AA2)

12/00

To Be Submitted With Each
Payout Request by the Subcontractor
to the Prime Contractor

Signed: _____
 Date: _____

| CITY OF BALTIMORE | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------------------------|--|----|----|----|-----------------------------------|-------------------------------------|---|----|----|----|---|---|---|---------------------------------------|------|----|------------|---|-------------------------------------|--|
| SEMI ANNUAL TRAINEE REPORT | | | | | | | | | | | | | | | | | | | | | |
| ADMINISTRATION CENTER | | PERIOD ENDING | | | | | | LEGEND BA – BLACK AMERICAN AMERICAN | | | | | | AI – AMERICAN INDIAN HA – HISPANIC AMERICAN | | | | AA – ASIAN | | | |
| LINE NO | TRAINING CLASSIFICATION A | NUMBER RECEIVING TRAINING DURING REPORT PERIOD B | | | | | | NUMBER STARTING TRAINING DURING REPORT PERIOD C | | | | | | NUMBER COMPLETING TRAINING DURING REPORT PERIOD D | | | | | | TOTAL HRS OF TRAINING DURING PERIOD | |
| | | TOTAL | BA | AA | AI | HA | O | TOTAL | BA | AA | AI | HA | O | TOTAL | BA | AA | AI | HA | O | TOTAL | |
| 03 | EQUIPMENT OPERATOR | | | | | | | | | | | | | | | | | | | | |
| 04 | MECHANICS | | | | | | | | | | | | | | | | | | | | |
| 05 | TRUCK DRIVERS | | | | | | | | | | | | | | | | | | | | |
| 06 | IRON WORKERS | | | | | | | | | | | | | | | | | | | | |
| 07 | CARPENTERS | | | | | | | | | | | | | | | | | | | | |
| 08 | CEMENT MASONS | | | | | | | | | | | | | | | | | | | | |
| 09 | ELECTRICIANS | | | | | | | | | | | | | | | | | | | | |
| 10 | PIPEFITTERS | | | | | | | | | | | | | | | | | | | | |
| 11 | PAINTERS | | | | | | | | | | | | | | | | | | | | |
| 12 | OTHER SKILLS | | | | | | | | | | | | | | | | | | | | |
| 13 | TOTAL | | | | | | | | | | | | | | | | | | | | |
| 14 | NUMBER OF FEMALES RECEIVING TRAINING | | | | | | NUMBER OF FEMALES STARTING TRAINING | | | | | | | | NUMBER OF FEMALES COMPLETING TRAINING | | | | | | |
| | | NUMBER OF NEW HIRES RECEIVING TRAINING | | | | NUMBER IN APPRENTICESHIP TRAINING | | | | | | NUMBER OF TERMINATIONS PRIOR TO COMPLETION OF TRAINING | | | | | | | | | |
| | | NUMBER OF UPGRADES RECEIVING TRAINING | | | | NUMBER IN OTHER JOB TRAINING | | | | | | NUMBER OF PROJECTS UNDER WAY DURING REPORTING PERIOD AND CONTAINING TRAINING SPECIAL PROVISIONS | | | | | | | | | |
| COMMENTS: | | | | | | | | | | | | | | | | | | | | | |
| REPORT PREPARED BY (SIGNATURE) AND TITLE OF CITY OFFICIAL | | | | | | | | | | | | | | | | DATE | | AA1 | | | |

CONTRACT NO: **GS21828** TRAINEE'S NAME: _____
PROJECT NAME: **ENGINE 33 ELECTRICAL UPGRADES**
START DATE: _____
SUBCONTRACTOR: _____ WAGE RATE: _____

| MONTH | | YEAR | PHASES | | | | | | | | | | | | | |
|---------------|-------------|------|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| DATE | DAILY TOTAL | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
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| 17 | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | |
| MONTHLY TOTAL | | | | | | | | | | | | | | | | |
| PREV. TOTAL | | | | | | | | | | | | | | | | |
| GRAND TOTAL | | | | | | | | | | | | | | | | |
| REQ'D HOURS | | | | | | | | | | | | | | | | |

CERTIFIED CORRECT BY _____ DATE: _____

INSTRUCTOR'S COMMENTS:

_____.

_____.

_____.

DISTRIBUTION: Original Project Engineer:

MWBOO (AA2A)

REVIEWED BY:

CITY OF BALTIMORE

_____.

SIGNATURE

_____.

DATE

| | |
|--|---|
| BALTIMORE APPRENTICE TRAINEE PROGRAM CONTRACTOR'S SEMIANNUAL TRAINEE REPORT | PROJECT NO GS21828 |
| | PROJECT NAME ENGINE 33 ELECTRICAL UPGRADES |

INSTRUCTIONS - This report is to be completed by the contractor semiannually for each individual employed on this contract (including any subcontractor under it) who has received training during the reporting period under the training special provisions (a part of the contract proposal). The report is to be submitted by the 10th of the month following the reporting period (July 10, and January 10). The original of this report is to be furnished to the trainer and two copies submitted to the City of Baltimore

| | | |
|---|--|---|
| 1. NAME OF CONTRACTOR NAME OF SUBCONTRACTOR (IF APPLICABLE) | | 1.A. ADDRESS |
| 2. NAME OF TRAINEE | 2A. SEX (check one) _____ M _____ F | 2.B. ADDRESS |
| 3. AGE OF TRAINEE | 4. SOCIAL SECURITY NO. | 5. EMPLOYEE STATUS (check one) _____ NEW HIRE _____ UP-GRADE |
| 6. ETHNIC GROUP DESIGNATION (check one) Black _____ Hispanic _____ American _____ Asian _____ American _____ American _____ Indian _____ American _____ White _____ | | |

7. SUMMARY OF PREVIOUS TRAINING (ENTER AMOUNT AND TYPE OF TRAINING RECEIVED BY TRAINEE ON OTHER CONTRACTS UNDER APPROVED TRAINING PROGRAMS)

| | | |
|----------------------------------|---|---|
| 8. JOB CLASSIFICATION OF TRAINEE | 9. DATE TRAINING STARTED ON THIS CONTRACT | 10. TYPE OF ON THE JOB TRAINING (Check one) _____ Apprenticeship _____ Other |
|----------------------------------|---|---|

REPORTING PERIODS

INSTRUCTIONS: One vertical column is to be completed for each succeeding reporting period and the form submitted. Enter June 30, Dec. 30, as applicable in

| HOURS OF TRAINING DATA | | | | | | | | |
|---|--|--|--|--|--|--|----------|--|
| 11. PROVIDED DURING REPORT PERIOD | | | | | | | | |
| 12. PROVIDED TO DATE | | | | | | | | |
| 13. REMAINING TO COMPLETE THE APPROVED PROGRAM | | | | | | | | |
| 14. TERMINATION (IF TRAINING WAS TERMINATED PRIOR TO COMPLETION OF APPROVED PROGRAM EXPLAIN REASON FOR TERMINATION) | | | | | | | | |
| 15. REPORT PREPARED BY (SIGNATURE AND TITLE OF CONTRACTOR'S REPRESENTATIVE) | | | | | | | 16. DATE | |
| 17. REPORT REVIEWED BY (SIGNATURE AND TITLE OF CITY OF BALTIMORE OFFICIAL) | | | | | | | 18. DATE | |

MWBOO (1A)

I. BALTIMORE CITY'S YOUTHWORKS PROGRAM

TO: Mayor's Office of Employment Development ("MOED")

FROM: _____

(Legal name of Bidder)

Pursuant to Executive Order, the aforesaid Bidder hereby presents MOED with the following information to assist its outreach efforts for the Baltimore City YouthWorks Program:

Contact Person: _____

Address: _____

Telephone Number: _____

Facsimile Number: _____

E-mail address: _____



J. EMPLOY BALTIMORE

Employ Baltimore is designed to create opportunities for businesses that receive municipal contracts to access qualified City residents to meet their workforce needs. The initiative will also ensure that City dollars contribute to the local economy and improve the lives of employable Baltimoreans.

Employ Baltimore meets the business development need by helping employers save time And money in the recruitment process. This service also offers businesses customized training resources that build worker pipelines for hard-to-fill job vacancies, and provides easy access to tax credit programs that support investments in the City's growth. Every year, hundreds of area employers utilize the Mayor's Office of Employment Development's resources to assist their expansion efforts. We look forward to serving you also.

Employ Baltimore

Requirements

1. Complete the *Employ Baltimore* "Certification Statement" contained in the bid document and submit it with your bid package.
2. Contact the Mayor's Office of Employment Development (MOED) within two (2) weeks of receiving the contract award to schedule a meeting. At this meeting MOED will review your workforce/employment plan; explain the employment report requirements and discuss other workforce services available. You will not receive your first payment from the contract until MOED verifies with the contracting city agency that the meeting has been scheduled.
3. Should the workforce plan indicate a need to fill new jobs, the company will agree to post these positions through MOED and its One Stop Career Center network for a period of seven (7) days prior to publicly advertising the openings. This will enable MOED to identify and refer qualified city residents as candidates for these job opportunities.
4. Complete the "Employment Reports" as required on June 30th and December 31st during each year of the contract and at contract completion. Submit "Employment Reports" to:

**Employ Baltimore
Mayor's Office of Employment
Development
3001 East Madison Street
Baltimore, Maryland 21205**

- or -

employbaltimore@oedworks.com

The City will not release a final payment or any retainage held by the City until MOED verifies that the Employment Reports have been submitted.

5. Businesses awarded construction contracts that fully participate in the Employ Baltimore program and comply with the conditions listed in the certification statement may receive an early release or reduction in the retainage fee assigned to the contract.

To Schedule Your Meeting with MOED Please Contact:

**Rosalind Howard
Employ Baltimore
Mayor's Office of Employment Development
3001 East Madison Street
Baltimore, Maryland 21205
Phone 443-984-3014 • Fax 410-361-9648**

rhoward@oedworks.com

- or -

employbaltimore@oedworks.com

Employ Baltimore**CERTIFICATION STATEMENT**

| Contracting City Agency | Bid Number | Bid Due Date |
|----------------------------------|-------------------|---------------------|
| Dept. Of General Services | | |

To promote the commitment to utilize ***Employ Baltimore*** to meet employment needs, all businesses awarded contracts, franchises and development opportunities with the City of Baltimore, shall comply with the terms of the Executive Order as described in the bid specification. Under this agreement, contract awardees will complete and submit the certification statement with the bid package.

This Executive Order shall apply to contracts awarded by the City that are in the amounts of \$50,000.01 to \$300,000.00, except for professional service contracts and emergency contracts.

Additionally, companies awarded construction contracts that fully participate in the ***Employ Baltimore*** program and submit and comply with the certification statement, may receive an early release of or reduction in the retainage fee assigned to the contract.

CERTIFICATION STATEMENT

As a representative of _____, I _____
 (NAME OF COMPANY) (PRINT NAME AND TITLE)

Certify that a company representative will schedule a meeting with the Mayor's Office of Employment Development within two weeks of contract award to review the workforce plan required for this contract.

If there is a need for additional employees, I agree to post the new job openings with MOED's One Stop Career Center Network for seven (7) days prior to publicly advertising these openings. I agree to interview qualified Baltimore City residents referred from MOED. I agree to submit an Employment Report on June 30th and December 31st identifying the total number of workers on this project and the total number of Baltimore City residents on payroll during each year of the contract and at the contract completion as a condition of release of the final payment of any retainage due.

Name: _____ Telephone: _____

Company Address: _____ Email: _____

Send to: Rosalind Howard
Employ Baltimore/ Mayor's Office of Employment Development
3001 East Madison Street
Baltimore, Maryland 21205
Phone 443-984-3024 . Fax 410-361-9648
employbaltiore@oedworks.com

Employ Baltimore**EMPLOYMENT REPORT**

| Contracting City Agency | Bid/Contract Number & Name |
|----------------------------------|---|
| Dept. of General Services | Contract No. GS21828 - ENGINE 33 ELECTRICAL UPGRADES |
| Contract Start Date | Contract End Date |
| | |

To promote the commitment to utilize the *Employ Baltimore Executive Order* and to meet workforce needs, all businesses awarded contracts, franchises and development opportunities with the City of Baltimore, shall comply with the terms of the Executive Order as described in the bid package. Under this Executive Order, contract awardees will complete and submit this Employment Report on June 30th and December 31st during each year of the contract and at contract completion. You must identify the number of total workers and the number of Baltimore City residents on payroll for this contract. Also, please indicate any new positions created as a result of the award and filled by Baltimore City residents. Employment Reports should be sent to:

Employ Baltimore
Mayor's Office of Employment Development
3001 East Madison Street
Baltimore, Maryland 21205

- Or email -

employbaltimore@oedworks.com

The Employment Report below is hereby submitted by the undersigned for this period:

___ December 31, 20___ ___ June 30, 20___ ___ End of Contract Date___

| | |
|--|--|
| No. of total workers on payroll for this contract | |
| No. of Baltimore City residents on payroll for this contract | |
| No. of new positions filled by Baltimore City residents | |

Name: _____ Signature: _____

Title: _____ Date: _____



The Mayor's Office of Employment Development provides businesses with a pipeline of qualified, skilled job candidates and supports businesses in retaining and developing their employees. We offer customized workforce solutions including outreach and recruitment, applicant prescreening, assessment and testing services, tax credit information, human resources support and training funds for new or existing employees. Training funds are available through several strategies.

Hiring new employees?

Customized Training is a business-driven strategy that helps companies train and hire people to fit their job-specific needs. MOED Business Services staff recruit and pre-screen applicants based on the company requirements. Your business saves on recruitment costs and could receive up to 50% reimbursement on costs associated with the required training. The positions must be full-time and meet minimum salary requirements. The training can be employer-based, on-the-job, or offered by qualified vendors. Companies awarded Customized Training grants must agree to hire successful trainees. Many companies have used this strategy to increase their workforce and reduce their hiring budget.

Want to improve and increase the skills of your current staff?

Incumbent Worker training

MOED works closely with other local, state and federal agencies to promote the link between the city's workforce and economic development initiatives.

For Further Information Contact:

Rosalind Howard or Susan Tagliaferro
 Employ Baltimore
 Mayor's Office of Employment Development
 3001 East Madison Street
 Baltimore, Maryland 21205
 Phone 443-984-3014 • Fax 410-361-9648
rhoward@oedworks.com stagliaferro@oedworks.com
employbaltimore@oedworks.com

K. LOCAL HIRING LAW**Rules and Regulations**

1. The Local Hiring Law (Council Bill 12-0159) (the "Law") is applicable to all City contracts that are greater than \$ 300,000.00, or agreements authorizing assistance that are within the terms of §27-2 of the Law executed by the City on or after the Law's effective date, December 23, 2013. The Law requires compliance by vendors/contractors and their subcontractors regardless of the subcontractor award amount and by all persons benefitting from an agreement involving more than \$ 5,000,000.00 in assistance for a City subsidized project.
2. The Law only applies to the original term of contract awards greater than \$ 300,000.00. Extra Work Orders and contract modifications do not affect the applicability of the Law. Whether a City subsidized project is subject to the Law shall be finally determined when an agreement authorizing assistance valued at more than \$5,000,000.00 is executed by the City.
3. Any contract that was originally subject to the Employ Baltimore Executive Order and the dollar amount of the contract increases to over 300K, will become subject to the Local Hiring Law.
4. All City bids, RFP's and requests for bid packages and final contracts must include reference to the requirements of the Law. All bid documents and contracts subject to the Law will include a section referencing the requirements of the Law. The bidder's signature will verify a commitment to abide by the Law.
5. Upon contract award or approval of an agreement for subsidy covered by the Law, the contracting city agencies or agencies entering into an agreement for the City subsidized project must immediately complete the Mayor's Office of Employment Development (MOED) Vendor Contact form, providing contact information for each vendor/contract awarded and each beneficiary of a qualifying City subsidized project. MOED will contact the vendor or beneficiary upon receipt of the completed form from the city agency.
6. Within two weeks of the contract award or agreement for a City subsidized project covered by the Law, the awardee must work with a representative of the Mayor's Office of Employment Development (MOED) to complete an Employment Analysis that will project the total workforce and the "new hires" in the Baltimore area needed to fulfill the contract/agreement. That Analysis shall include all information reasonably required by MOED showing at a minimum general locations (Baltimore area or not) of all workforce positions required to complete the contract/agreement.
7. Vendors who report that they do not have any "employees" needed for the contract" at the initial workforce meeting or on the required monthly Employment Report form must meet with the City Agency to discuss how the work is getting done and how the funding is being utilized.

8. A Local Hiring Review Committee ("LHRC") will be established. The LHRC will be comprised of representatives/designees from the following:

- Office of the City Council President
- Office of the Deputy Chief of Economic Development and Neighborhoods
- Mayor's Office of Employment Development
- Office of the Director of Finance
- Baltimore City's Procurement Office – Bureau of purchases
- Baltimore City Department of Transportation
- Baltimore City Department of Public Works
- Baltimore City Department of General Services
- Baltimore Development Corporation
- Baltimore City Law Department
- Community Resident to be appointed by the President of the City Council

The LHRC will appoint a chair and meet no less than quarterly and as frequently as needed. Its primary role will be to review the monthly Employment Reports and to make recommendations to MOED regarding the approval or denial of any waiver requests made. The LHRC will also recommend to the Board of Estimates potential penalties and debarment for persons and others subject to the Law that has not complied with the Law. MOED will coordinate the materials to be presented to the LHRC and provide it with administrative staff support.

9. Vendors and others subject to the Law must submit Monthly Employment Reports by the fifth business day of the month for the preceding month beginning no later than 90 days after the Board of Estimates has awarded the contract or approved the agreement. City agency directors will be notified of persons or others subject to the Law that do not submit reports by the due date; continued delinquent persons or others subject to the Law will be reported to the LHRC.

10. Vendors and others subject to the Law that have binding collective bargaining agreements with unions will be granted a waiver from only utilizing MOED recruitment services, since they are bound by union regulations to utilize union halls. However, the persons or others subject to the Law must still meet the 51% residency requirement on new hires and must submit the monthly Employment Reports as required by the Law.

11. If MOED cannot fill a job posting provided by a vendor or others subject to the Law within the seven day period, the person or others subject to the Law must still meet the 51% residency requirement on new hires. This requirement will only be waived if : 1) the person or others subject to the Law requests a waiver in writing and can provide documentation that they made good faith efforts in the form of job posting and other recruitment methods and that there were insufficient qualified applicants to fill the available new positions or ; 2) the bidder is able to confirm in the bid process that the contract will be only for services that will be performed or for

products that will be manufactured outside the Baltimore Metropolitan Area and as such, no new positions will be called for in Baltimore area.

12. The Law is not applicable to a contract or an agreement that is made by the City, or on its behalf with any person in the event of an emergency pursuant to Article VI, § 11 (e)(ii) of the Baltimore City Charter.

13. Definitions:

a. *Good Faith Effort* is defined as a set of activities conducted by the contractor/vendor or other person which demonstrate multiple types of outreach efforts have been made to City residents including, but not limited to: ads in local papers, paid local job boards, information to local educational and workforce organizations, as well as an objective review and rating of resumes of city residents. (§ 27-6 (B) (1))

b. *Substantially below appraised value* is the sale or transfer of land applicable to property that has been approved and sold for an amount below 30% of the appraised value. (§ 27-1 (C) (1))

c. *“Satisfactory Special Workforce Development Training or Placement Arrangement”* is defined as a written agreement with MOED or a recognized workforce partner for a customized training or On-The-Job-Training opportunity leading to unsubsidized employment. (§27-6(B) (3))

LOCAL HIRING

Article 5, Subtitle 27 of the Baltimore City Code, as amended (the “Local Hiring Law”) and its rules and regulations apply to contracts and agreements executed by the City on or after the Local Hiring Law’s effective date of December 23, 2013. The requirements for the Local Hiring Law are summarized below:

A. The Local Hiring Law applies to every contract for more than \$300,000 made by the City, or on its behalf, with any person. It also applies to every agreement authorizing assistance valued at more than \$5,000,000 to a City-subsidized project. Unless the Mayor’s Office of Employment Development (“MOED”) grants an exception under the Local Hiring Law, at least 51% of the new jobs required to complete the contract or project must be filled by Baltimore City residents.

B. Within two (2) weeks of the Board of Estimate’s award of the contract or approval of the agreement, the contractor shall have a meeting, either in person or via telephone, with MOED to complete an employment analysis and review the workforce plan required for such contract or agreement. The contractor will not receive any payments under the contract or agreement, unless and until the employment analysis is performed. Contact information for MOED can be found on its website: www.oedworks.com.

C. Should the contractor’s workforce plan indicate a need to fill new jobs, the contractor shall post the new job openings with MOED’s One Stop Career Center Network for a period of seven (7) days prior to its publicly advertising these openings. Further, the contractor shall interview qualified Baltimore City residents referred from MOED; and unless granted an exception, fill at least fifty-one percent (51%) of the new jobs required to complete the contract or project with Baltimore City residents.

D. For all contracts subject to the Local Hiring Law, the contractor shall submit an Employment Report to MOED by the fifth (5th) day of each month throughout the duration of the contract or agreement, regardless of whether MOED has granted a waiver of any of the Local Hiring Law’s requirements.



City of Baltimore Local Hiring Certification and Compliance Statement

CERTIFICATION STATEMENT (Complete and submit this certification statement with your bid package. Your bid may be considered non-responsive if you fail to include this signed document)

For the purpose of requiring employers (contractors and their subcontractors) benefitted by City contracts and subsidies to take measures to hire Baltimore City residents, all businesses awarded a contract with the City for more than \$300,000 or will benefit from more than \$5,000,000 in assistance for a subsidized project, shall agree to comply with the terms of the Local Hiring Law 12-0159 as described in the bid specification.

By signing below as a representative of _____ (Company Name), I certify that if awarded this contract, a company representative will meet with the Mayor's Office of Employment Development (MOED) within two weeks of the contract award to complete an employment analysis review the workforce plan required for this contract. If there is a need for new hires, I agree to post the new job openings with MOED's One Stop Career Center Network for a period of seven (7) days prior to publicly advertising these openings. I agree to interview qualified Baltimore City residents referred from MOED and to fill at least 51% of the new jobs required with Baltimore City residents. I also agree to submit an Employment Report by the 5th day of each month throughout the duration of contract.

Signature: _____ Title: _____ Phone: _____

Company Address: _____ Email: _____

CONTRACT AWARD INFORMATION (To be completed by the responsible Baltimore City agency representative and submitted to MOED within two (2) business days of the contract award.)

Baltimore City Agency: _____

Contract No./Description: _____

Award Amount: _____ Award Date: _____

Contractor's Rep for Local Hiring compliance: _____

Telephone #: _____ Email: _____

City Agency Staff Name/Title

Date

COMPLIANCE VERIFICATION (To be completed by MOED and returned to the City agency.)

As required by the Law, "before the disbursement of any funds", the beneficiary must meet with and complete an employment analysis with MOED. This is to certify that the information below is accurate as verified by MOED:

- ☐ Complied with the requirements of the Local Hiring Law 12-0159 and met with MOED on _____ to assess their employment needs, complete the workforce plan and identify new jobs. We have been informed that an estimate of _____ jobs will be created as a result of the contract award.
- ☐ **NOT** complied with the Local Hiring Law. In accordance with the Law, the City Agency is required to withhold payments associated with this award until the meeting has occurred.

MOED Staff Name/Title

Date

If there are any questions, please call Rosalind Howard at 410-396-9045

L. BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____

as Principal, and _____

as Surety, are hereby held and firmly bound unto the Mayor and City Council of Baltimore as Owner, in the amount of at least Two Percent (2%) of the Total Bid submitted for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, personal representatives, successors and assigns. Signed this

_____ day of _____, 20_____.

The condition of the above obligation is such that WHEREAS the Principal has submitted to the Board of Estimates of the Mayor and City Council of Baltimore a certain Bid, attached hereto, and hereby made a part hereof to enter into a Contract, in writing, for **CONTRACT NO. GS21828 – ENGINE 33 ELECTRICAL UPGRADES**

NOW, THEREFORE,

- (a) If said Bid shall be rejected or in the alternate.
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the form of Contract attached here to (properly completed in accordance with said Bid), and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith and shall in all other respects perform the Agreement created by the acceptance of said bid.

Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event, exceed the penal amount of this obligation, as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their Hand and Seals, and such of them as are Corporation have caused their Corporate Seals to be hereto affixed and these presents to be signed by their proper Officers, the day and year first set forth above.

ATTEST:

PRINCIPAL

(SEAL)

ATTEST:

SURETY

(SEAL)

END OF SECTION

SECTION 00500
AGREEMENT

THIS AGREEMENT, made this _____ Day of _____
in the year 20____, by and between _____

hereinafter called the "Contractor", and the Mayor and City Council of Baltimore, a
Municipal Corporation, hereinafter called the "City", for Contract No. **GS21828 -**
ENGINE 33 ELECTRICAL UPGRADES

WHEREAS, the Contract designated as to be performed in strict accordance with the Contract Documents, which Standard Specifications, Plans and other Contract Documents are in all respects made a part hereof, has recently been awarded to the Contractor by the City, through the Agency of its Board of Estimates, at and for a sum equal to the aggregate cost of the work, labor, materials and supplies done or furnished at the prices and rates respectively named therefore in the Proposal attached hereto; and

WHEREAS, it was one of the conditions of said award that a formal Contract should be executed by and between the Contractor and the City evidencing the terms of said award.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH, That the Contractor doth hereby covenant and agree with the City that it will well and faithfully construct, and complete the said Work in accordance with each and every one of the conditions, covenants, stipulations, terms and provisions contained in the Contract Documents, at and for a sum equal to the aggregate cost of the work, labor, materials and supplies done or furnished at the prices and rates respectively named therefore in the Proposal attached hereto, and will well and faithfully comply with and conform to each and every obligation imposed upon it by the Contract Documents, or by the terms of said award. Time is of the essence of this Agreement.

And the City doth hereby covenant and agree with the Contractor that it will pay the Contractor, when due and payable under the terms of the Contract Documents and of said award, the above mentioned sum; and that it will well and faithfully comply with and perform each and every obligation imposed upon it by the Contract Documents or by the terms of said award.

In WITNESS WHEREOF, Said _____
has caused this Agreement to be signed in its name by its President/Vice President and its
Corporate Seal to be hereunto and duly attached and the City has caused these presents to be
signed by the Mayor of Baltimore City and the Corporate Seal of the City to be hereunto affixed,
duly attested by the Custodian of the City Seal.

ATTEST:

SIGNATURE

SIGNATURE

PRINT NAME AND TITLE (SEAL)

ATTEST:

Mayor and City Council of Baltimore

Custodian of the City Seal

By: _____
BRANDON M. SCOTT, MAYOR

APPROVAL OF AGREEMENT
FOR
DEPARTMENT OF GENERAL SERVICES
CONTRACT NO. GS21828

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY:

Chief Solicitor

APPROVED:

APPROVED:

Chief, Capital Projects Division

Director of General Services

SECTION 00610**PERFORMANCE BOND**

| | |
|--|--|
| Principal | Business Address of Principal |
| Surety a Corporation of the State of and authorized to do business in the State of Maryland | Obligee Mayor and City Council of Baltimore |
| Sum of Bond (Equal to Contract Price) SUM OF _____ Dollars (\$ _____) | |
| Contract Number and Identification City of Baltimore Department of General Services Contract No. GS21828 - ENGINE 33 ELECTRICAL UPGRADES | Date of Contract _____, 20____ Date Bond Executed _____, 20____ |

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL above named and SURETY above named, are held and firmly bound unto the OBLIGEE above named in the full and just 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, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the PRINCIPAL is entering into a certain Contract with the OBLIGEE described and dated, as shown above and attached hereto, and is required under the Provisions of the Public General Laws of Maryland to give a bond conditioned as hereinafter set forth.

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 OBLIGEE, with or without notice to the SURETY, and during the term or terms of any maintenance, repair, guaranty and warranty required under the Contract, and

PERFORMANCE BOND

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, and shall indemnify and save harmless the Mayor and City Council of Baltimore, its agents and employees against and from all costs, expenses, damages, injury or loss to which the said Mayor and City Council of Baltimore, its agents and employees, may be subjected by reason of any wrongdoing, misconduct, want of care or skill, negligence or default on the part of said PRINCIPAL, its agents or employees, or in any manner arising directly or indirectly from any and all causes whatsoever, in or about the execution or performance of the Contract, during the Original term of said Contract and/or any authorized extension or modification thereof and/or during the term or terms of any maintenance, repair, guaranty and warranty required under the Contract, then this obligation shall be null and void; otherwise to remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OBLIGEE, or the successors or assigns of OBLIGEE.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several Seals on the date indicated above, the Name and corporation seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST: as to principal

SIGNATURE

SIGNATURE

PRINT NAME
ATTEST: as to surety

PRINT NAME AND TITLE (SEAL)

SIGNATURE

SIGNATURE

PRINT NAME

PRINT NAME AND TITLE (SEAL)

AGENT (COMPANY): _____

AUTHORIZED BY: _____
NAME AND TITLE

PERFORMANCE BOND

APPROVED:

APPROVED:

Mayor of Baltimore City

Director of General Services

Comptroller

Chief, Capital Projects Division
Department of General Services

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY:

APPROVED BY BOARD OF ESTIMATES:

Chief Solicitor

Clerk

Date _____

END OF SECTION

SECTION 00620**PAYMENT BOND**

| | |
|--|--|
| Principal | Business Address of Principal |
| Surety a Corporation of the State of and authorized to do business in the State of Maryland | Obligee Mayor and City Council of Baltimore |
| Sum of Bond (Equal to Contract Price) SUM OF _____ Dollars (\$ _____) | |
| Contract Number and Identification City of Baltimore Department of General Services Contract No. GS21828 - ENGINE 33 ELECTRICAL UPGRADES | Date of Contract _____, ____ Date Bond Executed _____, ____ |

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL above named and SURETY above named, are held and firmly bound unto the OBLIGEE above named in the full and just 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, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the PRINCIPAL is entering into a certain Contract with the OBLIGEE described and dated, as shown above and attached hereto, and is required under the Provisions of the Public General Laws of Maryland to give a bond conditioned as hereinafter set forth.

NOW THEREFORE, the condition of this obligation is such that if the PRINCIPAL shall promptly make payments to all persons supplying labor and/or material in the prosecution of the work provided for in said Contract and any and all duly authorized extensions and/or modifications of said contract that may hereafter be made, notice of such extensions and/or modifications to the SURETY being hereby waived, and any maintenance, repair, guaranty and warranty required under the Contract, then this obligation to be null and void; otherwise they remain in full force and effect.

PAYMENT BOND

A suit or action commenced hereunder shall comply with applicable Provisions of the Public General Laws of Maryland. No suit or action shall be commenced hereunder against the OBLIGEE, its successors or assigns, nor shall OBLIGEE be liable for any costs or expenses of such suit.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several Seals on the date indicated above, the Name and corporation seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST: as to principal

SIGNATURE

SIGNATURE

PRINT NAME

PRINT NAME AND TITLE (SEAL)

ATTEST: as to surety

SIGNATURE

SIGNATURE

PRINT NAME

PRINT NAME AND TITLE (SEAL)

AGENT (COMPANY): _____

AUTHORIZED BY: _____
NAME AND TITLE

PAYMENT BOND

APPROVED:

APPROVED:

Mayor of Baltimore City

Director of General Services

Comptroller

Chief, Capital Projects Division
Department of General Services

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY:

APPROVED BY BOARD OF ESTIMATES:

Chief Solicitor

Clerk Date

SECTION 011000 - SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

Electrical Upgrades at Engine 33 Baltimore City Fire Department, Baltimore City, Maryland, for the Department of General Services.

A. The Work as described in the Project Manual and as indicated on the Construction Drawings.

B. Description of Work:

The project includes the demolition and replacement of electrical distribution system. In addition, the lighting fixture and electrical power devices shall be replaced and/or upgraded throughout the building.

1.2 PROJECT INFORMATION

A. Project Identification: Contract No. 21828 - Engine 33 Electrical Upgrades - Baltimore City Fire Department.

1. Project Location: 1223 North Montford Avenue, Baltimore, MD 21213.

2. Contact: See "Owner Representative" below for contact information.

B. Owner: Mayor and City Council of Baltimore c/o Baltimore City Department of General Services, Abel Wolman Municipal Building, Baltimore, MD 21202.

1. Owner's Representative: Capital Projects and Energy Division, Baltimore City, Department of General Services.

a. Address: 200 N. Holliday Street, Room 204, Baltimore, MD 21202

2. Phone: 410-545-6071

3. Prime Consultant (Mechanical/Electrical Engineer): Gipe Associates, Inc.

C. Prime Consultant (Mechanical/Electrical Engineer):

1. Gipe Associates, Inc.

a. Address: 1220 E. Joppa Rd., Building A, Suite 223, Towson, MD 21286

b. Phone: 410-832-2420

c. Fax: 410-832-2428

d. Contact: Kristofer Curreri

D. Sub-Consultants: Prime Consultant has retained the following design professional who have prepared designed portions of the Contract Documents:

1. Architect: KPN Architects

a. Address: 1800 Washington Blvd., Suite 414, Baltimore, MD 21230

- b. Phone: 443-682-7757
- c. Fax: 443-863-6500

1.3 RELATED DOCUMENTS

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

1.4 RELATED SECTIONS

- A. Divisions Zero and One Specification Sections.

1.5 REGULATORY REQUIREMENTS

- A. Building Code:
 - 1. Comply with requirements of International Building Code (2018) and adopted Supplements.
- B. The State Fire Prevention Code (COMAR 12.03.01).
- C. Maryland Accessibility Code, MAC, 2015 (COMAR 05.02.02)
- D. Life Safety Code - NFPA 101, Life Safety Code 2015, inclusive of all supplements and modifications.
- E. IgCC – 2018 International Green Construction Code.
- F. National Electrical Code: NEC-2017
- G. IFC-2018 International Fire Code.
- H. IECC-2018 International Energy Conservation Code.
- I. Accessibility Code: MAC (COMAR 05.02.02 & 2010 ADA Standards).

1.6 QUALITY CONTROL AND QUALITY ASSURANCE

- A. Coordinate with requirements of Division 1 Specification Sections and Standard Specifications.
- B. The Contractor shall take note of the following:
 - 1. When the words Quality, Quality Control, and Quality Assurance are used within the Contract Documents the work of providing qualitative control, monitoring and documenting the quality of the contract is the sole responsibility of the Contractor.
- C. The Contractor is fully and wholly responsible for Quality Control of the Project.
- D. The Contractor shall employ a full time, on-site Quality Control Manager (QCM) for the duration of the contract to provide and implement Quality Control measures and services identified in the Contract Documents and in accordance with the Contractor's written Quality Control Program as reviewed and approved by the City.

1.7 USE OF PREMISES

A. General.

1. Confine operations to areas indicated by Contract Documents.
2. Do not unreasonably encumber site areas with materials or equipment.
3. When required by other construction activities, relocate, move and/or remove materials and temporary facilities as directed by the Owner's representative.
4. Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
5. Do not obstruct roadways, sidewalks, or other public ways without permit.

B. Partial Owner Occupancy:

1. Owner reserves right to occupy, place, and install equipment in completed or partly completed areas of Project or site prior to, on, during, or following Substantial Completion.

C. Placing of equipment and partial occupancy by the Owner shall not constitute final acceptance of the Work.

1. Prior to partial Owner occupancy, mechanical equipment and electrical and security systems shall be fully operational.
2. Required inspections and tests shall have been successfully completed.
3. Upon occupancy, the Owner will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building.
4. A Certificate of Substantial Completion will be executed for each specific portion of the Work to be occupied prior to Owner occupancy.
5. Contractor shall obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
6. Areas of the building may be occupied during the period of construction only if all required exits and all required fire protection features are in place and continuously maintained for the parts occupied. (NFPA 101, 1-3.11.1).

D. When Owner has occupied a portion of the project prior to final completion, Contractor's employees shall not use facilities within occupied portion of buildings, unless they are instructed to do so as part of construction work.

E. Contractor Use of Premises

1. Coordinate use of premises under direction of Owner.
2. Other concurrent and contiguous contracts may be ongoing during the term of this Contract.
3. Follow directions provided by the Owner regarding locations of temporary facilities and utilities, storage areas, stockpile areas, and staging areas to prevent interference with Work by other Contractors.
4. Assume full and sole responsibility for protection and safekeeping of materials and products under this Contract.
5. When not indicated and if available, the Owner's representative will assist the Contractor in identifying on-site staging and storage areas or work areas needed for operations under this Contract.
6. If on-site storage areas are not available, the Contractor shall obtain and pay for use of off-site storage or work areas.
7. Contractor storage/staging area is not guaranteed.

F. Related Contract Documents:

1. Contractor may contact the Owner to review and/or obtain copies of other relevant documents prepared under separate contracts for the City of Baltimore.
2. Duplication costs of other site documents are the responsibility of the Contractor.

1.8 CONSTRUCTION PERIOD

- A. Do not exceed the number of calendar days established from Notice-to-Proceed (NTP) date based on the Contract Time and Completion Date and as further defined in the General Conditions and the Construction Agreement between the Baltimore City and the Contractor.
- B. The duration for this project shall be 120 days.
- C. All work will be totally complete by the established Substantial Completion date and dates indicated herein.
- D. The Final Inspection Date shall be established between the Owner and the Contractor and shall not exceed thirty (30) calendar days beyond the established Substantial Completion Date nor shall the Final Inspection Date be after the Contract Time and Completion Date established for this project.
 1. The Contractor shall identify the Substantial Completion date in the initial and all subsequent cost and labor loaded schedules.
- E. Fourteen (14) calendar days following NTP the Contractor shall submit to the Owner and the Engineer for review and approval the cost and labor loaded CPM schedule and "Shop Drawing" submittal log in duplicate. Submittal Log shall be a report generated directly from the cost and labor loaded CPM schedule and shall indicate the early and late start and finish dates for each submittal item. During this period, perform field investigations, secure clearances, store materials in designated staging areas, and other related initial activities.
- F. Fourteen (14) calendar days following Schedule and Submittal Log review and approval by the Owner and Engineer, resubmit corrected schedule and log.
- G. The Contractor shall notify the Owner in writing seven (7) calendar days in advance of the exact day construction is to start within the Project limits.

1.9 CONTRACTOR'S COORDINATION

- A. Submit coordination drawings in compliance with requirements of the Contract Documents, and as directed by the Engineer and/or Owner.
- B. Coordinate openings and locations for the work between various Sections to include, but not necessarily limited to the following:
 1. Fire Detection.
 2. Electrical.
- C. Concurrent, Contiguous, and Other Contracts:

1. Contractor is hereby notified that there are other concurrent and contiguous contracts awarded by DGS and that these contracts may overlap the limits of work of this contract.
2. The Contractor shall recognize this contiguous relationship and shall make provisions in the schedule and work plan to comply with this critical contract requirements, inclusive of right-of-way and access.
3. Incidental and scheduled disruption to the Contractor work schedule and work plan shall not constitute the basis for additional compensation from the Owner.

1.10 WORK SEQUENCE

- A. Sequence of work and phasing must be submitted by the Contractor for Owner's approval and shall be finalized dependent on Base Bid via CPM schedule.

1.11 OWNER OCCUPANCY

- A. Owner intends to continue to occupy the building during the entire construction period.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the work to accommodate the Owner occupancy.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 CONTRACT COMPLETION

- A. The Contractor is ultimately responsible for a complete, operational, functional, and final project that includes:
 1. All portions of the work as defined in the Contract Documents for this Project.

3.2 SCHEDULE OF WORK

- A. Contractor shall refer to Phasing Plan and Notes indicated on Contract Drawings to schedule phase work.

END OF SECTION 011000

SECTION 011400 – WORK RESTRICTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.2 USE OF PREMISES

- A. Construction will occur in areas/floors of the facility as per the plans. The Contractor shall limit work to one area or floor at any given time. During that time, the Contractor shall limit use of the facility to the area/floor where work is being performed. The Contractor shall not disturb the areas/floors beyond the present work area.
 - 1. Limits: Confine construction operations to the present work area.
 - 2. Owner Occupancy: Allow for Owner occupancy of Facility and full operation of Facility.
 - 3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, 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.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of Existing Building: Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.3 OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site and existing building 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 operations.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 011400

SECTION 012500 – SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.2 EQUAL OR APPROVED EQUAL

- A. On City Contracts the terms "or equal" and "substitution" are to be considered interchangeable. Where any item or material is specified by proprietary name, the trade names, and/or name of manufacturer, with or without the addition of such expressions as "or equal" or "approved equal", it is to be understood that the item or material named or the equal thereof, is intended, subject to the advance written approval of the Engineer as to the equality thereof, and it is distinctly and expressly understood by the Contractor.
 - 1. That the Engineer is to use his own judgment in determining, from time to time, whether or not any item or material proposed to be substituted is the equal of any item or material so specified.
 - 2. That the decision of the Engineer on all such questions of equality shall be final; and,
 - 3. That in the event of any adverse decision by the Engineer, no claim of any sort shall be made or allowed against the Engineer or the City.
- B. Should the Contractor elect to submit an "or equal" for any specified equipment or material for approval by the Engineer, the Contractor shall be responsible for any modifications which are necessary to make the equipment or material operate or function so as to meet the requirements of the Contract Documents, at no additional costs or expense to the City, including without limitation, costs and expenses arising out of or related to additional testing.
- C. If, subsequent to award of the Contract, it becomes necessary or desirable because of the inability of the Contractor to obtain promptly any items, equipment or materials as specified, or because the Contractor intends to use an "or equal" thereof, the Engineer, at his sole discretion, may authorize use of "or equal" or substitute items, equipment or materials of the same, greater, or less cost than those specified. In such cases the Contractor shall submit, in writing, its request for permission to use "or equal" equivalents or make such a substitution and shall furnish full information as to costs of the item, equipment or material specified, and the item, equipment or material to be equaled or substituted therefore. Such information shall be in such form and detail as to permit the Engineer to check to his satisfaction the specifications, quality and costs issues involved with any such request. Prior to the approval of the "or equal" or substitution, when the direct cost thereof is less than the direct costs of the item, equipment or material specified, the Engineer will issue a written authorization and directive setting forth the appropriate credit(s) to be allowed the City. The credit(s) so authorized by the Engineer

shall represent the difference between the net cost to the Contractor of the "or equal" or substituted items, equipment or material, and the price at which it could have obtained the lowest priced item, equipment or material specified. Under no circumstances shall the Contractor be entitled to any increase in the cost or time of performance arising out of or relating to the approval by the Engineer of any "or equal" or substitute item, equipment or material.

- D. The decision of the Engineer, from time to time, as to the proper credits to be allowed the City shall be final and conclusive upon the Contractor.
- E. The Contract Documents may specify the name of manufacturer, trade name, model number or type of item, equipment or materials to be used in the project. All Bids shall be based on the named items, equipment or materials so specified without exception, and any credit authorized and directed by the Engineer for approval of any "or equal" or substitute item, equipment or material may be calculated on such use in the Contractor's Bid regardless of whether the Contractor did, in fact, base its Bid on the named item, equipment or materials. Reference made to a particular product or model of the manufacturer is made to identify a particular design, quality, construction, arrangement, style, etc.
- F. If the Contractor wishes to substitute a product of equal quality and fitness for a named material or item of equipment, it shall submit to the Engineer complete information and Working Drawings for such proposed substitute item, including without limitation all necessary redesign of the structure, partitions, foundations, piping, ductwork, wiring, or of any part of the project needed to accommodate such substitution. This submittal shall accompany the submission of the materials list. All such redesign and all new Drawings and detailing required therefore shall be prepared by the Contractor at the Contractor's sole costs and expense. If substitution of any item requires a different quantity and arrangement of structure, partitions, foundations, piping, ductwork, wiring, conduit and equipment from that specified or indicated on the Contract Drawings, the Contractor shall perform all such changes, modifications or Extra Work required arising out of or relating thereto at no additional cost, expense or time to the City. Requests for increases in the Contract amount or Contract Time to accommodate substitutions shall not be considered by the City, and the Contractor expressly waives any and all claims arising out of or relating thereto. The City shall pursue credits for substitute items of lower cost from the Contractor, and the Contractor shall be responsible for the payment thereof. It shall be expressly understood that equipment and materials named shall be furnished in full accordance with the Contract Drawings and/or Specifications.
- G. The attention of the Contractor is especially directed to the requirement that, if the Contractor proposes to substitute materials or equipment as "equals" to those specified, it shall be the Contractor's responsibility to furnish complete, specific, detailed information from the manufacturer or supplier of the material or equipment it proposes to furnish, in which the requirements of the Contract Documents are shown to be met or exceeded within twenty (20) days after Notice to Proceed. This submission by the Contractor shall include, without limitation, a point-by-point comparison of the specification requirements with the material or equipment proposed to be furnished. This comparison will include actual bid day pricing for the "or equal" substitution and specified equipment. In the event the Contract Documents mention a model number and manufacturer, a point-by-point comparison of the equipment specified under the Contract and the proposed substitute shall be provided. The full burden of responsibility for furnishing this information is with the Contractor. If, in the Engineer's sole discretion, incomplete or irrelevant data is submitted by the Contractor to comply with this requirement, the data shall be returned to the Contractor and the request for approval of the substitution shall be denied. Names of manufacturers for substitute items, which are not approved by the Engineer, shall not be

considered and the Contractor shall supply the products named in the Specifications. The Contractor accepts all responsibility for any delays that result from the "or equal" approved process.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 012500

SECTION 01 29 00 - APPLICATION FOR PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of Applications for Payment.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

1.4 FORMAT

- A. Application and Certification for Payment.
 - 1. Contractor will be provided with a copy of the required document format at the Preconstruction Conference.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 PREPARATION OF APPLICATIONS

- A. Type required information on form using format required by Owner.
- B. Do not prepare hand written application.
- C. Execute certification by signature of authorized officer of the firm.
- D. Use data on approved Schedule of Values.
- E. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- F. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- G. Prepare Application for Final Payment.

3.2 SUBMITTAL PROCEDURES

- A. Following review and acceptance by Owner's Representative, submit one original and two copies of each Application for Payment to Engineer at times stipulated in Contract Agreement.

3.3 SUBSTANTIATING DATA

- A. When Engineer or Owner requires substantiating information, submit data to Engineer justifying line item amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal.
- C. Show application number and date, and line item number and description.

END OF SECTION 01 29 00

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Coordination Drawings.
 - 3. Administrative and supervisory personnel.
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connections, and operation.
- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

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

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conference.
7. Project closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.4 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

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

1. Include special personnel required for coordination of operations with other contractors.

END OF SECTION 013100

SECTION 013120 - PROJECT MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Scheduling and administration requirements for Progress Meeting.
- B. Administrative requirements for Contractor's Daily Construction Progress Reports.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

1.4 GENERAL

- A. Record all meetings and conferences and issue meeting minutes as indicated.
- B. Issue meeting minutes to Owner, Engineer, Contractor and conference participants through the Contractor.
- C. Distribute copies of all meeting minutes to all Subcontractors.

1.5 PROGRESS MEETING

- A. Schedule and conduct meetings and conferences at Project site.
 - 1. In event Work under this Contract obstructs or impedes passage of work of others, remove such obstructions and impediments expeditiously and make provisions to prevent delay and provide access for others.
- B. Preconstruction Conference: The Owner shall schedule a pre-construction conference before construction begins. The conference shall be held at the project site or another convenient location.
 - 1. Attendees: Authorized representatives of Owner, Engineer, Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.

- f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of Record Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and storage areas.
 - n. Equipment deliveries and priorities.
 - o. First aid.
 - p. Security.
 - q. Progress cleaning.
 - r. Working hours.
- C. Progress Meeting will be held on a mutually agreed upon weekday of every other week for duration of Contract.
- D. Progress Meeting will be held in Contractor's on-site office conference room.
- E. The following individuals and agencies shall attend each Progress Meeting:
 - 1. Owner's Representatives.
 - 2. Engineer (City PM).
 - 3. Contractor's Project Manager.
 - 4. Contractor's Superintendent.
 - 5. Other members from design team, as needed.
 - 6. Architect (if needed).
 - 7. Subcontractors (if needed).
- F. Contractor will administer, record, and distribute Progress Meeting Minutes.
- G. Progress Meeting Minutes will be issued within five days following Progress Meeting.
- H. Agenda:
 - 1. Review of minutes of previous meeting.
 - 2. Review of Work progress and on-site security.
 - 3. Review of Contractor's Request for Interpretations.
 - 4. Field observations, problems, and decisions.
 - 5. Review of Submittals Schedule and status of Submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work
- I. Contractor Prepared Documents:
 - 1. The Contractor's Project Manager shall provide documents containing representative information that Contractor shall prepare and distribute to each attendee at the start of each Progress Meeting, to include:

- a. Prior Progress Meeting minutes.
- b. Schedule Narrative:
 - 1) Description of work by trade or system.
 - 2) Describe past two-week's effort and next four weeks effort.
 - 3) Indicate where four-week scheduled tasks were not accomplished and report on methods to be employed by Contractor to recover schedule slippage.
 - 4) Narrative to include CPM Schedule task identifier, task description, task duration and percent complete (planned and actual) per week.
- c. Look-ahead Schedule: Two-week Look-Back and four-week Look-Ahead Gantt Bar Chart developed from Owner-approved CPM Construction Schedule.
- d. Request for Interpretation Log (RFI).
- e. Approved Change Order Log (ACO).
- f. Shop Drawing and Product Submittal Log.
- g. New Business: Contractor produced itemized list of new items and issues to be discussed.
 - 1) Number each item starting with the current meeting number, followed by a period and sequential item number. Example: 1.01, 1.02, etc.

1.6 DAILY CONSTRUCTION PROGRESS REPORTS

- A. Prepare Daily Construction Progress Reports and distribute copies to Owner on a weekly basis (Monday morning for previous week).
- B. Reports shall be prepared in type written format by Contractor's Superintendent and include the following items as a minimum:
 - 1. Project Title.
 - 2. Contract Number.
 - 3. Date Report Represents.
 - 4. Date Report was prepared.
 - 5. Field Engineer's Name.
 - 6. Work start time and work stop time.
 - 7. Official weather report from the nearest Federal Weather Reporting Station, or as approved by Engineer.
 - 8. Manpower distribution and totals by category of trade and trade skill level.
 - 9. Contractor's project administration manpower by description and total.
 - 10. Summary of manpower tasks scheduled and accomplished during reporting period.
 - 11. Summary of materials and products delivered and quantities used during reporting period.
 - 12. Other information as required.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 013120

SECTION 014000 – QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contractor's Quality Control Firm and Quality Control Program.
- B. Quality Control of products and workmanship.
- C. Manufacturer's instructions.
- D. Manufacturer's certificates and field services.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

1.4 DESCRIPTION: PROJECT QUALITY CONTROL and QUALITY ASSURANCE

- A. Coordinate with requirements of Division 1 Specification Sections.
- B. The Contractor shall take note of the following:
 - 1. When the words Quality, Quality Control, and Quality Assurance are used within the Contract Documents the work of providing qualitative control, monitoring and documenting the quality of the contract is the sole responsibility of the Contractor, with the exception of when the words and work of Quality Assurance is described herein and in Section 011000.
- C. The Contractor is fully and wholly responsible for Quality Control of the Project.

1.5 QUALITY CONTROL MANAGER REQUIREMENTS

- A. Contractor's Quality Control Manager shall have a minimum of ten (10) years of construction related experience where the technical and costs requirements are similar to the technical and cost requirements of this project.
 - 1. Identify and submit qualifications of the Contractor's candidate Quality Control Manager at the Preconstruction Conference for Owner's review and approval.
 - a. The Owner reserves the right to reject or accept the candidate QCM at their sole discretion.

1.6 CONTRACTOR'S QUALITY CONTROL PROGRAM

- A. Quality Control (QC) is defined to involve and require related testing and inspection procedures, and refers to collective actions required to ensure that fabricated and installed materials, equipment, systems comply with Contract Documents and regulations by governing agencies and authorities.
- B. Perform required actions and include specified surveillance, inspection, testing, measuring, reporting, and correction-of-defects.
- C. Completion of required Quality Control actions on a unit of work does not relieve Contractor of responsibility for compliance with other requirements of the Contract Documents.
- D. Specified and identified Quality Control requirements are not intended to limit Contractor's and Contractor's Fabricator's procedures that achieve compliance with the requirements of the Contract Documents; nor are these intended to limit related requirements which may be imposed by other provisions hereof, or by governing agencies and authorities.

1.7 QUALITY CONTROL ORGANIZATION AND SUBMITTALS

- A. Quality Control Plan: Submit the Contractor's Quality Control Plan (QCP) at the Preconstruction Conference.
 - 1. Plan shall indicate the required staff qualifications, personnel assignments, procedures, instructions, record keeping, and forms to be used for implementing and reporting QC requirements.
 - 2. Upon receipt of the Owner's review and acceptance of the Contractor's Quality Control Plan, coordinate and integrate the principal actions and work into the Contractor's Construction Progress Schedule.
 - 3. Include in the QC Plan a complete listing by specification Section of inspections and tests to be performed; and chart how the results will be reported to the Owner and Engineer.
 - a. Submit in QC Plan copy of Contractor's letter of authorization appointing qualifications of the QCM for overall management of the QCP and his authority to act for the Contractor in QC matters. Acceptance of the candidate QCM qualifications is subject to the Owner's review and approval.
 - b. When acceptable to the Owner, schedule and maintain QC staff on Project Site and elsewhere, whenever work is scheduled and performed such that qualified QC staff perform and document the QC work.
 - c. Include in the QC Plan and maintain a current listing of QC staff assignments, indicating names, qualifications, duties, authorizations, and responsibilities.
 - 4. Indicate and include in the OC Plan specifically how the related Sections under Divisions 0 and 1, are to be implemented.
 - 5. Prior to the start of work, meet with the Owner's Representative and review the QC Plan and how the Contractor will implement and integrate the QC Plan with the Construction Progress Schedule.
 - 6. Prepare and distribute detailed minutes of meeting, and subsequent meetings; signed by both the Contractor's PM, QCM and Owner's Representative.
 - a. Do not proceed with work subject to QC requirements until acceptance of QC Plan has been granted by QCM and PM.
 - b. Continued acceptance is subject to satisfactory performance of work, including satisfactory execution of QC Plan provisions.

- c. Do not change accepted QC Plan, except with prior written approval of PM and QCM on proposed change.
- d. Owner reserves the right to require changes in the QC Plan, where required by the PM as necessary to assure required qualities and Contract compliance.

1.8 QUALITY CONTROL SERVICES

- A. General: Contractor shall include sample taking, testing, analysis, reporting, and similar activities as part of this contract.
- B. QC Pre-Analysis and Preparation: Prior to start of each unit of work subject to QC inspection and testing, review related Contract Document requirements; and ensure that preliminary actions have been completed, including submittal/approval procedures, procurement of materials/equipment/ services required for the work, installation personnel and equipment available at the site, and inspection and test equipment and agencies are present. Notify PM a minimum of 48 hours in advance of each QC pre-analysis inspection procedure, and provide written record of such procedure to the QCM and PM.
- C. Where indicated, scheduled and/or identified, engage the QC service to perform inspections associated with or required in connection with QC activities, including written confirmation that materials being used in the work comply with the requirements of the Contract Documents.
- D. For QC services on work to be provided over prepared substrates; engage the related QC service to inspect and test prepared substrates for suitability to receive the superimposed work; and include the results of substrate inspections and testing in related QC reporting.
- E. Proceed with initial QC service related to each element of work as soon as possible after installation of a suitable increment of work has been accomplished. QCM to notify PM at least 48 hours in advance of each anticipated QC service, and include anticipated schedule for follow-up services, through installation of remaining increments. Conclude each QC sequence of service for a unit-of-work with a completion set of services, and a summary report for entire QC services on the unit of work.
- F. Provide testing as scheduled, specified, indicated or as otherwise required to ensure accurate determination of quality compliances with requirements of the Contract Documents. Comply with recognized standards of testing for each industry and trade. Use recognized independent testing laboratory services acceptable to the Owner. Provide written report of each QC inspection and test performed, including the following information:
 - 1. Contract Title and Contract Number.
 - 2. Test title, source, and sequence number.
 - 3. Date(s) and location(s) of samples, and dates of tests; related Contract Document Specification Section and Article.
 - 4. Identify the recognized industry/trade test method and specification.
 - 5. Name of testing laboratory, and individual conducting inspection/test procedure.
 - 6. Ambient conditions at time of sample taking, and at time of inspection/test procedure.
 - 7. Inspection/test data, results, interpretations, and analysis of information developed.
 - 8. Test agency's/individual's comments and professional opinions concerning; whether test has "passed", whether work-in-place complies with contract

- requirements, and whether retesting or other testing is recommended; complete with responsible individual's signature and date.
9. Other data as required/implied, by nature of particular inspection/test procedure being completed, or by provisions in related technical section of these Contract Specifications.
 10. Include name of person or agency conducting the inspection/test procedure; to the effect of "certification" that materials/equipment/services incorporated into the work comply with requirements of the Contract Documents; or "expressing" reservations thereto, as observed or determined.
- G. Maintain complete record and log of entire QC actions, ready for PM examination at any time. Highlight defects, deficiencies, and noncompliance's found; along with corrective actions/reconstructions completed, to be completed, or recommended for acceptance of PM.
- H. Completion Inspection: At the time each unit of work or separate increment thereof is substantially complete, and regardless of whether subjected to specific QC inspection and testing, conduct a completion inspection and develop a "punch list" of deficiencies to be corrected on non-complying elements, and include in QC documentation. Include in report the dates established or estimated for completion of corrections, as required to comply with Construction Progress Schedule and Close-Out Procedures identified elsewhere.
- 1.9 COINCIDENTAL SERVICES
- A. Provide incidental services needed by engaged QC agency/services, including services performed by SCITF and by its engaged services. Incidental services include, but are not limited to the following:
1. Use of Contractor's QC testing laboratory.
 2. Assistance in gaining access to work, and taking of test samples, and subsequent repair of work and substrates.
 3. Temporary facilities, as reasonably utilized by quality control/testing services.
 4. The handling, curing, storage, and protection of test samples at the Project Site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. Comply with industry-referenced standards except where more restrictive tolerances or specified requirements indicate more rigid standards; the more restrictive requirement shall apply.
- B. Provide sufficient quantity of qualified personnel to comply with requirements of specifications for this project.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- D. Provide finishes to match approved samples and mockups.

3.2 MANUFACTURER'S INSTRUCTIONS

- A. Require compliance with instructions in full detail, including each step in construction sequence.
- B. Should instruction conflict with Contract Documents, request clarification from Engineer before proceeding.

3.3 MANUFACTURER'S CERTIFICATES

- A. When required by Specification Sections, submit manufacturer's certificate in original duplicate, certifying that products meet or exceed specified requirements, executed by responsible officer of the manufacturer.

3.4 MANUFACTURER'S FIELD SERVICES

- A. Provide qualified manufacturer representative when required by Specification Section or as a result of review and evaluation of Contractor's sub-contractor's named list.
- B. Provide qualified manufacturer representative, at no additional cost to Owner, to perform the following:
 - 1. Observe field conditions.
 - 2. Conditions of surfaces and installation.
 - 3. Quality of workmanship.
 - 4. Start-up of equipment.
 - 5. Test, adjust, and balance equipment.
 - 6. Provide written report of observations and recommendations to Contractor within two days of each site visit.
- C. Submit report to Engineer in accordance with Specification 017839.

3.5 CORRECTION OF WORK

- A. Defects in Work: Where QC procedures disclose defects in the work provide remedial actions, as agreed upon with PM, to upgrade, repair, restore, reconstruct, replace, or otherwise correct defects in the work, so as to provide compliance with requirements of the Contract Documents.
 - 1. Provide reinspection/retesting of corrected work, comparable with that required for initial work, and as directed by the PM; repeat until compliances are achieved.
 - 2. Neither the required QC procedure, nor detection of defects, nor correction of defects, nor the reinspection/retesting of corrected work, provides a basis for Contractor's claim for Contract Modification, Additional Compensation, or request for extension of Contract Time.

3.6 RESTORATION AND PROTECTION

- A. General, Final Restoration: Upon completion of inspection, sample taking, testing, and correction-of-defects for the work in place; repair damaged work and substrates, and restore finishes to eliminate deficiencies in visual and performance qualities; comply with PM's requests. Restore protection as specified. Comply with provisions of section on cutting and patching.
- B. Continued Protection: As an integral action of the QC Plan, provide continued protection of completed work through remainder of Construction Time, and monitor protective measures in relation to construction activities.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Applicability of Reference Standards.
- B. Provision of Reference Standards at Site.
- C. Acronyms used in Contract Documents for Reference Standards.
- D. Source of Reference Standards.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

1.4 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the date of Owner-Contractor Agreement.
- C. When required by individual Specification Section and/or at the request of the Owner and/or Engineer, obtain copy of standard.
- D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.

1.5 SCHEDULE OF REFERENCES

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| AA | Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006 |
| AABC | Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005 |

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| ACI | American Concrete Institute Box 19150 Reford Station Detroit, MI 48219 |
| ADC | Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601 |
| ADA | Americans with Disabilities Act |
| AGC | Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006 |
| AISC | American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611 |
| AMCA | Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004 |
| ANSI | American National Standards Institute 1430 Broadway New York, NY 10018 |
| APA | American Plywood Association Box 11700 Tacoma, WA 98411 |
| ARI | Air-Conditioning and Refrigeration Institute 1815 North Fort Myer Drive Arlington, VA 22209 |
| ASHRAE | American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329 |
| ASME | American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017 |
| ASTM | American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103 |

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| AWWA | American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 |
| AWS | American Welding Society 550 LeJeune Road Miami, FL 33135 |
| COMAR | Codes for the State of Maryland Division of State Documents 11 Bladen Street Annapolis, MD 21401 |
| CDA | Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10174 |
| EJCDC | Engineers' Joint Contract Documents Committee American Consulting Engineers Council 1050 15th Street, N.W. Washington, DC 20005 |
| FM | Factory Mutual 1151 Boston-Providence Turnpike Norwood, MA 02062 |
| FS | Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407 |
| GA | Gypsum Association 1603 Orrington Avenue Evanston, IL 60201 |
| IEEE | Institute of Electrical and Electronics Engineers 345 East 47th Street New York, NY 10017 |
| IMIAC | International Masonry Industry All-Weather Council International Masonry Institute 815 15th Street, N.W. Washington, DC 20005 |
| ML/SFA | Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, IL 60601 |
| NEBB | National Environmental Balancing Bureau 8224 Old Courthouse Road |

Vienna, VA 22180

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| NEMA | National Electrical Manufacturers' Association 2101 L Street, N.W. Washington, DC 20037 |
| NFPA | National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471 |
| PS | Product Standard U.S. Department of Commerce Washington, DC 20203 |
| SDI | Steel Door Institute 712 Lakewood Center North Cleveland, OH 44107 |
| SMACNA | Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, VA 20151 |
| TAS | Technical Aid Series Construction Specifications Institute 601 North Madison Street Alexandria, VA 22314 |
| UL | Underwriters' Laboratories, Inc. 333 Pfingsten Road Northbrook, IL 60062 |

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015690 - CONSTRUCTION CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cleaning and disposal of Contractor-generated construction waste materials, debris, and rubbish for duration of Contract.
- B. Cleaning and disposal of Contractor- and Owner-generated field office waste materials, debris and rubbish for duration of Contract.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.
- B. Green Book Specification Section 2.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. Provide covered containers for deposit of waste materials, debris, and rubbish.

PART 3 - EXECUTION

3.1 CLEANING

- A. Maintain project limits free of waste materials, debris, and rubbish on a daily basis.
- B. Maintain project limits in a clean and orderly condition on a daily basis.
- C. Remove debris and rubbish from ductwork, pipes, structures, and other closed or remote spaces, prior to closing the space and/or as instructed by the Owner or the City's Field Project Manager.
- D. Daily clean interior areas to provide suitable conditions for Work.
- E. Broom and wet mop interior areas prior to start of surface finishing, and continue cleaning on an as-needed basis.
- F. Control cleaning operations so that dust and other particles will not adhere to wet or newly coated surfaces.
- G. Remove debris, trash and clean project limits and field offices at the direction of the

Owner at no additional cost to the Owner within 24 hours of receiving written direction.

3.2 DISPOSAL

- A. Remove waste materials, debris, and rubbish from site daily and legally dispose of off-site.

END OF SECTION 015690

SECTION 016000 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project. Multiple Prime Contracts: Provisions of this Section apply to the construction activities of each prime Contractor.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."
- C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to products specified.
- D. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturers published product literature that is current as of the date of the Contract Documents.
 - b. "Foreign Products", as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of nor living within the United States and its possessions.
 - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Engineer. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
 2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturers and name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date, or time span of delivery period.
 3. Initial Submittal: Submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period. Include list of all supervisors and subcontractors, by Pre-Construction Meeting.
 4. Completed Schedule: Within the time specified in Section 010000, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 5. Engineer's Action: The Engineer will respond in writing to the Contractor within 1 week of receipt of the completed product list schedule. The Engineer's response will include the following: A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 QUALITY ASSURANCE

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

1. Each prime Contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other prime or separate Contractors.
 2. If a dispute arises between prime Contractors over concurrently selectable, but incompatible products, the Engineer will determine which products shall be retained and which are incompatible and must be replaced.
- C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:
1. No available domestic product complies with the Contract Documents.
 2. Domestic products that comply with Contract Document are only available at prices or terms that are substantially higher than foreign products that also comply with the Contract Documents.
- D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
 2. Semi-Proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or accepted substitute" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
7. Visual Matching: Where Specifications require matching an established Sample, the Engineer's decision will be final on whether a proposed product matches satisfactorily. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Engineer will select the color, pattern and texture from the product line selected.

2.2 WARRANTY

- A. Warranties for all equipment shall begin at the time of Substantial Completion.

PART 3 EXECUTION

3.1 INSTALLATION OF PRODUCTS:

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

END OF SECTION 016000

SECTION 016500 - TRANSPORTATION AND HANDLING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Packaging, Transportation.
- B. Delivery and Receiving.
- C. Product Handling.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 PACKAGING AND TRANSPORTATION

- A. Require supplier to package finished products in boxes or crates for protection during shipment, handling, and storage.
- B. Protect sensitive products against exposure to elements and moisture.
- C. Protect sensitive equipment and finished against impact, abrasion, and other damage.

3.2 DELIVERY AND RECEIVING

- A. Arrange deliveries of products in accordance with construction progress schedules.
- B. Allow time for inspection prior to installation.
- C. Coordinate deliveries to avoid conflict with Work and conditions at site; limitations on storage space; availability of personnel and handling equipment; and Owner's use of premises.
- D. Deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.
- E. Clearly mark partial deliveries of component parts of equipment to identify equipment and contents, to permit easy accumulation of parts, and to facilitate assembly.

F. Immediately upon delivery, inspect shipment to assure:

1. Product complies with requirement of Contract Documents and reviewed submittals.
2. Quantities are correct.
3. Accessories and installation hardware are correct.
4. Containers and packages are intact and labels legible.
5. Products are protected and undamaged.

3.3 PRODUCT HANDLING

- A. Provide equipment and personnel to handle products, by methods to prevent soiling and damage.
- B. Provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.
- C. Handle product by methods to avoid bending or overstressing.
- D. Lift large and heavy components only at designated lift points.

END OF SECTION 016500

SECTION 016600 - STORAGE AND PROTECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Storage, General.
- B. Enclosed Storage.
- C. Exterior Storage.
- D. Maintenance of Storage.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 GENERAL

- A. Storage facilities are not guaranteed. Minimal on-site storage is preferred.
- B. Store products, immediately upon delivery, in accordance with manufacturer's instructions, with seals and labels intact.
- C. Protect until installed.
- D. Arrange storage in a manner to provide access for maintenance of stored items and for inspection.
- E. Storage of materials to be used for a week's duration may be stored in the secured construction area.
- F. Stored materials must not conflict with work conditions.
- G. On-site storage subject to Owner approval and inspection.

3.2 ENCLOSED STORAGE

- A. Store products, subject to damage by the elements, in substantial weathertight enclosures.
- B. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
- C. Provide humidity control and ventilation for sensitive product, as required by manufacturer's instructions.
- D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

3.3 EXTERIOR STORAGE

- A. Provide substantial platforms, blocking, or skids, to support fabricated products above ground; slope to provide drainage.
- B. Protect products from soiling and staining.
- C. For products subject to discoloration or deterioration from exposure to the elements, cover with impervious sheet material.
- D. Provide ventilation to avoid condensation.
- E. Provide surface drainage to prevent erosion and ponding of water.
- F. Prevent mixing of refuse or chemically injurious materials or liquids.

3.4 MAINTENANCE OF STORAGE

- A. Periodically inspect stored products on a schedule basis.
- B. Maintain a log of inspections available to Owner on request.
- C. Verify that storage facilities comply with manufacturer's product storage requirements.
- D. Verify that manufacturer-required environmental conditions are maintained continually.
- E. Verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes is acceptable under requirements of Contract Documents.

3.5 MAINTENANCE OF EQUIPMENT STORAGE

- A. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions shown on exterior of package.
- B. Service equipment on a regularly scheduled basis, maintaining a log of services; submit as a Record Document.
- C. Off-site storage unit shall be in bonded warehouse per Green Building Specifications.

END OF SECTION 016600

SECTION 017300 - EXECUTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Construction Layout.
- B. Installation of work.
- C. Starting and Adjusting.
- D. Protection of installed construction.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Before proceeding with each component of work, examine substrates, areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Examine rough-in for mechanical and electrical systems to verify actual locations of connections before equipment installation.

3.2 PREPARATION

- A. Take field measurements as required and provide coordinated drawings showing installation and routing of equipment, conduit, etc..

- B. Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review contract documents and compare with existing field conditions. Immediately contact Architect/Engineer on discovery of areas that need clarification of the Contract Documents caused by differing field conditions outside the control of Contractor.

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 and replacement.
 - 3. Conceal conduit and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

3.4 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with Commissioning Agent.
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.5 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 control of space temperature and humidity.

END OF SECTION 017300

SECTION 017310 - CUTTING AND PATCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedural requirements for cutting and patching.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections

1.4 DEFINITIONS

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

1.5 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
 - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - 7. Owner's Representative and Engineer's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.6 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 1. Water, moisture, or vapor barriers.
 - 2. Membranes and flashings.
 - 3. Equipment supports.
 - 4. Piping, ductwork, vessels, and equipment.
 - 5. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
 - 1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
 - a. Preformed metal panels.
 - b. Roofing.
 - c. Firestopping.
 - d. Fluid-applied flooring.
 - e. HVAC enclosures, cabinets, or covers.

1.7 WARRANTY

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

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

- A. 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 existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing 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. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 - 5. 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.
 - 6. Proceed with patching after construction operations requiring cutting are complete.

- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate 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 eliminate evidence of patching and refinishing.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

END OF SECTION 017310

SECTION 017400 - FINAL CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Final cleaning of project.
- B. Site debris not exposed to view.
- C. Perform Final Cleaning at Substantial Completion and Final Completion.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

1.4 DESCRIPTION

- A. Execute and complete cleaning prior to inspection date established for Substantial Completion.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS

- A. Use materials that will not create hazards to health or property and that will not damage surfaces.
- B. Use only materials and methods recommended by manufacturer of material being cleaned.

PART 3 EXECUTION

3.1 CLEANING

- A. In addition to removal of debris and cleaning specified in other Sections, clean interior and exterior exposed-to-view surfaces.
- B. Remove temporary protection and labels not required to remain.
- C. Clean finishes free of dust, stains, films, and other foreign substances.
- D. Clean transparent and glossy materials to a polished condition; remove foreign substances.

- E. Polish reflective surfaces to a clear shine.
- F. Vacuum clean carpet, fabric, and similar soft surfaces.
- G. Clean and damp-mop resilient and hard-surfaced floors as specified, wax and polish if recommended by manufacturer.
- H. Clean surfaces of equipment and remove excess lubrication.
- I. Clean permanent filters of ventilating equipment, and replace disposable filters when units have been operated during construction.
- J. Clean HVAC blowers, and coils when units have been operated during construction.
- K. Clean light fixtures and lamps.
- L. Remove waste, foreign matter, and debris from roofs, gutters, areaways, and drainage systems.
- M. Remove waste, debris, and surplus materials from site.
- N. Clean site; remove stains, spills, and foreign substances from paved areas and sweep clean.
- O. Rake clean other exterior surfaces.
- P. Open all remotely operated door housing covers for final Owner, Engineer and City's Field Project Manager inspection.
 - 1. Close upon acceptance of interior cleanliness.
- Q. Maintain Final Cleaning until Final Completion.

3.2 DEBRIS NOT EXPOSED TO VIEW

- A. Prior to final inspection date for Substantial Completion, scan the entire area of work, accompanied by a representative of the Owner, and remove all items considered a security risk.
- B. Upon completion, submit to the Owner certification that the site has been searched and cleared of any security risk items.

END OF SECTION 017400

SECTION 017700 CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operating and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Division 2 through Division 26.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.

6. Deliver tools, spare parts, extra stock, and similar items.
 7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
 8. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- B. Inspection Procedures: On receipt of a request for inspection, the Engineer will either proceed with inspection or advise the Contractor of unfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List Exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Engineer.
 4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
 5. Submit consent of surety to final payment.
 6. Submit a final liquidated damages settlement statement.
 7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

- B. Re-inspection Procedure: The Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Engineer.
 - 1. Upon completion of re-inspection, the Engineer will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 - 2. If necessary, re-inspection will be repeated.
- C. Final Completion: Substantial completion shall be met when the Work or designated portion of the work is sufficiently complete to meet the following conditions and demonstrate to the Owner and Architect/Engineer that the materials, equipment or other appurtenances are:
 - 1. Install as called for in accordance with the Contract Documents.
 - 2. Inspected by the Architect/Engineer of Record.
 - 3. Formally accepted for its intended use.
 - 4. And when the appropriate Authorities Having Jurisdiction have issued final inspections and released the permits for such Work.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Engineer's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 - 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 - 3. Note related Change Order numbers where applicable.
 - 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the

Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data. Upon completion of the Work, submit record Specifications to the Engineer for the Owner's records.

- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications. Upon completion of mark-up, submit complete set of record Product Data to the Engineer for the Owner's records.
- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Engineer and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Engineer for the Owner's records.
- G. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
 - 1. Emergency instructions.
 - 2. Spare parts list.
 - 3. Copies of warranties.
 - 4. Wiring diagrams.
 - 5. Recommended "turn around" cycles.
 - 6. Inspection procedures.
 - 7. Shop Drawings and Product Data.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by Manufacturer's representatives. Include a detailed review of the following items:
 - 1. Maintenance manuals.
 - 2. Record documents.
 - 3. Spare parts and materials.
 - 4. Tools.
 - 5. Identification systems.
 - 6. Control sequences.
 - 7. Hazards.
 - 8. Cleaning.
 - 9. Warranties and bonds.
 - 10. Maintenance agreements and similar continuing commitments.
 - 11. Balancing and Commissioning Report.
- B. As part of instruction for operating equipment, demonstrate the following procedures:
 - 1. Start-up.
 - 2. Shutdown.
 - 3. Emergency operations.
 - 4. Safety procedures.

3.2 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with Manufacturer's instructions. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 - 1. Remove labels that are not permanent labels.
 - 2. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

3. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances.
 4. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
- D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Maintenance of Record Documents and Samples.
- B. Submittal of Record Documents and Samples.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 01 Specification Sections.

1.4 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. See individual specification Sections for requirements of manufacturer's certificates and certificates of inspection.
- B. In addition to requirements in General Conditions, maintain at the site one record copy of each of the following:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Clarifications, Minor Modifications and Supplements.
 - 5. Change Orders and other modifications to the Contract.
 - 6. Reviewed shop drawings, product data, and samples.
 - 7. Field test records.
 - 8. Inspection certificates.
 - 9. Manufacturer's certificates.
- C. Label and file Record Documents and samples in accordance with Section number listings in Table of Contents of this Project Manual.
- D. Label each document "PROJECT RECORD DOCUMENTS" in neat, large, printed letters.
- E. Maintain Record Documents in a clean, dry, and legible condition.
- F. Do not use Record Documents for construction purposes.
- G. Keep Record Documents and samples available for inspection by Owner and Engineer at all times.

1.5 RECORDING

- A. Record information on a set of blue line opaque drawings, provided by Owner.

- B. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.
- C. Record information concurrently with construction progress.
- D. Do not conceal any Work until required information is recorded.
- E. Contract Drawings and Shop Drawings:
 - 1. Legibly mark each item to record actual construction, including:
 - a. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - b. Field changes of dimension and detail.
 - c. Changes made by Clarifications, Minor Modifications and Supplements.
 - d. Details not on original Contract Drawings.
 - e. References to related shop drawings and modifications.
 - 2. Specifications:
 - a. Legibly mark each item to record actual construction, including:
 - 1) Manufacturer, trade name, and catalog number of each product actually installed particularly optional items and substitute items.
 - b. Changes made by Addenda and modifications.
 - 3. Other Documents:
 - a. Maintain manufacturer's certifications, inspection certifications, and field test records, as required by individual Specification Section.

1.6 SUBMITTALS

- A. On the day established for Contract closeout, deliver Final Record Documents and Samples under provisions of Section 017700.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 – DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for demonstration of equipment operation and instruction of Owner's personnel.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
- B. Applicable Sections of the 2006 edition of the City of Baltimore Department of Public Works Specifications ("Green Book").

1.3 RELATED SECTIONS

- A. Division 1 Specification Sections.

1.4 QUALITY ASSURANCE

- A. When specified in other Sections, require manufacturer to provide manufacturer's authorized technical representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstrations and instructions have been completed.
- B. Owner will provide list of personnel to receive instructions and will coordinate their attendance at agreed-upon times through the Owner.

1.5 SUBMITTALS

- A. Submit preliminary schedule for Owner's approval, listing times and dates for demonstration of each item of equipment and each system, 45 days prior to proposed dates.
- B. Submit three (3) copies of each pre-evaluation and site report and proposed video filmed demonstration seven days prior to filming, to ensure that the planned demonstrations and instructions are complete and accurate for the intended purpose.
- C. Submit to Owner time and date of each proposed demonstration, hours devoted to demonstration, and a list of personnel to be present.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify equipment has been inspected, fully functional and operational.
- B. Verify testing, adjusting, and balancing has been performed and equipment and systems are fully operational.

- C. Use copies of completed operation and maintenance manuals and other props on hand for use in demonstrations and instructions.

3.2 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate maintenance of equipment and systems to Owner's personnel one day prior to date of Final Inspection.
- B. For equipment requiring seasonal operation, perform instructions for other seasons at the same time.
- C. Use operation and maintenance manuals as basis of instruction.
- D. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

3.3 TIME ALLOCATED FOR INSTRUCTIONS

- A. The amount of time required for instruction on each item of equipment and system is specified in individual Sections, but no less than 120 minutes.

END OF SECTION 017900

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

1.2 RELATED DOCUMENTS

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

1.3 RELATED SECTIONS

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 017300 "Execution" for architectural cutting and patching procedures.
3. Section 017310 "Cutting and Patching" for mechanical cutting and patching procedures.

1.4 DEFINITIONS

- ##### A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- ##### B. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- ##### C. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.5 MATERIALS OWNERSHIP

- ##### A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- ##### B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.6 INFORMATIONAL SUBMITTALS

- ##### A. Qualification Data: For refrigerant recovery technician.
- ##### B. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending

dates for each activity. Ensure Owner's building manager's and other tenants' on-site operations are uninterrupted.

2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Use of elevator and stairs.
 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- D. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 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.
1. Before selective demolition, Owner will remove the following items:
 - a. Tenant Property.
- C. Notify Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

- E. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches (300 mm) or more.
- F. Storage or sale of removed items or materials on-site is not permitted.
- G. 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.

1.10 WARRANTY

- A. Existing Warranties: Obtain existing warranty from Owner. Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.11 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of measured drawings.
 1. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 2. Arrange to shut off utilities with utility companies.
 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3.4 PROTECTION

- A. Temporary Protection: 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.

- B. Temporary Shoring: Design, 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.
- C. Remove temporary barricades and protections where hazards no longer exist.

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. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. 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. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. 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.
 - 5. Maintain fire watch during and for at least 3 hours after flame-cutting operations.
 - 6. Maintain adequate ventilation when using cutting torches.
 - 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 10. Dispose of demolished items and materials promptly.
- B. 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.
- 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 cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 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.

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 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section is subject to General Provisions of the Contract including General and Supplementary Conditions and Division 1 specifications, apply to this section. These requirements apply unilaterally to all Baltimore City General Conditions to all technical specification sections unless noted otherwise and if not stated.
- B. Section includes acoustical panels and exposed suspension systems for interior ceilings.

1.2 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site to review removal and replacement of acoustical tile ceilings, coordination with existing lighting fixtures, smoke detectors and miscellaneous devices to be removed and reinstalled as directed in the Electrical drawings and specifications.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.
- C. Delegated-Design Submittal: For seismic restraints for ceiling systems.
 - 1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, and coordinated with each other, using input from installers of the items involved.
- B. Product test reports.
- C. Research reports.
- D. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, to design seismic restraints for ceiling systems.

- B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- C. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E 1264.
 - 2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL PANELS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. CertainTeed Corporation.
 - 3. United States Gypsum Company.
- B. Acoustical Panel Standard: Manufacturer's standard panels according to ASTM E 1264, and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
 - 1. Cirrus 574 by Armstrong or approved equal
- D. Color: White.
- E. Light Reflectance (LR): 0.88.
- F. Ceiling Attenuation Class (CAC): 35.
- G. Noise Reduction Coefficient (NRC): 0.75.
- H. Edge/Joint Detail: Square.
- I. Thickness: 3/4 inch.
- J. Modular Size: 48 by 24 inches, where indicated on the drawings.

2.3 METAL SUSPENSION SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. CertainTeed Corporation.
 - 3. Chicago Metallic Corporation.
 - 4. United States Gypsum Company.
- B. Metal Suspension-System Standard: Manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M.
- C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; pre-painted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: butt-edge type.

3. Face Design: Flat, flush.
4. Cap Material: Cold-rolled steel.
5. Cap Finish: Painted white.

2.4 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated.
- B. Layout openings for penetrations centered on the penetrating items.

3.2 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C 636/C 636M, seismic design requirements, and manufacturer's written instructions.
- B. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
 3. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.

3.3 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform inspections.
 1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.

END OF SECTION 095113

SECTION 260501 - GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 GENERAL

- A. Provide all labor, materials, equipment and services necessary for and incidental to the complete installation and operation of all electrical work.
- B. All work under this Division is subject to the General Conditions and Special Requirements for the entire contract.
- C. Unless otherwise specified, all shop drawings and submissions required under Division 26 shall be made to, and acceptances and approvals made by, the ENGINEER.
- D. Conform to the requirements of all rules, regulations, and codes of local, state, and federal authorities having jurisdiction. Conform to the National Electrical Code and all NECA – National Electrical Installation Standards (NEIS).
- E. Perform the work in a first-class, substantial, and workmanlike manner. Any materials installed which do not present an orderly and neat workmanlike appearance shall be removed and replaced when so directed by the Engineer, at the Contractor's expense.
- F. Coordinate the work of all trades.
- G. Arrange conduit, wiring, equipment, and other work generally as shown, providing proper clearances and access. Carefully examine all contract drawings and fit the work in each location without substantial alteration. Where departures are proposed because of field conditions or other causes, prepare and submit detailed drawings for approval in accordance with "Submittals" specified below. The right is reserved to make reasonable changes in location of equipment, conduit, and wiring up to the time of rough-in or fabrication.
- H. The contract drawings are generally diagrammatic and all offsets, bends, fittings, and accessories are not necessarily shown. Provide all such items as may be required to fit the work to the conditions.
- I. Be responsible for all construction means, methods, techniques, procedures, and phasing sequences used in the work. Furnish all tools, equipment and materials necessary to properly perform the work in a first class, substantial, and workmanlike manner, in accordance with the full intent and meaning of the Contract Documents.
- J. The Contractor shall provide other work and services not otherwise included in the Contract Documents that are customarily forwarded in accordance with generally-accepted construction practices.

1.2 PERMITS, INSPECTIONS, AND FEES

- A. The Contractor shall obtain and pay for all charges and fees, and deliver all permits, licenses, certificates of inspection, etc., required by the authorities having jurisdiction. Deliver inspection, approval, and other certificates to the City prior to final acceptance of the work.
- B. File necessary plans, prepare documents, give proper notices, and obtain necessary approvals.
- C. Permits and fees shall comply with the General Requirements of the Specification.

- D. Notify Inspection Authorities to schedule inspections of work. All work shall be subject to field inspections.
- E. Notify Architect in advance of scheduled inspections.
- F. An electrical foreman, superintendent or other supervisor shall be in attendance for all scheduled inspections.
- G. The Contractor shall provide an electrical certificate from an independent electrical inspection agency approved by the City and the State of Maryland Fire Marshal. The Contractor shall submit certificate prior to final payment invoice. The Contractor shall pay all fees, including filing fees.

1.3 ELECTRICAL WORK UNDER OTHER DIVISIONS

A. Mechanical Equipment and Systems

- 1. In general, power wiring and motor starting equipment for mechanical equipment and systems are furnished and installed under Electrical Division 26.
- 2. Certain mechanical units contain starters, contacts, transformers, fuses, wiring, etc., required for fans, pumps, etc., furnished with the equipment from the factory. When this equipment is supplied from the factory, the Contractor must supply power circuit(s) to the unit and a disconnecting means. Coordinate with Contractor so that one, and only one, set of starters, fuses, switches, etc., is provided and installed.
- 3. In general, control and interlock equipment for HVAC systems (including associated wiring, conduit, transformers, relays, contacts, etc.) is furnished under Mechanical Divisions. Contractor shall install and connect all such equipment as necessary.
- 4. Controls, wiring, conduit, transformers, etc., for smoke, fire, and motor-operated dampers are provided by Mechanical. Electrical shall install and connect all such equipment.

B. Architectural Equipment: In general, any electrically operated or controlled equipment furnished under architectural divisions shall be supplied with control wiring, transformers, contacts, etc. Contractor shall provide power circuits to such equipment and install all electrical control equipment related thereto.

C. Carefully review the contract documents and coordinate the electrical work under the various Divisions.

1.4 CONTRACTOR QUALIFICATION

A. Contractor performing work under this Division shall be pre-qualified for Baltimore City contracts.

B. Contractor is any individual, partnership, corporation, or firm performing work by Contract or subcontract on this project.

C. Acceptance of a subcontractor will not relieve the Contractor of any contractual requirements or his responsibility to supervise and coordinate the various trades.

D. Supervisory Qualifications: The electrical work on the project shall be under the direct supervision of a licensed Master Electrician.

1.5 FIRE SAFE MATERIALS

- A. Unless otherwise indicated, materials and equipment shall conform to UL, NFPA, or ASTM Standards for Fire Safety with Smoke and Fire Hazard Rating not exceeding flame spread of 25 and smoke developed of 50.

1.6 REFERENCED STANDARDS, CODES, ORDINANCES AND SPECIFICATIONS

- A. Specifications, Codes and Standards listed below are included as part of this specification, latest edition.

| | |
|--------|---|
| ADA | Americans with Disabilities Act |
| ANSI | American National Standards Institute |
| ASHRAE | American Society of Heating, Refrigerating and Air Conditioning Engineers |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for Testing and Materials |
| AP | Allegheny Power |
| IBC | International Building Code |
| CABO | Council of American Building Officials |
| FM | Factory Mutual |
| IEEE | Institute of Electrical and Electronics Engineers |
| MOSHA | Maryland Occupational Safety & Health Administration |
| NEC | National Electrical Code |
| NECA | National Electrical Contractors Association |
| NEMA | National Electrical Manufacturers Association |
| NFPA | National Fire Protection Association |
| OSHA | Occupational Safety & Health Administration |
| UL | Underwriters Laboratories |

- B. All electrical equipment and materials shall comply with the Codes and Standards listed in the latest edition of IEEE Standard 241, *Electric Power Systems in Commercial Buildings*, Chapter 1, Section 1.6, entitled "Codes and Standards".
- C. Comply with all Codes applicable to the work:

1. Bidders shall inform themselves of all local and state codes and regulations.
 2. In case of conflict between Contract Documents and governing Codes, the most stringent shall take precedence. Where, in any specific case, different sections of any applicable codes or when Drawings and Specifications specify different materials, methods of Construction, or other requirements, the most restrictive shall govern.
 3. Where Contract Documents exceed minimum Code requirements, and are permitted under the Code, the Contract Documents take precedence and shall govern.
 4. No extra payment will be allowed for work or changes required by local Code enforcement authorities.
- D. Underwriters Laboratories Labels shall apply to all materials and devices, etc., except specified items not covered by existing UL Standards.
- E. Conflicts with applicable regulations:
1. Resolve at Contractor's expense.
 2. Prepare and submit details of alternate construction:
 - a. Acceptable solution of conflict.
 - b. List of substitute materials:

For approval of inspecting authorities.
For approval of Engineer.
- F. Comply with all NECA's National Electrical Installation Standards (NEIS), including NECA 1-2000 "Standard Practices for Good Workmanship in Electrical Contracting".

1.7 INTERPRETATION OF DOCUMENTS

- A. Any discrepancies between Drawings, Specifications, Drawings and Specifications, or within Drawing and Specifications shall be promptly brought to the attention of the City during the bidding period. No allowance shall subsequently be made to the Contractor by reason of his failure to have brought said discrepancies to the attention of the City during the bidding period or of any error on the Contractor's part.
- B. The locations of products shown on Drawings are approximate. The Contractor shall place the devices to eliminate all interference with above-ceiling ducts, piping, etc. Where any doubt exists, the exact location shall be determined by the City.
- C. All general trades and existing conditions shall be checked before installing any outlets, power wiring, etc.
- D. Equipment sizes shown on the Drawings are estimated. Before installing any wire or conduit, the Contractor shall obtain the exact equipment requirements and install wire, conduit, or other item of the correct size for the equipment actually installed. However, wire and conduit sizes shown on the Drawings shall be taken as a minimum and shall not be reduced without written approval from the City.

- E. Where variances occur between the drawings and specifications or within either document itself, the item or arrangement of better quality, greater quality, or higher cost shall be included in the Contract Price. The Engineer will decide on the item and manner in which the work shall be installed.
- F. Contract Drawings are generally diagrammatic and all offsets, fittings, transitions, and accessories are not necessarily shown. Furnish and install all such items as may be required to fit the work to the conditions encountered. Arrange conduits, equipment, and other work generally as shown on the Contract Drawings, providing proper clearance and access. Where departures are proposed because of field conditions or other causes, prepare and submit detailed Shop Drawings for approval in accordance with "submittals" specified below. The right is reserved to make reasonable changes in location of equipment, piping, and ductwork, up to the time of rough-in or fabrication.
- G. Work not specifically outlined, but reasonably incidental to the completion of the work, shall be included without additional compensation from the City.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Material and equipment installed as a part of the permanent installation shall be new, unless otherwise indicated or specified, and shall be approved by the Underwriters' Laboratories, Inc., for installation in each particular case where standards have been established.
- B. Where material or equipment is identified by proprietary name, model number, and/or manufacturer, furnish the named item or equivalent thereof, subject to acceptance.
- C. Material submissions shall conform to requirements outlined in SUBMITTALS, REVIEW, AND ACCEPTANCE.
- D. The Contractor shall submit manufacturers indicated in the Specification or approved equal. Submit all data necessary to determine suitability of substituted items for approval.
- E. All items of equipment furnished shall have a service record of at least five (5) years.

2.2 SUBSTITUTIONS

- A. Refer to Section 012500 Substitution Procedures.

2.3 SUBMITTALS, REVIEW, AND ACCEPTANCE

- A. General:
 - 1. The equipment, material, installation, workmanship, arrangement of work, final instruction, and final documentation is subject to review and acceptance. No substitution will be permitted after acceptance of equipment or materials except where such substitution is considered by the Engineer to be in the best interest of the City. Submit for review in clear and legible form the following documents:
 - a. Material and Equipment List
 - b. Descriptive Data

- c. Shop Drawings
 - d. Installation and Coordination Drawings
 - e. Contractor As-Built Drawings
 - f. Owner Instructions and Manuals
 - g. Construction Phasing and Outage Schedule
2. Prepare all submittals specifically for this project and stamp each submittal in a form indicating that the documents have been Contractor reviewed, are complete, and are in compliance with the requirements of the plans and specifications. Each submittal item shall be clearly identified and numbered. Each submittal shall contain a complete schedule of Manufacturer's part numbers and quantity listings of all supplied components. Each proposed item shall be highlighted and tagged with a star, an arrow, etc., including all options and accessories.
 3. Coordinate the installation requirements and any mechanical requirements for the equipment submitted. Submittals will be reviewed for general compliance with design concept in accordance with the contract documents. The Contractor is responsible for the correctness of all submittals. Reviews will not verify dimensions, quantities, or other details.
 4. Identify all submittals, indicating the intended application, location, or service of the submitted item. Refer to specification sections or paragraphs where applicable. Clearly indicate the exact type, model number, size, and special features of the proposed item. Clearly list on the first page of the Submittal all differences between the specified item and the proposed item. The Contractor shall be responsible for corrective action (or replacement with the specified item) while maintaining the specification requirements, if differences have not been clearly indicated in the submittal. Submittals of a general nature will not be acceptable.
 5. Submit actual operating conditions or characteristics for all equipment where required capacities are indicated. Factory order forms showing only required capacities will not be acceptable. Indicate all options used to meet the specifications. It is not the responsibility of the Engineer or City to make selections of factory options other than colors. Submittals lacking proper selection of factory options or special features required by the specification shall be RETURNED WITHOUT REVIEW.
 6. Acceptance will not constitute waiver of contract requirements unless deviations are specifically indicated and clearly noted.
 7. Documents of general form indicating options shall be clearly marked to show what is specifically proposed for this project.
 8. Submittals NOT IN COMPLIANCE with the requirements of this section will be RETURNED WITHOUT REVIEW.
- B. Material, Equipment, Manufacturer and Subcontractor List: Within 30 calendar days after the award of contract, submit a complete MATERIAL, EQUIPMENT, MANUFACTURER AND SUBCONTRACTOR LIST for preliminary review. List all proposed materials and equipment, the associated proposed Manufacturer, and any proposed subcontractors. After the receipt of reviewed Material and Equipment List, submit complete Shop Drawings for approval. List all materials and equipment, indicating manufacturer, type, class, model, curves, and other general

identifying information. Submittals shall be specific for each building as contained in the individual building Specifications and Drawings.

- C. Upon approval of the List of Materials, the Contractor shall prepare a complete Master Submittal Register, listing all products and materials that will be submitted for approval. Items shall be listed by referenced specification paragraph in ascending order. This master list shall be included with each submittal, updated to reflect the status of approval for each item, and shall highlight the items pertaining to the submittal. A suggested Submittal Register Format is shown below:

| SUBMITTAL REGISTER | | | | | |
|--------------------|-----------------------|-------------------------|----------------|--------|---------|
| Item/Material | Ref'd Spec. Paragraph | Specified or Substitute | Submittal Date | Status | Remarks |
| | | | | | |
| | | | | | |

- D. No Shop Drawing Submittals will be considered for approval until the complete List of Subcontractors and the complete List of Materials/Manufacturers and Equipment have been approved.
- E. Descriptive Data: After acceptance of the MATERIAL and EQUIPMENT LIST, submit additional DESCRIPTIVE DATA for all items. Data shall consist of specifications, data sheets, samples, capacity ratings, performance curves, operating characteristics, catalog cuts, dimensional drawings, installation instructions, and any other information necessary to indicate complete compliance with the contract documents. Where several ratings or sizes are shown or available, clearly indicate the exact size or rating relating to the particular device being proposed.
- F. Submit complete descriptive data for all items. Data shall consist of Specifications, data sheets, samples, capacity ratings, performance curves, operating characteristics, catalog cuts, dimensional drawings, wiring diagrams, specific electrical/wiring requirements and connections including control and interlock wiring, installation instructions, and any other information necessary to indicate complete compliance with the Contract Documents. Edit submittal data specifically for application to this project.
- G. Shop Drawings shall be submitted and approved for all materials and equipment prior to installation. If any material and/or equipment is installed prior to receipt by the Contractor of approved Shop Drawings, the Contractor is liable for its replacement at no additional cost to the City.
- H. Data submitted shall include information on all materials and equipment to demonstrate compliance with the Contract Drawings and Specifications. Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material.

- I. Any deviation of submitted material or equipment from the Contract Drawings or Specifications shall be clearly marked in red ink on Submittals, and itemized in a transmittal letter, in order to receive consideration for approval.
- J. Approval of material or equipment submittals containing deviations not specifically identified by Contractor shall not relieve the Contractor from compliance with specified requirements.
- K. All major items of mechanical equipment shall be the latest standard catalog products of reputable manufacturers. Where two (2) or more items of the same kind of equipment are required, they shall be the products of a single manufacturer.
- L. Thoroughly review and stamp all submittals to indicate compliance with Contract requirements prior to submission. Coordinate installation requirements and any electrical requirements for equipment submitted. Contractor shall be responsible for correctness of all submittals.
- M. Submittals will be reviewed for general compliance with design concept in accordance with Contract Documents, but dimensions, quantities, or other details will not be verified.
- N. Increase, by the quantity listed below, the number of electrical related Shop Drawings, product data, and samples submitted, to allow for required distribution plus two copies of each submittal required, which will be retained by the Electrical Consulting Engineer.
 - 1. Shop Drawings - Initial Submittal: 1 additional blue- or black-line print.
 - 2. Shop Drawings - Final Submittal: 1 additional blue- or black-line print.
 - 3. Product Data: 1 additional copy of each item.
- O. Additional copies may be required by individual sections of these Specifications.
- P. Shop Drawings:
 - 1. Prepare and submit SHOP DRAWINGS AND/OR DIAGRAMS for all specially fabricated items, modifications to standard items, specially designed systems where detailed design is not shown on the contract drawings, or where the proposed installation differs from that shown on the contract drawings.
 - 2. Shop drawings shall include plans, elevations, sections, mounting details of component parts, point to point interconnection diagrams, elementary diagrams, single line diagrams, and any other drawings necessary to show the fabrication and connection of the complete item or system.
 - 3. Shop drawings shall be provided for, but not limited to the following items:
 - Ballasts
 - Basic Electrical Materials
 - Circuit Breakers
 - Conduit and Surface Raceway
 - Contractor and Subcontractor Qualifications
 - Controllers & Control Devices
 - Disconnects
 - Electrical Connection Coordination Schedule
 - Equipment Connections
 - Equipment Pads
 - Firestopping
 - Fuses
 - Ground Conductors

Identification System
Innerduct
Lamps
Lighting Control Equipment
Lighting Fixtures
Low Voltage Fuses
Material and Equipment List
Motor Starters
Outlet Boxes
Panelboards
Receptacles
Record and Information Booklet
Safety Switches
Schedule of Values
Sleeves, Hangers, Supports
Submittal Schedule
Surge Suppression Devices
Tests and Reports
Wiring Devices
Wiring Diagrams

- Q. The Contractor, additionally, shall submit for approval any other shop drawings as required by the Architect. No item listed above shall be delivered to the site, or installed, until approved. After the proposed materials have been approved, no substitution will be permitted except where approved by the Engineer.
- R. The Contractor shall prepare and submit a Detail Schedule of Values indicating the Contract costs for the major work items. The Contractor shall provide additional detail and information as requested by the Engineer.
- S. The Contractor shall prepare and submit a complete Submittal Schedule. The Schedule shall include a listing of all Submittals, Shop Drawings, and Coordination Drawings.

2.4 COORDINATION DRAWINGS

- A. Prepare, submit, and use composite installation and coordination drawings to assure proper coordination and installation of the work. Drawings shall include, but not be limited to the following:
1. Telecommunication Rooms indicating data rack assemblies, panels, etc.
 2. Electrical Rooms indicating switchboard assemblies, transformer, equipment pads, panels, etc.
 3. Mechanical Equipment Rooms, including panels, transformers, starters, equipment, etc.
- B. Draw plans to a scale not less than 1/4 inch equals one foot. Include plans of the proposed work, showing all equipment, major elements, conduit, and wiring in the areas involved. Fully dimension all work, horizontally and vertically. Show coordination with other work including piping, ductwork and other mechanical work, walls, doors, ceilings, columns, beams, joists, and other architectural and structural work.
- C. Identify all equipment and devices on wiring diagrams. Where field connections are shown to factory-wired terminals, furnish manufacturer's literature showing internal wiring.

- D. Prepare, submit, and use scaled layout drawings indicating dimensions, clearances, and actual equipment dimensions. Layout drawing shall include, but not be limited to the following:

1. Pad-mounted equipment and equipment connections.
2. Underground conduits, ductbanks, manholes, handholes, and building penetrations.

2.5 RECORD DRAWINGS

- A. As the work progresses, record on a set of white prints the installed locations, sizes of electric feeders, equipment, etc. Upon completion of the work, submit one (1) complete set of white prints with "As-Built" information neatly recorded thereon in red ink. Use other colors to distinguish between variations in separate categories of the work. Note related change-order numbers where applicable. Provide electronic copies to the City and architect at the completion of the project.
- B. Write step-by-step detailed instructions for turn-on, turn-off, seasonal changeover, and periodic checks of all systems and equipment. Include all precautions and warnings.
- C. Prepare a list of the manufacturers of all major equipment, their local service representative and procedures for obtaining service.
- D. Post one (1) copy of all instructions, lists, charts, and diagrams at the equipment or where indicated, mounted under glass or approved plastic cover.
- E. Furnish to the City two (2) copies of the Manufacturer's installation and operations instructions, and an electronic copy. Include replacement parts lists where applicable. Also include copies of all posted instructions, lists and charts. Assemble the material in one or more heavy duty 8-1/2" x 11" loose leaf binders with tab separators. Submit for approval before final delivery. Binder shall be labeled on spine and on cover with Project Name.
- F. Deliver all instruction materials to the City prior to the formal instruction period.
- G. Deliver two (2) complete sets of all approved submittals to the City for filing, including electronic copies.
- H. Prepare record documents in accordance with the requirements in the specifications. In addition to the requirements specified, indicate installed conditions for:
1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry; and circuit breaker size and arrangements.
 2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 3. Approved Substitutions, Contract Modifications, and actual equipment and materials installed.
- I. The Contractor shall keep at the site at all times during construction, one set of up-to-date Contract prints for the express purpose of showing any and all changes made during construction. The Contractor shall make the prints showing each change and shall incorporate all changes in "Record/As-Built Drawings" to be submitted to the Engineer upon completion of the project.

- J. The Contractor shall show proof of up-to-date record drawings to the City prior to submitting monthly invoice.
- K. The Contractor shall conform to all drawings, including all revisions, addendums, alternates, change orders, deletions, existing conditions, and as-built conditions without extra cost to the City.

2.6 DEMONSTRATION AND OPERATING INSTRUCTIONS

- A. Furnish the necessary technicians, skilled workers, and helpers to operate the electrical systems and equipment of the entire project. The Contractor shall provide a minimum of three 2-hour sessions of system demonstration and operation for each system including, but not limited to: lighting controls, switchboards, generator, transfer switches.
- B. Where specified in technical sections, provide longer periods required for specialized equipment.
- C. Contractor shall provide start-up of all systems in an orderly, organized, and coordinated manner to ensure that all systems are functioning as designed. The Contractor shall provide a detailed start-up, testing, and demonstration plan for all systems in a coordinated manner that is documented in writing at least 45 days prior to system start-up. Start-up, testing and demonstration plans shall include detailed point-by-point checklists that clearly show that systems are, in fact, functioning as designed. Instruct the City or designated personnel in operation, maintenance, lubrication, and adjustment of systems and equipment.
- D. The Operating and Maintenance Manual shall be available at the time of the instructions, for use by Instructors and City personnel.
- E. Videotape each instruction session, including both the sessions specified above and added sessions required in technical sections for specialized equipment. Provide one complete set of DVD video disks with each Operating and Maintenance Manual.
- F. Schedule the general and specialized instruction periods for a time agreed upon by the City and Engineer. All operation training and demonstrations shall be complete prior to City acceptance of any given system.

PART 3 EXECUTION

3.1 EXAMINATION OF SITE, SURVEYS, AND MEASUREMENTS

- A. Examine the site, determine all conditions and circumstances under which the work must be performed, and make all necessary allowances for same. No additional cost to the City shall be permitted for Contractor's failure to do so.
- B. Examine the site and observe the conditions under which the work will be done or other circumstances which will affect the contemplated work. No allowance will be made subsequently in this connection for any error or negligence on the Contractor's part.
- C. The Contractor shall base all measurements, both horizontal and vertical, from established benchmarks. All work shall agree with these established lines and levels. Verify all measurements at the site and check the correctness of same as related to the work.
- D. Any discovery of discrepancy between actual measurements and those indicated which prevents following good practice or the intent of the Drawings and Specifications shall be

brought to the attention of the City's Representative. Work shall not proceed until receiving instructions from the City's Representative.

- E. The Contractor shall follow Drawings in laying out the work and check Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, the City's Representative shall be notified before proceeding with the installation.
- F. To prevent conflict with the work of other trades and for proper execution of the work, the Contractor, as directed by the City's Representative, shall make the necessary modifications in the layout as needed, at no extra charge to the City.
- G. The Contractor shall be solely responsible for the proper arrangement of his conduit and equipment.
- H. The Engineer shall make all final decisions as to any conditions that require the changing of any work.
- I. The Contractor shall have competent supervision on the site at all times to lay out, check, coordinate, and supervise the installation of all electrical work and be responsible for the accuracy thereof. He shall plan the installation of all electrical work, giving consideration to the work of other trades, to prevent interference.
- J. The Contractor shall determine the location, size, etc., of all chases, sleeve openings, etc., required for the proper installation of the electrical work and see that such are provided. All chases, sleeves, openings, etc., shall be set prior to erection of new work to prevent delay in the progress of other work or trades.
- K. Conditions and/or situations that prevent the proper installation of any equipment or item where shown on the Drawings shall be called to the attention of the Engineer for instructions.
- L. The Contractor shall have equipment shipped or fabricated in sections of suitable size for entering the building and being removed from the finished building in the future, if necessary.
- M. The Contractor shall fully investigate all peculiarities and space limitations for all materials and equipment.
- N. Outlet, pull, and junction boxes and other appliances that require operation, examination, adjustment, servicing or maintenance shall be readily accessible.
- O. The Contractor shall take all field measurements necessary for this work and shall assume responsibility for their accuracy.
- P. The Contractor shall coordinate the electrical work with all other sub-contractors. All work shall be so arranged that there will be no delay in the proper installation and completion of any part or parts of electrical equipment. All electrical work shall be installed in proper sequence with other trades without any unnecessary delay.
- Q. The Drawings are to some extent diagrammatic and indicate the general arrangement of the equipment, the runs of conduit, and the manner of connection.
- R. The Contractor shall confer with all sub-contractors engaged in the construction of the project, regarding the work that may, in any way, affect his installation. Whenever interference occurs, before installing any of the work in question, the Contractor shall consult with all sub-contractors

and shall come to an agreement with them as to the exact location and level of his conduit parts of his equipment.

- S. The Contractor shall be responsible for determining exact property lines and area of work. The Contractor shall not install any equipment or conduits outside of the property lines and/or area of work without written direction from the City. Any work indicated diagrammatically on the Contract Documents to be installed beyond the property lines and/or area of work shall be verified with the City prior to installation.

3.2 GENERAL RESPONSIBILITIES

- A. The Contractor shall be responsible for systems and related damages possible, and shall hold harmless the City, the Architect and his consultants from malfunction of systems and equipment installed under this Contract as defined in the laws of the State of Maryland pertaining to real property for the period of time as defined by such laws.
- B. It is the intent of these Specifications to fully cover without exception all required labor and materials so that the finished work will be delivered to the City in a complete and satisfactory working installation. Excavation, wiring, distribution, etc., shall be performed in compliance with the Contract Documents.
- C. Work not specifically outlined, but reasonably incidental to the completion of the work, shall be included without additional compensation from the City.
- D. Conflicting points in the Specifications or on the Drawings shall be called to the attention of the Architect prior to the execution of the Contract.

3.3 STORAGE AND PROTECTION OF EQUIPMENT

- A. All electrical equipment to be used in the construction shall be properly stored and protected against the elements. All equipment shall be stored under cover, and shall not be stored at the construction site on the ground, in mud, water, snow, rain, sleet or dust. Large diameter cables may be stored on reels with weatherproof materials. Such weatherproof materials shall be heavy-duty, securely fastened and made impervious to the elements.
- B. Conventional electrical construction materials such as building wire, outlet and junction boxes, wiring devices, conduit, lighting fixtures, fittings, etc., shall be stored in construction buildings, covered trailers or portable covered warehouses. Any equipment subject to damage or corrosion from excessive moisture shall be stored in dry, heated areas. Any equipment containing plastic or material subject to damage caused by excessive heat or sunlight shall be stored to prevent such damage. This includes plastic ducts and lenses.
- C. Switchboard, motor controllers, panelboards, breakers, emergency lighting, and supervisory equipment, if delivered to the construction site before the building is under cover, shall be warehoused and protected as follows: All gear and equipment shall be covered and protected from the elements and other damage and shall be stored in a clean, dry, heated atmosphere, under cover.
- D. All gear and equipment delivered to the construction site after the building is under cover shall be protected as described above and in addition shall be provided with auxiliary heat to prevent condensation damage. The gear shall also be protected against damage caused by installation of any building systems and equipment; or damage caused by carelessness of workmen who are installing equipment connected to or adjacent to the above electrical equipment.

- E. Equipment damaged as a result of the above conditions shall be properly repaired at the Contractor's expense or shall be replaced at the Contractor's expense, if, in the opinion of the Engineer the equipment has been damaged to such an extent it cannot operate properly after repairs are made.
- F. All electrical enclosures exposed to construction damages such as paint spots, spackling or plaster spatter, grout splashes, waterproofing compound, tar spots or runs and pipe covering compound splashes, shall be completely covered and protected against damage.
- G. In the event leakage into the building of any foreign material or fluid occurs or may occur, the Contractor shall take all steps as described above to protect any and all equipment.
- H. After connections to electrical equipment are complete and the equipment is ready for operation, all construction debris shall be removed from all enclosures. Such debris includes dust, dirt, wire clippings, tape and insulation removed in order to make the connection.

3.4 ELECTRICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:
 - 1. Coordinate electrical systems, equipment, materials, and installation with landscape/irrigation contractor(s).
 - 2. Verify all dimensions by field measurements.
 - 3. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Engineer.
 - 4. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components where installed exposed in finished spaces.
 - 5. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. All equipment and disconnects shall maintain proper working space to conform to NEC.
 - 6. Install systems, materials, and equipment giving right-of-way priority to systems that require installation at a specified slope.
 - 7. Arrange for chases, slots and openings in other building components during progress of construction, to allow for electrical installation.
 - 8. Space, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work.

3.5 SUPERVISION AND COORDINATION

- A. Provide complete supervision, direction, scheduling and coordination of all work under the contract, including that of subcontractors, using full attention and the best skill. Be responsible for all work and make all subcontractors, suppliers and manufacturers fully aware of all requirements of the contract.

- B. Coordinate the rough-in of all work performed under Mechanical & Electrical Divisions.
- C. The Contractor shall coordinate all electrical rough-ins with approved shop drawings and coordination drawings. Any rough-in installed without complete coordination shall be at the Contractor's risk and expense.
- D. Coordinate the installation of all necessary rough-in of work, sleeves, anchors and supports for conduit, wiring, and other work performed under Divisions Mechanical and Electrical Divisions.
- E. Coordinate the spacing and arrangement of lighting fixtures, diffusers, grilles and access panels in ceilings to establish a symmetrical pattern.
- F. Where a discrepancy exists within the Specifications or drawings or between the Specifications and Drawings, the more stringent (or costly) requirement shall apply until a clarification can be obtained from the Engineer. Failure to clarify such discrepancies with the Engineer will not relieve the Contractor of the responsibility of conforming to the requirements of the Contract.
- G. Failure of the Contractor to obtain a full and complete set of Contract Documents (either before or after bidding) will not relieve the Contractor of the responsibility of complying with the intent of the Contract Documents.
- H. To insure proper electrical coordination between the electrical components supplied under the Electrical Divisions and the equipment supplied under the Mechanical Divisions, a schedule shall be submitted, prior to start of work, for review by the Engineer with the following column headings:

| 1.Equip. or Item | 2. HP or KVA | 3.Voltage and Phase | 4. Power Factor | 5. Capacitor | 6.Motor Starter | 7.Discon. | 8.Controls | 9.Remarks |
|---------------------|--------------|---------------------------|--------------------|--------------|--------------------|-----------|------------|-----------|
|---------------------|--------------|---------------------------|--------------------|--------------|--------------------|-----------|------------|-----------|

Description of Column Headings:

1. List all the approved equipment furnished under Mechanical Division that requires electrical connections and designate the equipment as it appears in the Mechanical Divisions. Indicate the quantity, if more than one, in parentheses of identical equipment being supplied.
2. Indicate the supplied horsepower of the equipment listed under Column No. 1. If equipment listed has more than one motor, indicate each motor and its respective horsepower. Indicate the kVA rating for all other equipment requiring an electrical connection, unless the electrical connection is for a control circuit only.
3. Indicate the voltage and phase requirements for equipment listed under Column No. 1. If more than one electrical circuit or voltage is required for the listed equipment, it shall be so indicated. Indicate wiring required for connection, including all phase, neutral, and ground conductors.
4. Indicate the power factor rating for all motors listed under Column No. 2.
5. Where a capacitor is to be provided, indicate specification it is supplied under and indicate the KVAR size for any capacitor provided under Division 26.
6. Where a motor starter is required, indicate the specification division it is supplied under and the type of motor starter; across-the-line, reversible, variable speed, two speed-single winding, etc. Indicate in Column No. 9 if the motor starter provided under Division 26 is not compatible with the motor specified.

7. Where a disconnect switch is required by the National Electric Code or by the contract documents for the equipment listed under Column No. 1, indicate under which Division the disconnect switch is supplied.
 8. Indicate the Division under which the controls for the equipment listed under Column No. 1 are provided.
 9. Indicate any discrepancies between what is indicated in the contract documents and what is actually being provided.
- I. The Contractor shall fully coordinate the electrical connections to all equipment prior to installations, with the approved Shop Drawings and the trades involved. Coordination shall include voltage, phases, quantity and size of wiring, device sizes, terminations, rough-in work, and other coordination for a complete installation.
- J. Coordinate Division 26 work with all trades.
- K. Install work with proper clearances and access. Carefully examine all contract drawings and fit the work in each location without substantial alteration. Where departures are proposed or required, submit detailed drawings for acceptance. The right is reserved to make reasonable changes in location of equipment, conduit and wiring up to the time of rough-in or fabrication.
- L. Coordinate light switch locations with door swings prior to rough-in. No switches permitted behind doors.
- M. Coordinate electrical work with architectural items and equipment. Typical equipment refers to, but is not limited to, the following:
1. Countertops, Casework and Cabinets.
 2. Fume and Exhaust Hoods.
 3. Kitchen equipment.
 4. Do not install outlets, switches, etc., behind casework, cabinets, etc.
 5. Data, phone, and other low voltage system outlets shall be mounted above the counter tops to match power outlets in the same areas.
 6. Coordinate counter top outlets with drilling of casework/counters.
 7. Coordinate surface raceways and outlets above and below counters with approved casework shop drawings to avoid conflicts with sinks and other appurtenances.
 8. Verify lab/kitchen equipment nameplates and connection requirements prior to rough-in.
 9. Shop equipment connections, including busways.
- N. This Contractor shall make all system connections required to equipment furnished and installed under other divisions. Connections shall be complete in all respects to render this equipment functional to its fullest intent. The Contractor shall make all system connections required to equipment furnished under other Divisions. Circuits shall be extended to all equipment which is incidental to, but not necessarily shown, for equipment specified under other divisions such as magnetic flow meters, ATC panels, liquid level controls, leak detection systems, etc. Connections shall be complete in all respects to render this equipment functional to its fullest extent.

O. It shall be the responsibility of the Contractor to obtain complete instructions for connections.

3.6 GUARANTEE

A. Guarantee obligations shall be as hereinbefore specified in the GENERAL AND SPECIAL CONDITIONS of these specifications, except as follows:

1. Guarantee the complete electrical system free from all mechanical and electrical defects for the period of two (2) years beginning from the day of final acceptance of the work by the City.
2. Also, during the guarantee period, be responsible for the proper adjustments of all systems, equipment and apparatus installed by the Contractor and do all work necessary to ensure efficient and proper functioning of the systems and equipment.
3. Upon receipt of notice from the City of failure of any part of the electrical installation during the guarantee period, new replacement parts shall be furnished and installed promptly at no cost.
4. Warranty From the Manufacturer: Contractor shall obtain all warranty papers and records from the Original Equipment Manufacturer according to their warranty policy and deliver the same to the City. Contractor shall fulfill all the Original Manufacturer's requirements to validate the warranty as offered by the Original Equipment Manufacturer.

B. Provide 24-hour service for any and all warranty problems experience in the operation of the equipment provided.

C. Any equipment or system in need of warranty work whether during regular hours or on an emergency basis, shall be immediately serviced and repaired. The warranty work and guarantee shall include all parts and labor and shall be furnished at no cost to the City.

D. The Contractor shall guarantee to make good any and all defects in his work, exclusive of lamps, which may develop due to defective workmanship or materials, within one year from the date of final acceptance of the work by the City.

E. In addition to the warranty and correction of work obligations contained in the General and supplementary Conditions, correct the work of the system as embraced by the Specification, free from Mechanical and Electrical defects for the warranty period beginning from the day of acceptance of the building by the Architect for the beneficial use of the City.

F. During the warranty period, take responsibility for the proper adjustments of systems, equipment and apparatus installed and perform work necessary to ensure the efficient and proper functioning of the systems and equipment.

G. Certain items of equipment hereinafter specified shall be guaranteed for a longer time than the general warranty period. These guarantees shall be strictly adhered to and the Contractor shall be responsible for service or replacement required in connection with guarantee of these items. These guarantees shall commence on the same date as the final acceptance by the Architect.

H. Submission of a bid proposal for this Project warrants that the Contractor has reviewed the Contract Documents and has found them free from ambiguities and sufficient for the construction and proper operation of systems installed for this project. If discrepancies are found, have them clarified by Addendum.

- I. It is possible that certain areas of the building or certain systems will be accepted at a time different than as specified. The date of acceptance by the Architect for beneficial use of the City for these building areas or systems will be adjusted accordingly.

3.7 SCHEDULING OF WORK

- A. The Contractor shall not be permitted to do any work in any area of any occupied building during normal hours, except in areas specifically assigned.
- B. Coordination of work by the Contractor is essential such that power outages are kept to a minimum in quantity and duration. All required outages shall be approved by the City for optimum time scheduling. Written notice of not less than 15 calendar days shall precede all power outages.

3.8 DEMONSTRATION

- A. As a part of this contract, the Contractor shall provide for the services of equipment manufacturers or their established representatives to demonstrate to selected maintenance personnel the correct operation, safety and maintenance of all electrical equipment under this contract.

3.9 PAINTING AND FINISHES

- A. Provide protective finishes on all materials and equipment. Use coated or corrosion-resistant materials, hardware and fittings throughout the work. Paint bare, untreated ferrous surfaces with rust-inhibiting paint. All exterior components including supports, hangers, nuts, bolts, washers, vibration isolators, etc., shall be galvanized or stainless steel.
- B. Clean surfaces prior to application of coatings, paint, or other finishes.
- C. Provide factory-applied finishes where specified. Unless otherwise indicated factory-applied paints shall be baked enamel with proper pre-treatment.
- D. Protect all finishes and restore any finishes damaged as a result of work under Division 26 to their original condition.
- E. The preceding requirements apply to all work, whether exposed or concealed.
- F. Remove all construction marking and writing from exposed equipment, conduit, and building surfaces. Do not paint manufacturer's labels or tags.
- G. All exposed conduit, etc., shall be painted, except in electrical rooms, mechanical rooms, storage rooms, and crawl spaces. Colors shall be selected by the Architect and conform to ANSI Standards.
- H. Submit color of factory-finished equipment for approval prior to ordering.

3.10 PROTECTION OF WORK

- A. Protect work, material and equipment from weather and construction operations before and after installation. Properly store and handle all materials and equipment.
- B. Cover temporary openings in conduit and equipment to prevent the entrance of water, dirt, debris, or other foreign matter.

- C. Cover or otherwise protect all finishes.
- D. Replace damaged materials, devices, finishes and equipment.

3.11 OPERATION OF EQUIPMENT

- A. Clean all systems and equipment prior to initial operation for testing, retesting, or other purposes. Set, adjust, and test all equipment in accordance with manufacturer's instructions. Do not operate equipment unless all proper safety devices or controls are operational. Provide all maintenance and service for equipment that is authorized for operation during construction.
- B. Where specified, or otherwise required, provide the services of the manufacturer's factory-trained servicemen or technicians to start up the equipment.
- C. Do not use electrical systems for temporary services during construction unless authorized in writing by the City. Where such authorization is granted, temporary use of equipment shall in no way limit or otherwise affect warranties or guaranty period of the work.
- D. Upon completion of work, clean and restore all equipment to new conditions; replace expendable items such as filters.

3.12 TESTING AND ADJUSTMENT

- A. Perform all tests which are specified or required to demonstrate that the work is installed and operating properly. Where formal tests are required, give proper notices and perform all necessary preliminary tests to assure that the work is complete and ready for final test.
- B. Adjust all systems, equipment and controls to operate in a safe, efficient and stable manner.
- C. On all circuits, 600 volts or less, provide circuits that are free from ground faults, short circuits and open circuits.
- D. Other tests of a specific nature for special equipment shall be as specified under the respective equipment.

3.13 IDENTIFICATIONS, ELECTRICAL DIAGRAMS AND OPERATING INSTRUCTIONS

- A. Contractor shall submit for approval schematic diagrams of each electrical system installed in the building. Diagrams shall indicate device location, service, type, make, model number and the identification number of each device in the particular system. Following approval by all authorities, the diagrams shall be framed, mounted under glass and hung in each Main Equipment Room where directed. Contractor shall deliver the tracing or sepia from which the diagrams were reproduced to the City.
- B. All equipment shall be plainly tagged.
- C. All items of equipment, including motor starters, panels, etc., shall be furnished with white letters and numbers on black plastic identification plates or aluminum letters and numbers on black engraved aluminum identification plates. Lettering shall be a minimum of 1/4" high. Identification plates shall be securely affixed to each piece of equipment, starters, panels, etc., by screws or adhesive (Tuff-Bond #TB2 or as approved equal). Pressure sensitive tape backing is prohibited.

- D. Provide three (3) copies of operating and maintenance instructions for all principal items of equipment furnished. This material shall be bound as a volume of the "Record and Information Booklet" as hereinafter specified.
- E. Provide at least 24 hours of straight time instruction to the operating personnel. This instruction period shall consist of not less than three (3) consecutive 8-hour days. Time of instruction shall be designated by the City. Provide two VHS video taped copies of all instructional periods/demonstrations.

3.14 RECORD DRAWINGS AND SPECIFICATIONS

- A. Upon completion of the Electrical installations, the Contractor shall deliver to the Engineer one complete set of prints of the Electrical Contract Drawings which shall be legibly marked in red pencil to show all Addenda, approved Shop Drawings, Change Orders, changes and departures of the installation as compared with the original design. They shall be suitable for use in preparation of Record Drawings. Provide electronic copies of each.
- B. The Contractor shall provide a record specification including all Addenda and other modifications. Record substantial variations in actual work performed. Identify all substitutions.

3.15 RECORD AND INFORMATION BOOKLET

- A. The Contractor shall have prepared three (3) copies of the Record and Information Booklet as well as an electronic copy and deliver these copies of the booklet to the City. The booklet shall be as specified herein. The booklet must be approved and will not be accepted as final until so stamped.
- B. The booklet shall be bound in a three-ring loose-leaf binder similar to "National" No. 3881 with the following title lettered on the front and on the spine of the binder: "Record and Information Booklet (insert name of the project)". No sheets larger than 8-1/2" x 11" shall be used, except sheets that may be neatly folded to 8-1/2" x 11" and used as a pull-out. An Index will include the section tabs for each subject included. If more than one binder is required, print covers and spines with Volume numbers. Include in the front of every binder an index to all binders.
 - 1. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
 - 2. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, typed on white paper.
 - 3. Part 1: Directory, listing names, addresses, and telephone numbers of Electrical Engineers; Contractor; Electrical Subcontractors; and major Electrical equipment suppliers. Provide sales and service representative names and phone numbers of all equipment.
 - 4. Part 2: Operation and Maintenance Instructions, arranged by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment. Complete record of material list. Catalog brochures and product data for all components. Include all submittal comments, and corrected catalog data and shop drawings on each piece of equipment and each system.

- c. Parts list for each component, including recommended spare parts list. Include motor starter overload schedules.
 - d. Operating instructions, including sequence of operation.
 - 1) Description of function, normal operating characteristics and limitations, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts. Provide a description of each system installed.
 - 2) Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; control, stopping.
 - e. Maintenance instructions for equipment and systems. Detailed checkout procedures to insure operation of systems and gear, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
 - f. Servicing, diagnostic and troubleshooting instructions and procedures for systems and major equipment.
 - g. Recommended preventative maintenance program, including a list of items requiring inspection and servicing. Provide Chart Form indicating time and type of routine and preventative maintenance of electrical equipment, etc. The chart shall also indicate tag number, model number of equipment, location and service.
 - 1) For replacement items, indicate type, size and quantity of the replaceable items.
 - 2) Provide lubrication schedule, including type, grade, temperature range and frequency.
 - 3) Provide a list of each type of lighting fixture lamp used, lamp fixture used, and source.
 - 4) Include estimated mean time between failures for major parts.
 - h. Wiring Diagrams, Block Diagrams, and Assembly Drawings.
 - i. Panelboard Circuit Directory for each panelboard, including Panel Name, Panel Location, Panel Ratings, spare circuit breakers, spaces for additional circuit breakers.
 - j. List of equipment keys turned over to the City.
5. Part 3: Project Documents and Certificates, including the following:
- a. Shop Drawings and Product Data. Record Documents of the systems.
 - b. Photocopies of certificates.
 - c. Photocopies of Manufacturers' and Contractors' warranties, guarantees.
 - d. Test Reports: Copies of the approved results of all tests required under all sections of specifications.
 - e. Inspection Certificates.

- f. Manufacturer's Reports: Copies of the approved results of all tests required under all sections of specifications.
 - 6. Provide one copy (DVD video disk) of video instruction session with each booklet set. Label video disk with all pertinent information.
 - 7. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned with Engineer comments. Revise content of documents as required prior to final submittal.
 - 8. Submit final volumes revised, within ten days after final inspection.
- C. Upon completion of the project, the Contractor shall furnish the City a complete list of suppliers of equipment for parts and maintenance purposes. The list shall include the name, address, and telephone number of the parts and maintenance firm on a single 8-1/2" x 11" sheet of paper.
- D. This item shall include the furnishing of a complete list of equipment installed on the project, including the Manufacturer's name, the make and model number of the equipment, and address and telephone number of the nearest supplier who stocks maintenance and/or replacement parts. The list should be submitted along with as-built drawings and be typed in an organized manner.
- 3.16 INSTALLATION AND COORDINATION DRAWINGS
- A. In congested areas, prepare, submit, and use composite installation and coordination drawings to assure proper coordination and installation of work. Drawings shall include, but not be limited, to the following: Complete Electrical Drawings showing coordination with lights, electrical equipment, mechanical, plumbing, HVAC, structural, and architectural elements and provision for access.
 - B. Draw plans to a scale not less than 3/8-inch equals one foot. Include plans, sections, and elevations of proposed work, showing all equipment and conduit in areas involved. Fully dimension all work including lighting fixtures, conduits, pullboxes, panelboards, and other electrical work, walls, doors, ceilings, columns, beams, joists, mechanical equipment, and other architectural and structural work.
 - C. Identify all equipment and devices on wiring diagrams and schematics. Where field connections are shown to factory-wired terminals, include manufacturer's literature showing internal wiring.

END OF SECTION 260501

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

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. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

PART 2 PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, provide products by the following provide products by one of the following:
 - 1. Alpha Wire.
 - 2. General Cable Technologies Corporation.
 - 3. Southwire Incorporated.
- B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2.

2.2 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Hubbell Power Systems, Inc.
 - 2. Ideal Industries, Inc.
 - 3. IlSCO; a branch of Bardes Corporation.
 - 4. O-Z/Gedney; a brand of the EGS Electrical Group.
 - 5. 3M; Electrical Markets Division.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

PART 3 EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Minimum conductor size No. 12 AWG for power circuits and No. 14 AWG for control circuits.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-2-THWN-2, single conductors in raceway.
- B. Exposed Feeders: Type THHN-2-THWN-2, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-2-THWN-2, single conductors in raceway.
- D. Feeders Concealed in below Slabs-on-Grade, and Underground: Type THHN-2-THWN-2, single conductors in raceway.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway.
- F. Branch Circuits below Slabs-on-Grade, and Underground: Type THHN-2-THWN-2, single conductors in raceway.
- G. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Hangers and Supports for Electrical Systems.

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 NEUTRAL CONDUCTORS

- A. Shared neutral conductors are not acceptable. Provide dedicated neutral conductor for each circuit phase conductor requiring a neutral conductor.

3.7 CONDUCTORS AMPERE CAPACITY DE-RATING

- A. Do not combine current carrying conductors in single conduit raceway or wireway that would require more than 80% derating.

3.8 VOLTAGE DROP

- A. Maintain less than 3% voltage drop on all branch circuits. Increase corresponding conduit and conductor sizes to accommodate voltage drop. Increase 20 amp branch circuit conductor size as follows:

| HOME RUN LENGTH AND WIRE SIZE | | CIRCUIT LENGTH AND WIRE SIZE | |
|-------------------------------|-----|------------------------------|-----|
| 120 Volt | | 120 Volt | |
| 0 – 60' | #12 | 0 – 100' | #12 |
| 60 – 100' | #10 | 100' & Up | #10 |
| 100 – 150' | #8 | | |
| 150 – 240' | #6 | | |
| Over 240' | #4 | | |

Circuit length is wire length between first and last outlet on circuit. Home run length is wire length between first outlet and panelboard. Where size of conductors are increased by NEC for circuit rating ensure termination provisions of equipment connected to circuits are listed suitable for conductor sizes involved. Increase conduit sizes to accommodate increased sizes of conductors.

- B. Increase corresponding conduit and conductors' sizes for circuits greater than 20 amps to maintain less than stated voltage drop.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

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: Grounding systems and equipment.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:
 - 1. Test reports.

1.5 QUALITY ASSURANCE

- A. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

2.2 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

PART 3 EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.
- C. Signal and Communication Equipment: In addition to grounding and bonding required by NFPA 70, provide a separate grounding system complying with requirements in TIA/ATIS J-STD-607-A.
 - 1. For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode

system to each service location, terminal cabinet, wiring closet, and central equipment location.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.4 LABELING

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for instruction signs. The label or its text shall be green.
- B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.
 - 1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency to Perform Tests and Inspections:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
- B. Grounding system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.
- D. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
- E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260528 – ELECTRICAL FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Through-penetration firestopping in fire rated construction.
 - 2. Through-penetration smoke-stopping in smoke partitions.
- B. Related items: Raceway seals and manufactured electrical devices: Refer to Division 26 "Basis Electrical Materials and Methods".

1.2 REFERENCES

- A. Underwriters Laboratories
 - 1. UL Fire Resistance Directory
 - a. Through-penetration firestop devices (XHCR)
 - b. Fire resistance rating (BXUV)
 - c. Through-penetration firestop systems (XHEZ)
 - d. Fill, void, or cavity material (XHHW)
- B. American Society for Testing and Materials Standards: ASTM E 814-88: Standard Test Method for Fire Tests of Through-Penetration Firestops.

1.3 DEFINITIONS

- A. Assembly: Particular arrangement of materials specific to given type of construction described or detailed in referenced documents.
- B. Barriers: Time-rated fire walls, smoke barrier walls, time rated ceiling/floor assemblies and structural floors.
- C. Firestopping: Methods and materials applied in penetrations and unprotected openings to limit spread of heat, fire, gasses and smoke.
- D. Penetration: Opening or foreign material passing through or into barrier or structural floor such that full thickness of rated materials is not obtained.
- E. System: Specific products and applications, classified and numbered by Underwriters Laboratories, Inc. to close specific barrier penetrations.
- F. Sleeve: Metal fabrication or pipe section extended through thickness of barrier and used to permanently guard penetration. Sleeves are described as part of penetrating system in other sections and may or may not be required.

1.4 SYSTEM DESCRIPTION

A. Design Requirements

1. Fire-rated construction: Maintain barrier and structural floor fire resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces or types of construction, at separations required to permit building movement and sound or vibration absorption.
2. Smoke barrier construction: Maintain barrier and structural floor resistance to cold smoke at all penetrations, connections with other surfaces and types of construction and at all separations required to permit building movement and sound or vibration absorption.

1.5 SUBMITTALS

A. Submit in accordance with Division 26 "Basis Electrical Materials and Methods", unless otherwise indicated.

B. Product data: Manufacturer's specifications and technical data including the following:

1. Detailed specification of construction and fabrication.
2. Manufacturer's installation instructions.

C. Shop drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements.

1. Details of each proposed assembly identifying intended products and applicable UL system number, or UL classified devices.
2. Manufacturer or manufacturer's representative shall provide qualified engineering judgment and drawings relating to non-standard applications as needed.

D. Quality control submittals: Statement of qualifications.

E. Applicators' qualifications statement: List past projects indicating required experience.

1.6 QUALITY ASSURANCE

A. Installer's qualifications: Fire experienced in installation or application of systems similar in complexity to those required for this project, plus the following:

1. Acceptable to or licensed by manufacturer, State or local authority where applicable.
2. At least 2 years' experience with systems.
3. Successfully completed at least 5 comparable scale projects using this system.

B. Local and State regulatory requirements: Submit forms or acceptance for proposed assemblies not conforming to specific UL Firestop System numbers, or UL classified devices.

C. Materials shall have been tested to provide fire rating at least equal to that of the construction.

D. Manufacturer shall be a member of the International Firestop Council (IFC).

1.7 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping:

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Coordinate delivery with scheduled installation date, allow minimum storage at site.

B. Storage and protection: Store materials in a clean, dry, ventilated location. Protect from soiling, abuse, moisture and freezing when required. Follow manufacturer's instructions.

1.8 PROJECT CONDITIONS

A. Existing conditions:

1. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.
2. Proceed with installation only after penetrations of the substrate and supporting brackets have been installed.

B. Environmental requirements:

1. Furnish adequate ventilation if using solvent.
2. Furnish forced air ventilation during installation if required by manufacturer.
3. Keep flammable materials away from sparks or flame.
4. Provide masking and drop cloths to prevent contamination of adjacent surfaces by firestopping materials.

1.9 GUARANTEE

A. Submit copies of written guarantee agreeing to repair or replace joint sealers which fall in joint adhesion, extrusion resistance, migration resistance, or general durability or appear to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated. The guarantee period shall be two year from date of substantial completion unless otherwise noted.

PART 2 PRODUCT

2.1 MANUFACTURERS

A. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Hilti.
2. Nelson.

2.2 THROUGH-PENETRATION FIRESTOPPING OF FIRE-RATED CONSTRUCTION

- A. Systems of devices listed in the UL Fire Resistance Directory under categories XHCR and XHEZ may be used, providing that it conforms to the construction type, penetrant type, annular space requirements and fire rating involved in each separate instance, and that the system be symmetrical for wall applications. Systems or devices must be asbestos-free.
1. Additional requirements: Withstand the passage of cold smoke either as an inherent property of the system, or by the use of a separate product included as a part of the UL system or device, and designed to perform this function.
 2. Acceptable manufacturers and products.
 - a. Those listed in the UL Fire Resistance directory for the UL System involved and as further defined in the System and Applications Schedule in Part 3.6 of this section.
 - b. All firestopping products must be from a single manufacturer. All trades shall use products from the same manufacturer unless otherwise noted.

2.3 SMOKE-STOPPING AT SMOKE PARTITIONS

- A. Through-penetration smoke-stopping: Any system complying with the requirements for through-penetration firestopping in fire-rated construction, as specified in The Systems and Applications Schedule in Part 3.6 of this section, is acceptable, provided that the system includes the specified smoke seal or will provide a smoke seal. The length of time of the fire resistance may be disregarded.

2.4 ACCESSORIES

- A. Fill, void or cavity materials: As classified under category XHHW in the UL Fire Resistance Directory.
- B. Forming materials: As classified under category XHKU in the UL Fire Resistance Directory.
- C. Sleeves: Minimum 24 MSG galvanized steel, 12" diameter or smaller steel pipe. Sleeve shall project 1/2" from each surface of the floor/wall. Size as recommended by firestop manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
1. Verify barrier penetrations are properly sized and in suitable condition for application of materials.
 2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean surfaces to be in contact with penetration seal materials of dirt, grease, oil, loose materials, rust, or other substances that may affect proper fitting, adhesion, or the required fire resistance.

3.3 INSTALLATION

- A. Install penetration seal materials in accordance with printed instructions of the UL Fire Resistance Directory and in accordance with manufacturer's instruction.
- B. Seal holes or voids made by penetrations to ensure an effective smoke barrier.
- C. Protect materials from damage on surfaces subject to traffic.
- D. When large openings are created in walls or floors to permit installation of conduits, cable tray, or other items, close unused portions of opening with firestopping materials tested for the application. See UL Fire Resistance Directory or Paragraph 2.2 of this document.
- E. Install smoke stopping as specified for firestopping.
- F. Provide sleeves the full thickness of the assembly being penetrated and cut sleeves to a length of 1-inch more than the over-all thickness of the penetration, or as recommended by the firestop manufacturer.
- G. All holes and voids shall be sealed the same day they are made.

3.4 FIELD QUALITY CONTROL

- A. Examine penetration sealed areas to ensure proper installation before concealing or enclosing areas.
- B. Keep areas of work accessible until inspection by applicable code authorities.
- C. Perform under this section patching and repairing of firestopping caused by cutting or penetration by other trades.

3.5 ADJUSTING AND CLEANING

- A. Clean up spills of liquid components.
- B. Neatly cut and trim materials as required.
- C. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

3.6 SYSTEMS AND APPLICATION SCHEDULES*

SEE NEXT PAGE.

| PENETRATING ITEM | CONCRETE | GYPSUM | WOOD FLOOR/CEILING |
|------------------|---|---|---|
| Metal Pipe | CAJ1001 CP25S/L, CP25N/S CAJ1006 CS-195+, FS-195+ CAJ1007 FS-195+, 1"& 2" Wide CAJ1009 2000, 2000+, 2003 CAJ1010 2000, 2000+, 2003 CAJ1012 2000, 2000+, 2003 CAJ1013 2000, 2000+, 2003 CAJ1014 2000, 2000+, 2003 CAJ1015 2000, 2000+, 2003 CAJ1017 FD 150 CAJ1021 FD 150 CAJ1027 MPS-2+ CAJ1044 CP 25WB+ CAJ1052 CP 25S/L, CP 25N/S CAJ1058 2000, 2000+, 2003 CAJ1060 2000, 2000+, 2003 CAJ1063 2000, 2000+, 2003 CAJ1066 CP 25N/S, CP 25S/L, CP 25WB+ CAJ1091 CP 25N/S, CP 25S/L, CP 25WB+ CAJ1092 CP 25WB+ CAJ1112 FS-195+ CAJ1160 CP 25S/L, CP 25N/S CAJ1175 CP 25WB+ CAJ1176 CP 25WB+ CAJ1188 2000+ CBJ1020 CS-195+, FS-195+ CBJ1021 CS-195+, MPS-2+ CBJ1031 2001 CBJ1032 2001 FA1002 CP 25WB+ WJ1010 CP 25WB+ WJ1023 2001 | WL1001 CP 25 WL1002 FS-195+ WL1003 CP 25WB+, CP 25N/S WL1008 2000+ WL1009 2000+ WL1010 2000+ WL1016 CP 25WB+ WL1017 CP 25WB+, CP 25N/S WL1032 CP 25WB+, CP 25N/S WL1036 FD 150 WL1037 CS-195+, FS-195+ WL1067 CP 25N/S WL1073 CP 25WB+ WL1080 MPS-2+ WL1082 2000+ | FC1002 CP 25 FC1003 2000, 2000+, 20003 FC1006 CP 25WB+ |
| Non-Metallic | CAJ2001 FS-195+, 1"& 2" WIDE, PPD'S CAJ2002 FS-195+ CAJ2003 CS-195+, FS-195+ | WL2002 FS-195+, PPD'S WL2003 FS-195+ WL2004 FS-195+ WL2005 FS-195+ 4' WIDE | FC2002 FS-195+, PPD'S FC2007 FS-195+, PPD'S |

| PENETRATING ITEM | CONCRETE | GYPSUM | WOOD FLOOR/CEILING |
|------------------|---|---|---|
| | CAJ2005 FS-195+ CAJ2006 FS-195+ CAJ2013 FS-195+ CAJ2019 2000, 2000+, 2003 CAJ2027 FS-195+, CP 25N/S, CP 25S/L, CP 25WB+ CAJ2028 FS-195, MPS-2+ CAJ2029 FS-195+, PPD'S CAJ2030 CS-195+, FS-195+ CAJ2040 FS-195+, CP 25WB+ CAJ2044 FS-195+, CP 25N/S, CP 25S/L CP 25 WB+ CAJ2090 FS-195+ CAJ2177 FS-195+, PPD'S FA2001 FS-195+, PPD'S FS2002 CS-195+, FS-195+, MPS-2+, PPD'S FA2011 FS-195+ WJ2012 FS-195+ 1" WIDE | WL2006 FS-195+ WL2013 FS-195+ WL2031 CS-195+, FS-195+ WL2032 CS-195+, FS-195+ WL2033 FS-195+ WL2073 FS-195+ 1" WIDE | FC2008 FS-195+ FC2009 FS-195+, PPD'S FC2024 FS-195+ FC2026 FS-195+ FC2028 FS-195+, 1' & 2" WIDE, PPD'S |
| Insulated Cable | CAJ3001 CP 25N/S, CP 25S/L CAJ3005 CS 195+, FS-195+ CAJ3007 2001 CAJ3009 2000, 2000+, 2003 CAJ3010 2000, 2000+, 2003 CAJ3011 2001 CAJ3014 FD 150 CAJ3015 FD 150 CAJ3021 MPS-2+ CAJ3029 2000, 2000+, 2003 CAJ3030 CP 25WB+ CAJ3031 CP 25N/S, CP 25S/L CAJ3041 2000, 2000+, 2003 CAJ3044 CS-195+, FS-195+ CAJ3058 FS-195+, MPS-2+ CAJ3071 CP 25N/S, CP 25S/L CAJ3074 CP 25N/S, CP 25S/L CAJ3075 2001 CAJ3080 CP 25WB+ CBJ3016 CS-195+, FS-195+ CBJ3017 CS-195+, MPS-2+ FA3001 CP 25WB+ | WL3001 CP 25, MPS-2+ WL3008 2000+ WL3009 2000+ WL3015 CP 25WB+, CP 25N/S WL3022 2000+ WL3030 FS-195+ WL3031 MPS-2+ WL3032 CP 25WB+ WL3041 2000+ WL3051 CP 25N/S WL3056 CP25N/S WL3062 CP 25WB+ | FC3001 CP 25S/L, CP 25N/S FC3002 2000+ FC3003 2000, 2000+, 20003 FC3007 CP 25WB+, MPS-2+ FC3008 FS-195+ |

| PENETRATING ITEM | CONCRETE | GYPSUM | WOOD FLOOR/CEILING |
|--------------------------------|---|-------------------------|--------------------|
| | FB3004 CS-195+, MP WJ3015 2001 WJ3016 2001 | | |
| Mixed Penetrating Items Combos | CAJ8001 CS-195+ FS-195+ CAJ8003 2000, 2000+, 20003 CAJ8004 2000, 2000+, 20003 CAJ8006 2001 CAJ8013 FS-195+, CP 25 CBJ8004 CS-195, FS-195+ CBJ8005 CS-195+, MPS-2+ CBJ8008 2001 FA8001 FS-195+, CP 25WB+ | WL8002 CS-195+, FS-195+ | |

* Underwriter's Laboratories, Inc., Fire Resistance Directory.

END OF SECTION 260528

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

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. Hangers and supports for electrical equipment and systems.
- B. Related Sections include the following:
 - 1. Metal Fabrications – For requirements for miscellaneous metal items involved in supports and fastenings.
 - 2. Joint Sealants – For requirements for firestopping at sleeves through walls and floors that are fire barriers.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.

1.6 QUALITY ASSURANCE

- A. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
1. Manufacturers: Subject to compliance with requirements, provide slotted metal angle and U-channel systems by one of the following:
 - a. Thomas & Betts Corporation.
 - b. Alstrut.
 - c. Unistrut; Diversified Products
 - d. Power-Strut.
 2. Manufacturers: Subject to compliance with requirements, provide conduit sealing bushings and accessories by one of the following:
 - a. Bridgeport Fittings
 - b. GS Metals, Corporation
 - c. O-Z / Gedney
 - d. Raco, Inc.
 3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to FMA-4.
 4. Painted Coatings: Manufacturer's standard painted coating applied according to FMA-4.
 5. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

- a. 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) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - 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) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 1. To Wood: Fasten with lag screws or through bolts.
 2. To New Concrete: Bolt to concrete inserts.
 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 4. To Existing Concrete: Expansion anchor fasteners.
 5. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 6. To Light Steel: Sheet metal screws.
 7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete.
- C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

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 conduits, tubing, and fittings.
 - 2. Surface raceways.
 - 3. Boxes, enclosures, and cabinets.

1.3 DEFINITIONS

- A. GRC: Galvanized rigid steel conduit.
- B. IMC: Intermediate metal conduit.

1.4 ACTION SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
 - 1. Structural members in paths of conduit groups with common supports.
 - 2. HVAC and plumbing items and Engineerural features in paths of conduit groups with common supports.

PART 2 PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following provide products by one of the following:
 - 1. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 2. O-Z/Gedney; a brand of EGS Electrical Group.

3. Robroy Industries.
 4. Thomas & Betts Corporation.
 5. Wheatland Tube Company; a division of John Maneely Company.
- B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. GRC: Comply with ANSI C80.1 and UL 6.
- D. IMC: Comply with ANSI C80.6 and UL 1242.
- E. EMT: Comply with ANSI C80.3 and UL 797.
- F. FMC: Comply with UL 1; zinc-coated steel.
- G. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- H. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
1. Fittings for EMT:
 - a. Material: Steel.
 - b. Type: Compression.
 2. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
- I. Joint Compound for IMC, GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.
- 2.2 SURFACE RACEWAYS
- A. Listing and Labeling: Surface raceways shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Surface Metal Raceways: Galvanized steel with snap-on covers complying with UL 5. Prime coated, ready for field painting.
- 2.3 BOXES, ENCLOSURES, AND CABINETS
- A. Manufacturers: Subject to compliance with requirements, provide products by the following provide products by one of the following:
1. Cooper Technologies Company; Cooper Crouse-Hinds.
 2. EGS/Appleton Electric.
 3. Hoffman; a Pentair company.
 4. Hubbell Incorporated; Killark Division.
 5. O-Z/Gedney; a brand of EGS Electrical Group.

6. RACO; a Hubbell Company.
 7. Robroy Industries.
 8. Spring City Electrical Manufacturing Company.
 9. Thomas & Betts Corporation.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy Type FD, with gasketed cover.
- E. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed and marked for the maximum allowable weight.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- H. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- I. Device Box Dimensions: 4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep).
- J. Gangable boxes are prohibited.

PART 3 EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below:
1. Exposed Conduit: GRC IMC.
 2. Concealed Conduit, Aboveground: GRC IMC.
 3. Connection to Vibrating Equipment (Including Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
- B. Indoors: Apply raceway products as specified below unless otherwise indicated:
1. Exposed, Not Subject to Physical Damage: EMT.
 2. Exposed and Subject to Physical Damage: GRC IMC. Raceway locations include the following:

- a. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - b. Mechanical rooms.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 4. Connection to Vibrating Equipment (Including Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 - 5. Damp or Wet Locations: GRC IMC.
 - C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
 - D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - 2. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
 - 3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
 - E. Do not install aluminum conduits.
 - F. Install surface raceways only where indicated on Drawings.
- 3.2 INSTALLATION
- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
 - B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
 - C. Complete raceway installation before starting conductor installation.
 - D. Arrange stub-ups so curved portions of bends are not visible above finished slab.
 - E. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
 - F. Conceal conduit and EMT within finished walls and ceilings. Install conduits parallel or perpendicular to building lines.
 - G. Conceal rigid steel conduit below slabs on grade. Do not embed raceways in slabs.
 - H. Support conduit within 12 inches (300 mm) of enclosures to which attached.
 - I. Stub-ups to Above Recessed Ceilings:
 - 1. Use EMT, IMC, or RMC for raceways.

2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- J. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions or Under Slabs on Grade: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- K. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- L. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on conduits.
- M. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- N. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- O. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- P. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.
- Q. Surface Raceways:
 1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- R. Expansion-Joint Fittings:
 1. Install in each run of aboveground RMC and EMT conduit that is located where environmental temperature change may exceed 100 deg F (55 deg C) and that has straight-run length that exceeds 100 feet (30 m).
 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.

- d. Attics: 135 deg F (75 deg C) temperature change.
 - 3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.
 - 4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 - 5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
 - S. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for motors.
 - 1. Use LFMC in damp or wet locations subject to severe physical damage.
 - 2. Use LFMC in damp or wet locations not subject to severe physical damage.
 - T. Mount boxes at heights indicated. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
 - U. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box.
 - V. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
 - W. Locate boxes so that cover or plate will not span different building finishes.
 - X. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
 - Y. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
- 3.3 PROTECTION
- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

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. Identification for raceways.
 - 2. Identification of power and control cables.
 - 3. Identification for conductors.
 - 4. Underground-line warning tape.
 - 5. Warning labels and signs.
 - 6. Instruction signs.
 - 7. Equipment identification labels.
 - 8. Miscellaneous identification products.

1.3 ACTION SUBMITTALS

- A. Product Data: For each electrical identification product indicated.
- B. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.
- C. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 PRODUCTS

2.1 POWER AND CONTROL RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage and system or service type.
- C. Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing ends of legend label.

2.2 CONDUCTOR IDENTIFICATION MATERIALS

- A. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted 3-mil- (0.08-mm-) thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the conductor diameter such that the clear shield overlaps the entire printed legend.
- B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.3 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Baked-Enamel Warning Signs:
 - 1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
 - 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 - 3. Nominal size, 7 by 10 inches (180 by 250 mm).

C. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."

2.4 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.
1. Engraved legend with black letters on white face.
 2. Punched or drilled for mechanical fasteners.
 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.5 EQUIPMENT IDENTIFICATION LABELS

- A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).
- B. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm).

2.6 CABLE TIES

- A. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
1. Minimum Width: 3/16 inch (5 mm).
 2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 7000 psi (48.2 MPa).
 3. UL 94 Flame Rating: 94V-0.
 4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).
 5. Color: Black.

2.7 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels with mechanical fasteners appropriate to the location and substrate.
- F. Attach plastic raceway labels with clear vinyl tape with adhesive appropriate to the location and substrate.
- G. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.
- H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
 - 1. Outdoors: UV-stabilized nylon.
 - 2. In Spaces Handling Environmental Air: Plenum rated.
- I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
- J. Painted Identification: Comply with requirements in painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

- A. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
 - 1. Power.
- B. Power-Circuit Conductor Identification, 600 V or Less: For conductors in, pull and junction boxes, use color-coding conductor tape to identify the phase.
 - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

- a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral: White, Ground: Green
 - c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- C. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
- 1. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- E. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.
- 1. Comply with 29 CFR 1910.145.
 - 2. Identify system voltage with black letters on an orange background.
 - 3. Apply to exterior of door, cover, or other access.
 - 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
 - a. Controls with external control power connections.
- F. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- G. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
- 1. Labeling Instructions:

- a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
 - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
 - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
 - d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
2. Equipment to Be Labeled:
- a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
 - b. Enclosures and electrical cabinets.
 - c. Access doors and panels for concealed electrical items.
 - d. Enclosed switches.
 - e. Enclosed circuit breakers.
 - f. Enclosed controllers.
 - g. Push-button stations.
 - h. Contactors.

END OF SECTION 260553

SECTION 260923 – LIGHTING CONTROL DEVICES

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. Outdoor photoelectric switches, solid state, flexible mounting.
 - 2. Outdoor photoelectric switches, solid state, luminaire-mounted.
 - 3. Indoor occupancy and vacancy sensors.
- B. Related Requirements:
 - 1. Section 262726 "Wiring Devices" for wall-box dimmers, non-networkable wall-switch occupancy sensors, and manual light switches.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Show installation details for the following:
 - a. Occupancy sensors.
 - b. Vacancy sensors.
 - 2. Interconnection diagrams showing field-installed wiring.
 - 3. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
- B. Sample Warranty: For manufacturer's warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.

1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail(s) in materials or workmanship within specified warranty period.
1. Faulty operation of lighting control devices.
 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements manufacturers offering products that may be incorporated into the work included, but not limited to, the following available manufacturers' names:
1. Wattstopper
 2. Sensor Switch
 3. Leviton

2.2 INDOOR OCCUPANCY SENSORS

- A. General Requirements for Sensors:
1. Wall and Ceiling-mounted, solid-state indoor occupancy sensors.
 2. Passive Infrared and Dual technology.
 3. Hardwired connection to switch
 4. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 5. Operation:
 - a. Occupancy Sensor: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
 6. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A.
 7. Power: Line voltage.
 8. Mounting:
 - a. Sensor: Suitable for mounting in any position on a standard outlet box.
 - b. Relay: Externally mounted through a **1/2-inch** knockout in a standard electrical enclosure.
 - c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
 9. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
 10. Bypass Switch: Override the "on" function in case of sensor failure.

- B. PIR Type: Wall and Ceiling mounted; detect occupants in coverage area by their heat and movement.
 - 1. Detector Sensitivity: Detect occurrences of **6-inch-** minimum movement of any portion of a human body that presents a target of not less than **36 sq. in.**
 - 2. Detection Coverage (Room, Ceiling Mounted): Detect occupancy anywhere in a circular area of **1000 sq. ft.** when mounted on a **96-inch-** high ceiling.
- C. Dual-Technology Type: Wall and Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.
 - 1. Sensitivity Adjustment: Separate for each sensing technology.
 - 2. Detector Sensitivity: Detect occurrences of **6-inch-** minimum movement of any portion of a human body that presents a target of not less than **36 sq. in.**, and detect a person of average size and weight moving not less than **12 inches** in either a horizontal or a vertical manner at an approximate speed of **12 inches/s.**
 - 3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of **1000 sq. ft.** when mounted on a **96-inch-** high ceiling.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF SENSORS

- A. Comply with NECA 1.
- B. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
- C. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.3 IDENTIFICATION

- A. Identify components and power and control wiring in accordance with Section 260553 "Identification for Electrical Systems."
 - 1. Identify controlled circuits in lighting contactors.

2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.

- B. Label time switches and contactors with a unique designation.

3.4 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

- B. Lighting control devices will be considered defective if they do not pass tests and inspections.

- C. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.

3.6 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION 260923

SECTION 262416 - PANELBOARDS

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. Lighting and appliance branch-circuit panelboards.
 - 2. Load centers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 6. Include wiring diagrams for power, signal, and control wiring.
 - 7. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Field Quality-Control Reports:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.

3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- C. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017700 "Operation and Maintenance Data," include the following:
 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
 2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Keys: Two spares for each type of panelboard cabinet lock.
 2. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: Two spares for each panelboard.

1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.
- B. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NEMA PB 1.
- F. Comply with NFPA 70.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

- B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.9 PROJECT CONDITIONS

A. Environmental Limitations:

1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Ambient Temperature: Not exceeding 23 deg F (minus 5 deg C) to plus 104 deg F (plus 40 deg C).
 - b. Altitude: Not exceeding 6600 feet (2000 m).

B. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet (2000 m).

1.10 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Enclosures: Flush- and surface-mounted cabinets.

1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
2. Finishes:

- a. Panels and Trim: Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - b. Back Boxes: Same finish as panels and trim.
3. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.
- B. Incoming Mains Location: Top and bottom.
- C. Phase, Neutral, and Ground Buses:
 1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
 3. Isolated Ground Bus: Adequate for branch-circuit isolated ground conductors; insulated from box.
 4. Extra-Capacity Neutral Bus: Neutral bus rated 200 percent of phase bus and UL listed as suitable for nonlinear loads.
- D. Conductor Connectors: Suitable for use with conductor material and sizes.
 1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Main and Neutral Lugs: Compression type.
 3. Ground Lugs and Bus-Configured Terminators: Compression type.
 4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
 6. Extra-Capacity Neutral Lugs: Rated 200 percent of phase lugs mounted on extra-capacity neutral bus.
- E. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- F. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Square D; a brand of Schneider Electric or comparable product by one of the following:
 1. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 2. Siemens Energy & Automation, Inc.

3. Eaton Electrical Inc. Cutler-Hammer Business Unit.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: Circuit breaker or lugs only, as indicated.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Square D; a brand of Schneider Electric or comparable product by one of the following:
 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 100A through 225A, field adjustable short-time and continuous current setting for frame sizes 250A and larger.
 2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
 3. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
 4. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
 5. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
 6. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Compression style, suitable for number, size, trip ratings, and conductor materials.
 - c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.

- d. Shunt Trip: 120 -V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.
- e. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.
- f. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

2.4 ACCESSORY COMPONENTS AND FEATURES

- A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation per manufacturer's recommendations.
- B. Portable Test Set: Provide for testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.
- C. Mount top of trim 90 inches (2286 mm) above finished floor unless otherwise indicated.
- D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- E. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- F. Install filler plates in unused spaces.
- G. Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.

- H. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.
- I. Comply with NECA 1.

3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate City's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- D. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- E. Panelboards will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports, including a certified report that identifies panelboards included. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as specified in Section 260573 "Overcurrent Protective Device Coordination Study."
- C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
 - 1. Measure as directed during period of normal system loading.
 - 2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
 - 3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
 - 4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

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. Standard-grade receptacles, 125V 20A.
 - 2. USB receptacles, 125V 20A.
 - 3. GFCI receptacles, 125V 20A.
 - 4. Toggle switches 120/277V 20A.
 - 5. Occupancy sensors.
 - 6. Wall-box dimmers.
 - 7. Wall plates.

1.3 DEFINITIONS

- A. BAS: Building automation system
- B. EMI: Electromagnetic interference.
- C. GFCI: Ground-fault circuit interrupter.
- D. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- E. RFI: Radio-frequency interference.
- F. SPD: Surge Protection Device.
- G. UTP: Unshielded twisted pair.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Samples: One for each type of device and wall plate specified, in each color specified.
- D. Field quality-control test reports.

- E. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.
- D. Products and installation shall comply with the applicable provisions of the ADA Standards.

1.6 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
 - 1. Cord and Plug Sets: Match equipment requirements.

PART 2. PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 - 2. Leviton Manufacturing Company, Inc (Leviton)
 - 3. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Comply with NFPA 70.
- C. RoHS compliant.
- D. Comply with NEMA WD 1.
- E. Device Color: Wiring Devices Connected to Normal Power System: As selected by Architect unless otherwise indicated or required by NFPA 70 or device listing.
- F. Wall Plate Color: For plastic covers, match device color.

- G. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.3 STANDARD-GRADE RECEPTACLES, 125 V, 20 A:

- A. Duplex Receptacles, 125 V, 20 A
 - 1. Description: Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Standards: Comply with UL 498 and FS W-C-596.

2.4 USB RECEPTACLES

- A. Duplex and USB Charging Receptacles:
 - 1. Description: Single-piece, rivetless, nickel-plated, all-brass grounding system. Nickel-plated, brass mounting strap. Integral shutters that operate only when a plug is inserted in the line voltage receptacle.
 - 2. Line Voltage Receptacles: Two pole, three wire, and self-grounding; NEMA WD 6, Configuration 5-20R.
 - 3. USB Receptacles: Dual USB Type A, 5 V dc, and 2.1 A per receptacle (minimum).
 - 4. Standards: Comply with UL 498, UL 1310, USB 3.0 devices, and FS W-C-596.

2.5 GFCI RECEPTACLES, 125 V, 20 A

- A. Duplex GFCI Receptacles, 125 V, 20 A:
 - 1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Type: Non-feed through.
 - 4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.

2.6 TOGGLE SWITCHES, 120/277 V, 20 A

- A. Single-Pole Switches, 120/277 V, 20 A:
 - 1. Standards: Comply with UL 20 and FS W-S-896.
- B. Three-Way Switches, 120/277 V, 20 A:
 - 1. Comply with UL 20 and FS W-S-896.
- C. Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches, 120/277 V, 20 A:

1. Description: For use with mechanically held lighting contactors.
2. Standards: Comply with NEMA WD 1, UL 20, and FS W-S-896.

2.7 OCCUPANCY SENSORS

A. Wall Switch Sensor Light Switch, Dual Technology:

1. Description: Switchbox-mounted, combination lighting-control sensor and conventional switch lighting-control unit using dual (ultrasonic and passive infrared) technology.
2. Standards: Comply with UL 20.
3. Rated 10 A at 277 V ac for LED lighting, and 1/4 hp at 120 V ac.
4. Adjustable time delay of 15 minutes.
5. Able to be locked to Manual-On mode.
6. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lux).
7. Connections: RJ-45 communications outlet.

B. Wall Sensor Light Switch, Passive Infrared:

1. Description: Switchbox-mounted, combination, lighting-control sensor and conventional switch lighting-control unit using passive infrared technology.
2. Standards: Comply with UL 20.
3. Connections: Hard wired.
4. Rated 10 A at 277 V ac for LED lighting, and 1/4 hp at 120 V ac.
5. Integral relay for connection to BAS.
6. Adjustable time delay of 15 minutes.
7. Able to be locked to Manual-On mode.
8. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lux).

2.8 DIMMERS

A. Wall-Box Dimmers:

1. Description: Modular, full-wave, solid-state dimmer switch with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
2. Control: Continuously adjustable slider; with single-pole or three-way switching.
3. Standards: Comply with UL 1472.

4. LED Lamp Dimmer Switches: Modular; compatible with LED lamps; trim potentiometer to adjust low-end dimming; capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.9 WALL PLATES

- A. Single Source: Obtain wall plates from same manufacturer of wiring devices.
- B. Single and combination types shall match corresponding wiring devices.
 1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Material for Finished Spaces: 0.035-inch- (1-mm-) thick, satin-finished, Type 302 stainless steel
 3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
 4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.

PART 3. EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Provide a minimum of one (1) lighting switch in each space regardless of whether shown on the drawings.
- C. Coordination with Other Trades:
 1. Take steps to ensure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 4. Install wiring devices after all wall preparation, including painting, is complete.
- D. Conductors:
 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.

3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
- E. Device Installation:
1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
 6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
 8. Tighten unused terminal screws on the device.
 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
- F. Receptacle Orientation:
1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.
- G. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- H. Dimmers:
1. Install dimmers within terms of their listing.
 2. Verify that dimmers used for fan speed control are listed for that application.
 3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.
- I. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION 262726

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SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

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:
 - 1. Fusible switches.
 - 2. Nonfusible switches.
 - 3. Molded-case circuit breakers (MCCBs).
 - 4. Molded-case switches.
 - 5. Enclosures.

1.3 DEFINITIONS

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.
 - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
 - 4. Include evidence of NRTL listing for series rating of installed devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
 - 6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

- 1. Wiring Diagrams: For power, signal, and control wiring.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017700 "Operation and Maintenance Data," include the following:

- 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
 - 2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
 - 2. Fuse Pullers: Two for each size and type.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NFPA 70.

1.8 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 PRODUCTS

2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. Siemens Energy & Automation, Inc.
 3. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper neutral conductors.
 3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
 4. Lugs: Mechanical type, suitable for number, size, and conductor material.
 5. Service-Rated Switches: Labeled for use as service equipment.

2.2 NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. Siemens Energy & Automation, Inc.
 3. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper neutral conductors.
 3. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.3 MOLDED-CASE CIRCUIT BREAKERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Square D; a brand of Schneider Electric

2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 3. Siemens Energy & Automation, Inc.
- B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
- C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- D. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
- E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.
- F. Features and Accessories:
1. Standard frame sizes, trip ratings, and number of poles.
 2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
 3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Install fuses in fusible devices.
- D. Comply with NECA 1.

3.3 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

- B. Set field-adjustable circuit-breaker trip ranges.

END OF SECTION 262816

SECTION 264313 - SURGE PROTECTION FOR LOW-VOLTAGE
ELECTRICAL POWER CIRCUITS

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 field-mounted SPDs for low-voltage (120 to 600 V) power distribution and control equipment.

1.3 DEFINITIONS

- A. Inominal: Nominal discharge current.
- B. MCOV: Maximum continuous operating voltage.
- C. Mode(s), also Modes of Protection: The pair of electrical connections where the VPR applies.
- D. MOV: Metal-oxide varistor; an electronic component with a significant non-ohmic current-voltage characteristic.
- E. OCPD: Overcurrent protective device.
- F. SCCR: Short-circuit current rating.
- G. SPD: Surge protective device.
- H. VPR: Voltage protection rating.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 - 2. Copy of UL Category Code VZCA certification, as a minimum, listing the tested values for VPRs, Inominal ratings, MCOVs, type designations, OCPD requirements, model numbers, system voltages, and modes of protection.
- B. Verification that all SPD are UL tested and labeled with 20kA (In) nominal discharge rating for compliance to UL96A Lightning Protection Master Label and NFPA 780.
- C. UL 1449 stipulation for fused SPD – The manufacturer's authorized representative is required to submit the following:
 - 1. Certify that the SPD is UL 1449 listed (UL Card) with UL Card.

2. Indicate the type of internal or external fusing that is incorporated in the SPD and what impact the fusing has on the performance of the device with respect to surge capacity and clamping levels.
- D. Manufacturer must provide independent testing on repetitive capability and maximum surge current rating of service entrance suppressor units. This shall be performed at a nationally recognized lab not affiliated with the manufacturer.
1. Single pulse surge current capacity: single pulse surge current tested in a mode at rated surge currents. Single pulse surge current capacities of 200,000 A or less per mode are established by single pulse testing in a mode.
 2. Single pulse surge current capacity test: an initial UL 1449 defined as 1.2 x 50 μ s, 6000V open circuit voltage waveform and an 8 x 20 μ s, 500A and 3kA short circuit current waveform is applied to benchmark the unit's suppression voltage.
 3. A single pulse surge of maximum rated surge current (for units rated over 200,000A per mode, components or sub-assemblies are tested) magnitude with an approximated 8 x 20 μ s waveform is then applied. To complete the test, another UL 1449 surge shall be applied to verify the unit's survival. Survival is achieved if the suppression voltage measured from the two UL1449 surges does not vary by more than 10%.
- E. Minimum Repetitive Surge Current Capacity.
1. Service entrance suppressor units should be tested repetitively to verify repetitive capacity.
 2. Minimum Repetitive Surge Current Capacity Test:
 - a. An initial UL 1449 surge defined as 1.2 x 50 μ s, 6000V open circuit voltage waveform and an 8 x 20 μ s, 500A and 3kA short circuit current waveform is applied to benchmark the unit's suppression voltage.
 - b. A repetitive number of ANSI/IEEE C62.41.2-2002 (Category C3) surges defined as a 1.2 x 50 μ s 10kV or 20kV open circuit voltage waveform and an 8 x 20 μ s 10,000A short circuit current waveform are then applied at one minute intervals.
 - c. To complete the test, another UL 1449 surge shall be applied to verify the unit's survival.
 3. Survival is achieved if the suppression voltage measured from the two UL 1449 surges does not vary by more than 10%.
 4. Proof of such testing shall be the test log generated by the surge generator.
- F. Short Circuit Fuse Testing:
1. Each design configuration shall be short circuit tested in accordance with the type of fusing utilized in the suppression path.
 2. Short Circuit Fuse Test:
 - a. Testing shall include application of a sustained overvoltage that causes the unit to enter a bolted fault condition.
 - b. This bolted fault condition shall occur with the full rated AIC current of the fuse available.

3. The fuse shall fail in a safe manner with no physical or structural damage to the unit and any failure shall be self-contained within the unit.

G. Surge Current Fuse Testing:

1. Each design configuration shall be surge tested with fusing in series to verify that a transient of maximum surge current capacity magnitude is fully suppressed without fuse failure, operation or degradation.

- H. Service Entrance SPD must be subjected to a series of waveforms as described in IEEE C62.41.2-2002. Clamping voltage measurements were taken throughout the tests to evaluate any deviations in performance as a result of the surges. Injected surges included the 1.2/50 μ s, 8/20 μ s waveforms at levels of 6kV/500A for bench marking, and high current 10/1000 μ s surges at 1.5, 3.1, 3.6 and 6.2 kA levels.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
- B. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For SPDs to include in maintenance manuals.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to replace or replace SPDs that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL SPD REQUIREMENTS

- A. SPD with Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.
- C. Comply with UL 1449, Third Edition.
- D. MCOV of the SPD shall be the nominal system voltage.
- E. Each protection device shall have a capacitive filtering system connected in each Line to Neutral (L-N)(wye) mode or Line to Line (L-L)(delta) mode to provide EMI/RFI noise attenuation.
- F. Protection modes: The SPD shall provide Line to Neutral (L-N)(wye), Line to Ground (L-G)(wye or delta), Line to Line (L-L)(delta), and Neutral to Ground (N-G)(wye) protection.

- G. SPD shall be a multi-stage parallel protector. SPDs minimum surge current capacity shall be 400kA per phase (L-N plus L-G) and 200kA per mode (L-N, L-G, L-L and N-G).
- H. Coordinate location of field-mounted suppressors to allow adequate clearances for maintenance.
- I. Service Conditions: Rate surge protective devices for continuous operation under the following conditions, unless otherwise indicated:
 - 1. Maximum Continuous Operating Voltage (MCOV): Should be tested to 115% per UL 1449 3rd.
 - 2. Operating Temperature: 0 to 50 deg F.
 - 3. Humidity: 0 to 95 percent, noncondensing.
 - 4. Altitude: Less than 12,000 feet above sea level.
- J. Every component of every mode shall be protected by internal thermal protection. SPDs relying on external or supplementary installed safety overcurrent protection do not meet the intent of this specification.
- K. All primary transient paths shall utilize copper wire, aluminum bus bar and lugs of equivalent capacity to provide equal impedance interconnection between phases. No plug-in module or components shall be used in surge carrying paths.

2.2 SERVICE ENTRANCE SUPPRESSOR

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. ASEA Brown Boveri Ltd.. (ABB). – Currentguard Series CG3
 - 2. LEA International; Protection Technology Group–SP 100.
 - 3. Surge Suppression Inc.- SpecPRO
- B. SPDs: Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 1449, Type 2.
 - 1. SPDs with the following features and accessories:
 - a. Integral disconnect switch.
 - b. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
 - c. Indicator light display for protection status.
 - d. Surge counter.
- C. Comply with UL 1283.
- D. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 400 kA and 200kA per mode.

- E. Protection modes and UL 1449 VPR for grounded wye circuits with 240Y/120 V, single-phase, three-wire circuits shall not exceed the following:
 - 1. Line to Neutral: 700 V for 208Y/120 V.
 - 2. Line to Ground: 700 V for 208Y/120 V.
 - 3. Line to Line: 1200 V for 208Y/120 V.
- F. SCCR: Equal or exceed 100 kA.
- G. Inominal Rating: 20 kA.

2.3 ENCLOSURES

- A. Indoor Enclosures: NEMA 250, Type 1.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install an OCPD or disconnect as required to comply with the UL listing of the SPD.
- C. Install SPDs with conductors between suppressor and points of attachment as short and straight as possible, and adjust circuit-breaker positions to achieve shortest and straightest leads. Do not splice and extend SPD leads unless specifically permitted by manufacturer. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.
- D. Use crimped connectors and splices only. Wire nuts are unacceptable.
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections with the assistance of a factory-authorized service representative.
 - 1. Compare equipment nameplate data for compliance with Drawings and Specifications.
 - 2. Before energizing electrical circuitry, verify that the unit voltage and connecting equipment voltage is the same.
 - 3. Inspect anchorage, alignment, grounding, and clearances.
 - 4. Verify that electrical wiring installation complies with manufacturer's written installation requirements.
- B. An SPD will be considered defective if it does not pass tests and inspections.

- C. Prepare test and inspection reports.

3.3 STARTUP SERVICE

- A. Complete startup checks according to manufacturer's written instructions.
- B. Do not perform insulation-resistance tests of the distribution wiring equipment with SPDs installed. Disconnect SPDs before conducting insulation-resistance tests, and reconnect them immediately after the testing is over.
- C. Energize SPDs after power system has been energized, stabilized, and tested.

3.4 DEMONSTRATION

- A. Train Owner's maintenance personnel to operate and maintain SPDs.

END OF SECTION 264313

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SECTION 265100 - INTERIOR LIGHTING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps, and drivers/ballasts.
2. Lighting fixture supports.

B. Related Sections:

1. Division 26 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
2. Division 26 Section "Wiring Devices" for manual wall-box dimmers.

1.3 REFERENCES

- A. The following references are useful in specifying interior lighting. Other references may be needed for design purposes.

American National Standards Institute

ANSI C82.1-2004: For Lamp Ballast - Line Frequency Fluorescent Lamp Ballast

ANSI C82.11-2002: High-Frequency Fluorescent Lamp Ballasts

ASTM International

ASTM A 580/A 580M-06: Specification for Stainless Steel Wire

ASTM A 641/A 641M-03: Specification for Zinc-Coated (Galvanized) Carbon Steel Wire

Code of Federal Regulations

29 CFR - Labor, Chapter XVII - Occupational Safety and Health Administration, Department of Labor, Part 1910 - "Occupational Safety and Health Standards," Subpart A - "General," Section 1910.7 - "Definition and Requirements for a Nationally Recognized Testing Laboratory." 2006.

47 CFR - Telecommunication, Chapter I - Federal Communications Commission, Part 18 - "Industrial, Scientific, and Medical Equipment," Subpart C - "Technical Standards." 2005.

The Institute of Electrical and Electronics Engineers, Inc.

IEEE C62.41.1-2002: Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits (ANSI)

IEEE C62.41.2-2002: Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits (ANSI)

Military Specification and Standards (U.S. Department of Defense)

MIL-STD-461E-1999: Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment

National Electrical Manufacturers Association

NEMA 250-2003: Enclosures for Electrical Equipment (1000 Volts Maximum)

NEMA LE 4-2006: Recessed Luminaires, Ceiling Compatibility

NEMA LE 5-2001: Procedure for Determining Luminaire Efficacy Ratings for Fluorescent Luminaire

NFPA

NFPA 70-2005: National Electrical Code

NFPA 101-2006: Life Safety Code

Underwriters Laboratories Inc.

UL 924-2006: Emergency Lighting and Power Equipment

UL 935-2001: Fluorescent Lamp Ballasts

UL 1598-2004 (Rev. 2006): Luminaires

1.4 DEFINITIONS

- A. BF: Ballast factor.
- B. CCT: Correlated color temperature.
- C. CRI: Color-rendering index.
- D. LER: Luminaire efficacy rating.
- E. Lumen: Measured output of lamp and luminaire, or both.
- F. Luminaire: Complete lighting fixture, including driver/ballast housing if provided.
- G. LED: Light-Emitting Diode.

1.5 SUBMITTALS

- A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of lighting fixture including dimensions.
 - 2. Emergency lighting units including battery and charger.
 - 3. Driver/Ballast, including BF.
 - 4. Energy-efficiency data.
 - 5. Life, output (lumens, CCT, and CRI), and energy-efficiency data for lamps.
 - 6. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, drivers/ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.
 - a. Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Shop Drawings: For nonstandard or custom lighting fixtures. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples: For each lighting fixture where indicated in Lighting Fixture Schedule. Each Sample shall include the following:
 - 1. Lamps and drivers/ballasts, installed.
 - 2. Cords and plugs.
- D. Installation instructions.
- E. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Lighting fixtures.
 - 2. Suspended ceiling components.
 - 3. Ceiling-mounted projectors.
 - 4. Other items in finished ceiling including the following:

- a. Air outlets and inlets.
 - b. Speakers.
 - c. Sprinklers.
 - d. Smoke and fire detectors.
 - e. Occupancy sensors.
 - f. Access panels.
- F. Product Certificates: For each type of driver/ballast for bi-level and dimmer-controlled fixtures, from manufacturer.
- G. Field quality-control reports.
- H. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.
- 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.
- I. Warranty: Sample of special warranty.
- 1.6 QUALITY ASSURANCE
- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - C. Comply with NFPA 70.
 - D. FM Global Compliance: Lighting fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
 - E. NECA/IESNA Compliance: Comply with NECA/IESNA 500-2006 Standard, INSTALLING INDOOR COMMERCIAL LIGHTING SYSTEMS (ANSI).
 - F. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.
 - G. Installer: All Installers shall have not less than five (5) years experience in the installation of lighting fixtures of the type and quality shown.
 - H. UL Compliance: Comply with UL Standards, including UL 486A and B, pertaining to interior lighting fixtures. Provide interior lighting fixtures and components which are UL-listed and labeled.
 - I. CBM Labels: Provide fluorescent lamp ballasts which comply with Certified Ballasts Manufacturer's Association Standards and carry the CBM label.

1.7 COORDINATION

- A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.8 WARRANTY

- A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Emergency Lighting Unit Batteries: 10 years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.
 - 2. Warranty Period for Emergency Fluorescent Ballast and Self-Powered Exit Sign Batteries: Seven years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining six years.
- B. Special Warranty for Drivers/Ballasts: Manufacturer's standard form in which driver/ballast manufacturer agrees to repair or replace drivers/ballasts that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Electronic Drivers/Ballasts: Five years from date of Substantial Completion.
- C. Special Warranty for T5 and T8 Fluorescent Lamps: Manufacturer's standard form, made out to Owner and signed by lamp manufacturer agreeing to replace lamps that fail in materials or workmanship, F.O.B. the nearest shipping point to Project Site, within specified warranty period indicated below:
 - 1. Warranty Period: Two years from date of Substantial Completion.

1.9 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
 - 2. Plastic Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
 - 3. Fluorescent-fixture-mounted, emergency battery pack: One for every 20 emergency lighting unit.
 - 4. Drivers/Ballasts: Five (5) for every 100 of each type and rating installed. Furnish at least two (2) of each type.
 - 5. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Products: Basis of design lighting fixture products / manufacturers are indicated on Drawings and Specifications. Approved Equals are acceptable, but subject to compliance with requirements and standards.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

- A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
- B. LED Fixtures: comply with UL 8750. Test according to IESNA LM-79-2008 and IESNA LM-80-2008, in addition to ANSI C78.377-2008.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- F. Diffusers and Globes:
 - 1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - a. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.
 - b. UV stabilized.
 - 2. Glass: Annealed crystal glass unless otherwise indicated.
- G. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and drivers/ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
 - 1. Label shall include the following lamp and driver/ballast characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter code (T-4, T-5, T-8, etc.), tube configuration (twin, quad, triple, etc.), base type, and nominal wattage for fluorescent luminaires.
 - c. Lamp type, wattage, bulb type and coating.
 - d. Start type (programmed start, instant start, etc.) for fluorescent luminaires.
 - e. CCT and CRI for all luminaires.

2.3 LED LUMINAIRES

- A. An LED luminaire consists of LED light engine and driver, heat-sink, fixture housing, and optic assembly where applicable.
1. Temperature: Minimum starting temperature of -20 deg C (-4 deg F), maximum operating temperature of 70 deg C (158 deg F).
 2. Lamp and Lumen Maintenance: Plus 50,000 hours rated life at greater than 70% lumen maintenance.
 3. CRI and CCT: 3500 deg K CRI and greater than 80 CRI.
 4. Dimming capability: 0-10 volt analog dimming.
 5. Photometric Data and Test Reports: Comply with IESNA LM-79-08, IESNA LM-80-08, and ANSI C78.377-08.
 6. Radio Frequency Interference: Comply with CAP 106B Telecommunications (Control of Interference) Regulations.
 7. Luminaires and components thereof shall comply with UL 8750 Standard of Safety.
 8. Five-year Warranty on Luminaire including LED light engine and driver.
 9. Power Factor: 90 percent minimum.
 10. Total Harmonic Distortion Rating: Less than 10 percent.
 11. RoHS compliant.
 12. Sound Rating: Class A.
 13. Overload, short circuit, and thermal protection.
 14. Transient Voltage Protection: Rated to withstand 2.5kV of transient line surge.
 15. LED electronic drivers shall be manufactured by Advance, Universal, Osram, Eldoed, Lutron, or approved equal.
 16. LED luminaires shall be listed with the Design Lights Consortium or Energy Star Qualified Products lists.

2.4 LIGHTING FIXTURE SUPPORT COMPONENTS

- A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.
- C. Twin-Stem Hangers: Two, 1/2-inch (13-mm) steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

- D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).
- E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage (2.68 mm).
- F. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.
- G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Lighting fixtures:
 - 1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
 - 2. Install lamps in each luminaire.
- B. Remote Mounting of Drivers/Ballasts: Distance between the driver/ballast and fixture shall not exceed that recommended by driver/ballast manufacturer. Verify, with driver/ballast manufacturers, maximum distance between driver/ballast and luminaire.
- C. Lay-in Ceiling Lighting Fixtures Supports:
 - 1. Install ceiling support system rods or wires, independent of the ceiling suspension devices, for each fixture. Locate not more than 6 inches (150 mm) from lighting fixture corners.
 - 2. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
 - 3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch (20-mm) metal channels spanning and secured to ceiling tees.
 - 4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.
- D. Suspended Lighting Fixture Support:
 - 1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
 - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
 - 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
 - 4. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.

- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.2 IDENTIFICATION

- A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

- A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.
- B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.4 STARTUP SERVICE

- A. Burn-in all lamps that require specific aging period to operate properly, prior to occupancy by Owner. Burn-in fluorescent lamps intended to be dimmed, for at least 100 hours at full voltage.

3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting aimable luminaires to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. Some of this work may be required after dark.

- 1. Adjust aimable luminaires in the presence of Architect.

END OF SECTION 265100

SECTION 265600 - EXTERIOR LIGHTING

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. Exterior luminaires with lamps and drivers.
- B. Related Sections:
 - 1. Division 26 Section "Interior Lighting" for exterior luminaires normally mounted on exterior surfaces of buildings.

1.3 REFERENCES

- A. The following references are useful in specifying exterior lighting. Other references may be needed for design purposes.

American National Standards Institute

ANSI C78.377-2008: For Chromaticity of Solid State Lighting (SSL) Products

ASTM International

Code of Federal Regulations

Illuminating Engineering Society of North America

IESNA LM-79-2008: Electrical and Photometric Measurement of Solid-State Lighting Products

IESNA LM-80-2008: Measuring Lumen Maintenance of LED Light Sources.

The Institute of Electrical and Electronics Engineers, Inc.

IEEE C2-2007: National Electrical Safety Code

IEEE C62.41.1-2002: Guide on the Surge Environment in Low-Voltage (1000 V and less) AC Power Circuits (ANSI)

IEEE C62.41.2-2002: Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits (ANSI)

National Association of Architectural Metal Manufacturers

National Electrical Manufacturers Association

NEMA 250-2003: Enclosures for Electrical Equipment (1000 Volts Maximum)

NFPA 70-2005: National Electrical Code

Underwriters Laboratories Inc.

UL 1598-2004 (Rev. 2006): Luminaires

UL 8750: Standard for Safety of Light Emitting Diode (LED) Equipment for Use in Lighting Products

1.4 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color-rendering index.
- C. LED: Light-Emitting Diode.
- D. LER: Luminaire efficacy rating.
- E. Luminaire: Complete lighting fixture, including driver housing if provided.

1.5 SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Details of attaching luminaires and accessories.
 - 3. Details of installation and construction.
 - 4. Luminaire materials.
 - 5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, drivers, and accessories.
 - a. Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - 6. Photoelectric relays.
 - 7. Drivers, including energy-efficiency data.
 - 8. Lamps, including life, output, CCT, CRI, lumens, and energy-efficiency data.
 - 9. Materials, dimensions, and finishes of poles.

- 10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
- B. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.
- C. Field quality-control reports.
- D. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.
- E. Warranty: Sample of special warranty.

1.6 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with IEEE C2, "National Electrical Safety Code."
- D. Comply with NFPA 70.
- E. All products shall comply with UL and shall be UL listed.
- F. Manufacturer's Qualifications: Firms regularly engaged in manufacture of exterior building lighting fixtures of types and ratings required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- G. Installer's Qualifications: Firm with at least three (3) years of successful installation experience on projects with exterior lighting fixture work similar to that required for the project.
- H. Electrical Code Compliance: Comply with applicable local code requirements of the Authority Having Jurisdiction and NEC Articles 25, 250, 410, and 501 as applicable to installation, and construction of lighting fixtures encompassed by this section.
- I. NEMA Compliance: Comply with applicable requirements of NEMA Standards Publication No. LE 2 pertaining to lighting equipment.
- J. IES Compliance: Comply with IES RP-8, 19, 20, and PB-15 pertaining to exterior, parking, and roadway lighting practices and fixtures.
- K. UL Compliance: Comply with requirements of UL Standards, including Standards 486A and B, pertaining to exterior lighting fixtures. Provide exterior lighting fixture and components which are UL listed and labeled.
- L. NFPA Compliance: Comply with applicable requirements of NFPA 78, *Lightning Protection Code*, pertaining to installation of exterior lighting fixtures.

- M. Code compliance is mandatory. Nothing in the Drawings and Specifications implies acceptance of work not conforming to these codes. Where work is shown to exceed minimum code requirements, comply with the Drawings and Specifications.
- N. Codes and Standards: Provide luminaires, poles, foundations and appurtenances conforming to the following:
 - 1. American National Standards Institute (ANSI):
 - a. C2 National Electrical Safety Code.
 - 2. National Electrical Manufacturers Association (NEMA):
 - a. FA1 Outdoor Floodlighting Equipment.
 - 3. Conform to applicable sections of National Fire Protection Association (NFPA) 70, "National Electrical Code".
 - 4. Underwriters Laboratories, Inc. (UL):
 - a. 57 Electric Lighting Fixture.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver exterior lighting fixtures in factory-fabricated containers or wrappings, which properly protect fixtures from construction debris and physical damage.
- B. Store exterior lighting fixtures in original wrappings in a clean dry space. Protect from weather, dirt, fumes, water, construction debris, and damage. Handle exterior lighting fixtures carefully to prevent damage, breaking, and scoring. Do not install damaged fixtures or components; remove units from site and replace with new.
- C. Sequence exterior lighting installation with other work to reduce possibility of damage and soiling of fixtures during the remainder of the construction period.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.

1.9 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lamps: Furnish at least one of each type.
 - 2. Glass and Plastic Lenses, Covers, and Other Optical Parts: Furnish at least one of each type.
 - 3. Drivers: Furnish at least two (2) of each type.
 - 4. Globes and Guards: Furnish at least one of each type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Basis of design lighting fixture products / manufacturers are indicated on Drawings and Specifications. Approved Equals are acceptable, but subject to compliance with requirements and standards.

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect driver when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

- M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
 2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 - a. Color: As selected by Architect from manufacturer's full range.
- N. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 2. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
 - a. Color: As selected by Architect from manufacturer's full range.
- O. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and drivers. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
1. Label shall include the following lamp and driver characteristics:
 - a. "USES ONLY" and include specific lamp type.
 - b. Lamp code, base type, and nominal wattage.
 - c. Lamp type, wattage, bulb type and coating.
 - d. Start type (programming start, instant start).
 - e. CCT and CRI for all luminaires.

2.3 LED LUMINAIRES:

- A. A LED luminaire consists of LED light engine and drive, heat-sink, fixture housing, and optic assembly where applicable.
1. Temperature: Minimum starting temperature of -30 deg C (-22 deg F), minimum 70 deg C (158 deg F) ambient temperature rating.
 2. Life and Lumen Maintenance: Plus 50,000 hours rated life at greater than 70% lumen maintenance.
 3. CRI and CCT: 3000 deg K (+/- 275 K) CCT unless otherwise noted and greater than 70 CRI.
 4. Transient Voltage Protection: Rated to withstand 6 kV of transient line surge.
 5. Photometric Data and Test Reports: Comply with IESNA LM-79-08, IESNA LM-80-08, and ANSI C78.377-08.
 6. Radio Frequency Interference: Comply with CAP 106B Telecommunications (Control of Interference) Regulations.

7. Luminaires and components thereof shall comply with UL 8750 Standard of Safety.
8. Five-year warranty on luminaire including LED light engine and driver.
9. Power Factor: 90 percent minimum.
10. Total Harmonic Distortion Rating: Less than 20 percent.
11. RoHS compliant.
12. Sound Rating: Class A.
13. Overload, short circuit, and thermal protection.
14. LED luminaires must be listed with the Design Lights Consortium or Energy Star Qualified Products lists.
15. LED electronic drivers shall be manufactured by Advance, Universal, Osram, Eldoled, Lutron, or approved equal.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

- A. Install lamps in each luminaire.
- B. Fasten luminaire to indicated structural supports.
 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Adjust luminaires that require field adjustment or aiming.

3.2 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 1. Verify operation of photoelectric controls.
- C. Illumination Tests:
 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
 - a. IESNA LM-72, "Directional Positioning of Photometric Data."
- D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 265600

SECTION 283112 –FIRE ALARM DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. This specification section provides the requirements for the installation and configuration of the fire alarm devices. The system shall include, but not be limited to: Automatic and manually activated alarm initiating and indicating peripheral devices and appliances, conduit, wire and accessories required to furnish a complete and operational Fire Alarm System.
- B. The work covered by this section of the specifications shall include all labor, equipment, materials and services to furnish and install the fire alarm devices. It shall be complete with all necessary hardware tailored for this installation.

1.2 SUMMARY

- A. Section Includes:
 - 1. Combo Smoke & Carbon Monoxide detectors.
 - 2. Heat detector
 - 3. Carbon Monoxide detectors

1.3 DEFINITIONS

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.

1.4 SYSTEM DESCRIPTION

- A. Noncoded, UL-certified addressable system, with multiplexed signal transmission, dedicated to fire-alarm service only.

1.5 SUBMITTALS

- A. General Submittal Requirements:
 - 1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
- B. Product Data: For each type of product indicated.
- C. Qualification Data: For qualified Installer.
- D. Field quality-control reports.

- E. Operation and Maintenance Data: For fire-alarm components to include operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Operating manuals covering the installed Fire Alarm Devices.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Smoke Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than 1 unit of each type.
 2. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but no fewer than 1 unit of each type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: Subject to compliance with requirement, provide Kidde by United Technologies Model #P4010ACLEDSO-2 or comparable product.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices:
1. Combination smoke / carbon monoxide detectors.
- B. Fire-alarm signal shall initiate the following actions:
1. Continuously operate alarm notification appliances.

2.3 COMBINATION SMOKE / CARBON MONOXIDE DETECTORS

- A. General Requirements for Combination Smoke / Carbon Monoxide Detectors:
1. Comply with UL 217 & UL 2075; operating at 120-V ac, with sealed 10-year lithium battery as the secondary power source.

2. Auxiliary Relays: One Form A and one Form C, both rated at 0.5 A.
3. Detector shall send trouble alarm when nearing end-of-life, power supply problems, or internal faults
4. Audible Notification Appliance: Piezoelectric sounder rated at 85 dBA at 10 feet (3 m) according to UL 464.
5. Visible Notification Appliance: 177-cd strobe.
6. Heat sensor, 135 deg F (57 deg C) combination rate-of-rise and fixed temperature.
7. Test Switch: Push to test; simulates smoke at rated obscuration.
8. Tandem Connection: Allow tandem connection of number of indicated detectors; alarm on one detector shall actuate notification on all connected detectors.
9. Plug-in Arrangement: Detector and associated electronic components shall be mounted in a plug-in module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
10. Self-Restoring: Detectors shall not require resetting or readjustment after actuation to restore them to normal operation.
11. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.

2.4 HEAT DETECTORS

A. General Requirements for Heat Detectors:

1. Comply with UL 521; operating at 120-V ac.
2. Auxiliary Relays: One Form A and one Form C, both rated at 0.5 A.
3. Detector shall send trouble alarm when nearing end-of-life, power supply problems, or internal faults
4. Heat sensor, 135 deg F (57 deg C) combination rate-of-rise and fixed temperature.
5. Test Switch: Push to test; simulates smoke at rated obscuration.
6. Tandem Connection: Allow tandem connection of number of indicated detectors; alarm on one detector shall actuate notification on all connected detectors.
7. Plug-in Arrangement: Detector and associated electronic components shall be mounted in a plug-in module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
8. Self-Restoring: Detectors shall not require resetting or readjustment after actuation to restore them to normal operation.
9. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.

2.5 CARBON MONOXIDE DETECTORS

A. General Requirements for Carbon Monoxide Detectors:

1. Comply with UL 2075; operating at 120-V ac, with sealed 10-year lithium battery as the secondary power source.
2. Audible Notification Appliance: Piezoelectric sounder rated at 85 dBA at 10 feet (3 m) according to UL 464.
3. Mounting: Adapter plate for outlet box mounting.
4. Testable by introducing test carbon monoxide into the sensing cell.
5. Detector shall provide alarm contacts and trouble contacts.
6. Detector shall send trouble alarm when nearing end-of-life, power supply problems, or internal faults.
7. Locate, mount, and wire according to manufacturer's written instructions.

8. Test button simulates an alarm condition.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 for installation of fire-alarm equipment.

3.2 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
 1. Visual Inspection: Conduct visual inspection of all installed equipment prior to testing.
 2. Prior to installation of any equipment, the Contractor shall provide the Engineer with copies of submittals for approval.
 3. The Contractor is responsible for assuring that conduit size and wire quantity, size and type are suitable for the equipment supplied. The Contractor shall review the proper installation of each type of device with the equipment supplier. Final connections between the wiring and equipment shall be made under the supervision of the equipment supplier's representative.
 4. Upon completion, the Contractor shall conduct a functional test of the system for the Owner, Architect, and Engineer.
- C. All components, parts, and assemblies supplied by the Manufacturer shall be guaranteed against defects in materials and workmanship for a period of 24 months.
- D. The equipment manufacturer shall have a local branch office staffed with trained, full-time employees who are capable of performing testing, inspection, repair, and maintenance services for the life of the System.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION 283112